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SEARCH STRATEGY

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S4	Journal of Nursing	Ebook Central, Public Health Database, Publicly Available Content Database	298838*
S3	Nursing	Ebook Central, Public Health Database, Publicly Available Content Database	580571*
S2	Nursing and Health Sciences	Ebook Central, Public Health Database, Publicly Available Content Database	251311*
S1	Manipal Journal of Nursing and Health Sciences	Ebook Central, Public Health Database, Publicly Available Content Database	415°

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Healthcare Workers' SARS-CoV-2 Infections in Four Hospital Outbreaks during Delta Variant Prevalence in Sydney, Australia

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ABSTRACT (ENGLISH)

Background. Healthcare workers (HCWs) are at risk of SARS-CoV-2 infections due to occupational exposure. The use of airborne personal protective equipment (PPE) significantly reduces this risk. In June 2021, an epidemic of the Delta variant began in New South Wales (NSW), Australia. Concurrent PPE guidelines, set by the Clinical Excellence Commission (CEC), restricted the use of respirators. **Objective.** To understand the relationship of PPE guidelines with workplace-acquired HCW SARS-CoV-2 infections in different clinical settings and to examine the relationship between rates of community transmission and workplace-acquired HCW infections during the Delta outbreak in NSW. **Methods.** Total SARS-CoV-2 HCW infections between 13 June and 30 October 2021 (first four months of the Delta wave) were estimated from the government COVID-19 surveillance reports and compared with the surveillance reports of community transmission. In the absence of a detailed reporting of HCW infections, open-source data including news articles, media releases, and epidemiological surveillance reports were also collected. Data were extracted on HCW cases of SARS-CoV-2 from four hospitals, including the number of HCW cases (per NSW Health definition), clinical setting, PPE guidelines, and evidence of increasing local transmission. **Results.** SARS-CoV-2 infections in HCW identified as workplace-acquired infections ($n=177$) and those without a known transmission source ($n=532$) increased during the period of increasing community transmission ($n=75,014$) in NSW. Four hospital COVID-19 clusters affecting 20 HCWs were identified between June and October 2021. HCW clusters occurred in general wards where staff were recommended to wear surgical masks. No workplace-acquired HCW infections were reported in these hospitals from critical care wards, where respirators were recommended during the same outbreak weeks. **Conclusions.** Differences in PPE policy across different wards may leave healthcare staff at risk of SARS-CoV-2 infection. During periods of high community transmission, respirators should be provided to protect hospital staff. Formal reporting of HCW infections should occur.

FULL TEXT

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1. Introduction

Since the emergence of COVID-19, the disease caused by the SARS-CoV-2 virus, in December 2019, more than 495 million cases have been confirmed globally [1]. In New South Wales (NSW), Australia, an epidemic of the Delta variant in Sydney, Australia, began in June 2021 and spread to all regions of NSW [2]. Healthcare workers (HCWs) are at higher risk of contracting COVID-19 due to occupational exposure and may have not have had access to adequate personal protective equipment (PPE) early in the pandemic due to the denial of airborne transmission of the virus [3].

The World Health Organization (WHO) has identified HCWs as a group at increased risk of becoming infected with SARS-CoV-2 due to the increased likelihood of exposure through contact with people infected with the virus [4]. This risk increases with increasing levels of community transmission [4]. In September 2021, WHO estimated HCW deaths due to COVID-19 between 80,000 and 180,000 globally, with a likely estimate of 115,500 deaths [4]. In the Australian context, it has been shown that HCWs have up to three times the risk of infection compared with the general population, and there have been multiple hospital outbreaks throughout the pandemic [5]. During the first six months of the pandemic, the rate of HCW infection was 90/100,000, the overall population infection was 34/100,000, and HCWs comprised of an estimated 6.03% of all reported infections [5]. In the Australian state of Victoria, over 4000 health and aged care workers became infected in 2020, with at least 69 percent of infections acquired at the workplace [6].

Transmission of SARS-CoV-2 is airborne [7]. In performing routine care with prolonged patient contact and working within a contaminated indoor environment, HCWs are at risk of COVID-19 exposure in the workplace [8]. HCWs may then cause ongoing transmission to their coworkers, patients, their families, and community members [8]. The use of masks and respirators, has been shown to significantly lower the rate of COVID-19 infection among HCWs [9]. The NSW Department of Health policy regarding the use of PPE is informed by the guidelines set by the Clinical Excellence Commission (CEC) [10]. During the COVID-19 pandemic, HCWs have been required to use “contact and airborne precautions” (P2/N95 respirator and eye protection) when providing care to patients with confirmed or suspected COVID-19, or if determined a close contact by the Public Health Unit (PHU) [10]. At the start of the Delta outbreak (version 1.1 of guidelines [10]), staff working in the critical care wards, including emergency departments, intensive care units, and designated COVID-19 wards, were required to use respiratory PPE, while staff working in other clinical areas (noncritical care) were required to wear surgical masks when performing patient care during periods of moderate community transmission [10]. These guidelines do not account for the presence of asymptomatic infection among staff and patients. Furthermore, restrictive guidelines and shortages of respirators in the NSW hospital system led to some frontline HCWs to use surgical masks or PPE that had not been fit-tested [11]. In NSW, there is no formal reporting of HCW infections. Therefore, in this study, media articles and other publicly available data were searched for reports of hospital outbreaks.

1.1. Objective

The objective of this study is twofold: first, to investigate the relationship between PPE guidelines and workplace-acquired HCW SARS-CoV-2 infections at different clinical settings within hospitals, in the absence of a formal reporting of HCW infections; and second, to examine the correlation between rates of community transmission and HCW infections.

2. Methods

2.1. Data Collection

In the absence of formal, public reporting of workplace-acquired HCW infections in NSW, open-source data can provide valuable information on workplace outbreaks, although it may be limited with regard to completeness of case information [5].

We searched for open-source reports of HCW clusters of SARS-CoV-2 infections in hospitals in NSW, Australia, between 13 June 2021 (the start of the epidemiological week in which the first case of Delta variant of SARS-CoV-2 was reported in NSW [12]) and 30 October 2021.

We conducted a study with a retrospective comparative analysis using open-source data to identify HCW clusters in

the Delta variant epidemic in NSW in 2021. In addition, we compared the PPE policy implementation across the affected and nonaffected wards in the same hospitals.

2.1.1. Identifying HCW Infections in NSW

Total SARS-CoV-2 HCW infections between 13 June 2021 and 30 October 2021 were collated using information from the State COVID-19 surveillance reports (Table 1) [8, 12–14]. In NSW surveillance reports, HCWs were defined as medical and nursing staff, administrative and support staff, paramedics, laboratory technicians, pharmacists, and cleaners [2]. For this study, this definition is maintained. The state PHU designates the source of HCW infections following a case investigation [6]. Attribution to workplace acquisition of SARS-CoV-2 may be difficult in periods of high levels of community transmission; therefore, both “possible” and “unknown” cases (Table 1) have been included in Figure 1.

Table 1

NSW HCW SARS-CoV-2 infections by attributed source (13 June 2021 to 30 Oct, 2021) [8, 12–14].

Reporting period	13 June 2021 to 30 October, 2021 (epidemiological weeks 25–43)
Dominant strain	Delta
Vaccination	High rates of vaccination among HCW
Workplace-acquired cases*	177
Community-acquired cases*	181
Unknown source*	532
Total HCW with COVID-19	890
Total cases with COVID-19 in NSW	75,014

*As assessed by NSW Health. Criteria for attributing place of infection not available.

[figure(s) omitted; refer to PDF]

2.1.2. Identifying HCW Workplace Outbreaks in NSW during the Delta Epidemic

Open-source data were collected for NSW, Australia, including media articles, hospital and state government media releases, and state government epidemiological surveillance reports, and were reviewed to identify workplace-acquired HCW infections between 13 June and 30 October 2021. The cohort study data collection began on 15 August 2021 and continued through 30 October 2021. A line list of reported positive cases was created with information including infection source, date of reported case, location including specific wards, policies relating to PPE, and vaccination coverage (see Table S1 in appendix). No identifying information was available or recorded. A Google search was conducted using the following keywords: (healthcare worker OR nurse OR hospital personnel) AND (NSW OR Sydney) AND (COVID-19 OR COVID OR coronavirus OR Delta OR SARS-CoV-2) AND (hospital OR ward) AND (outbreak OR cluster). The first six pages of each Google search were reviewed.

2.2. Inclusion and Exclusion Criteria for HCW Clusters

HCW clusters were defined as two or more cases of COVID-19 in the same healthcare facility within one week (Table 2). Critical care wards are defined as emergency departments, intensive care units, and designated COVID-19 wards, and noncritical care wards are defined as other wards providing clinical inpatient care.

Table 2

Inclusion and exclusion criteria and results.

Inclusion criteria	Included HCW clusters
Two or more HCWs in the same cluster were infected within a one-week period. Complete information about the hospital, the number of HCW infected with documented transmission occurring at the workplace, dates, and the ward type, in the week/s following an increase in community transmission, determined by the designation of LGA of concern	Hospital A ($n=7$)Hospital B ($n=2$)Hospital C ($n=8$)Hospital D ($n=3$)
–	
Exclusion criteria	Excluded
–	
No information about workplace transmission, less than 2 HCW infected, and no information about ward type	Hospital E: 24 patients and five staff members were infected across six separate wards ($n=5$) in an epidemiological week. No information about workplace transmission [15]Hospital F: one patient and one HCW ($n=1$) [16]

HCW clusters were included if complete information was available about the hospital, the number of HCWs infected with documented transmission occurring at the workplace, dates, and the ward type (Table 2). The PPE policy was as per the CEC guidelines unless otherwise stated by the hospital. Vaccination coverage was obtained by open-source media reports or hospital press releases. To establish an increased likelihood of HCW exposure to COVID-19 across all wards (including emergency department presentations), a criterion for inclusion was that the cluster occurred in the week/s following a documented increase in community transmission (Table 2). This was determined by the designation of local government areas (LGAs) of concern or suburbs of concern by the NSW Department of Health, through manual search of the daily NSW Health media releases and the weekly epidemiological reports [12, 17]. NSW Health used COVID-19 case data, vaccination coverage, and movement trends in the local area to determine LGAs of concern [18]. Inclusion and exclusion criteria and the results are shown in Table 2.

2.3. Data Analysis

Analysis and reporting were performed by using Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for epidemiological studies [19]. Data collected for analysis focused on the HCW in four tertiary care hospitals located in Sydney during the Delta epidemic in 2021. The four hospitals were selected due to well-reported outbreaks among health workers, including publicly available details on the type of wards involved.

A descriptive analysis was conducted, and case counts were compared between noncritical care wards and critical care wards within the same hospital over the same period.

Total SARS-CoV-2 community and HCWs confirmed infections between 13 June 2021 and 30 October 2021 were collated using information from the state and commonwealth COVID-19 surveillance reports.

3. Results

3.1. HCW Infections in NSW

Total SARS-CoV-2 HCW infections between 13 June 2021 and 30 October 2021 are shown in Table 1 [8, 12–14]. There were 890 cases in HCW in that period. The source of HCW infections is designated by the state PHU following case investigation, without further information about how the source was ascertained [6]. The majority of HCW infections ($n=532$) were classified as “unknown source,” followed by community-acquired cases ($n=181$) and

workplace-acquired cases ($n=177$) [8, 12–14].

During epidemic periods, HCWs in NSW have had an increase in workplace-acquired infections (Figure 1). There had been 890 healthcare workers diagnosed with COVID-19 in the Delta outbreak by 30 October 2021 (epidemiological week 43), and of those, 42.1% ($n=375$) were vaccinated with two doses of COVID-19 vaccine, 11.3% ($n=101$) had received one dose, and 46.5% ($n=414$) were unvaccinated [2]. The overall vaccination rate of HCWs in Sydney metropolitan hospitals as of 31 August 2021 was recorded as follows: 81% of HCWs had received two doses and 5% had received one dose [20].

[figure(s) omitted; refer to PDF]

3.2. HCW Workplace Outbreaks in NSW during Delta Epidemic

We identified six HCW outbreaks involving 25 infected HCWs, of which four met the inclusion criteria [21–27]. Table 3 shows that HCW outbreaks corresponded with the increasing community transmission by the local government area (LGA) [12, 28]. Vaccination rates were high compared to the community [20, 26, 29, 30]. The wards associated with the HCW clusters were general and noncritical care wards, including acute aged care, neurology, oncology, and orthopedic [21–27]. HCWs used surgical masks for patient care episodes on the affected wards, as per the CEC guidelines. Across the same weeks, there were no clusters identified in critical care wards (ICU and emergency), where HCWs were provided respirator masks for patient care [21–27].

Table 3

Summary of HCW clusters in NSW during Delta epidemic 2021 (epidemiological weeks 24–43).

HCW cluster	Hospital A	Hospital B	Hospital C	Hospital D
Local area identified as increasing community transmission*	18 July 2021	28 July 2021	8 August 2021	7 September 2021
Outbreak date	23–30 July 2021 <i>epidemiological week 31</i>	13–20 August 2021 <i>epidemiological week 33</i>	14–21 August 2021 <i>epidemiological week 33</i>	9 September 2021 <i>epidemiological week 36</i>
Vaccination rate	>50%	Approx. 80%	70%	92%
Wards associated with cluster	Acute aged care, neurology (29 patients)	Oncology (6 inpatients)	Oncology, orthopedic	Acute aged care
–				
<i>Number of HCW with workplace-acquired SARS-CoV-2 infection</i>				
Noncritical care wards	7	2	8	3
Critical care wards	0	0	0	0
–				
<i>PPE policy in place at the commencement of the outbreak</i>				

Noncritical care wards	Surgical masks for patient care (as per CEC guidelines)	Surgical masks for patient care (as per CEC guidelines)	Surgical masks for patient care (as per CEC guidelines)	Surgical masks for patient care (as per CEC guidelines)
Critical care wards (ED, ICU, and COVID-19 wards)	Contact and airborne precautions (respirator mask)	Contact and airborne precautions (respirator mask)	Contact and airborne precautions (respirator mask)	Contact and airborne precautions (respirator mask)

*Determined by NSW department of health.

3.2.1. Hospital A 23–30 July 2021 (Epidemiological Week 31)

The hospital A cluster was reported on 24 July with the index case of a partially vaccinated nurse who worked across two wards whilst infectious, neurology and geriatrics [31]. During the week from 23 July to 30 July 2021 (epidemiological week 31), there were seven workplace-acquired infections among HCWs in these two wards [22, 23]. During the same period, there were no HCW infections in critical care wards [23], despite the likely exposure to COVID-19-positive patients due to the increasing community transmission. The relevant LGA was designated an LGA of concern from 18 July 2021 due to the rising community transmission [12]. Following this outbreak, all clinical staffs were required to wear full respiratory PPE [22]. At the time of the hospital A cluster, the vaccination rates for the staff were greater than 50% [29].

3.2.2. Hospital B 13–20 August 2021 (Epidemiological Week 33)

The hospital B cluster was reported on 14 August, with the index case of an oncology patient who tested positive on 13 August [25]. Subsequently, five other oncology patients and two staff members were tested positive [25]. The staff members, a nursing unit manager and a junior medical officer, were both fully vaccinated [25]. During the same period, there were no reported HCW infections on critical care wards [20]. The surrounding area was designated an LGA of concern on 28 July 2021, due to the rising community transmission [32]. While vaccination rates were unable to be sourced for the relevant epidemiological week, it was documented on 31 August 2021 that across all Sydney metropolitan hospitals, staff vaccination rates were 81% fully vaccinated (two doses) and 5% partial vaccination (one dose) [20].

3.2.3. Hospital C 14–21 August 2021 (Epidemiological Week 33)

The hospital C cluster was reported on 14 August, with an unknown index case. The first four cases of staff members in this cluster who tested positive for workplace-acquired COVID-19 were reported on 14 August [21]. During the week of 14–21 August (epidemiological week 33), eight HCWs were infected across the oncology and orthopedic wards; however, no HCW infections were reported in the critical care wards in the hospital [15, 21, 26]. The surrounding area was designated an LGA of concern from 8 August [33]. Following the outbreak, the hospital C required all staff to use respiratory protection during clinical interactions [21, 27]. Staff vaccination rates at hospital C were reported to be 70% at the time [26].

3.2.4. Hospital D 9 September 2021 (Epidemiological Week 36)

The hospital D cluster was reported on 9 September, when two patients and three nurses tested positive in the geriatric ward [24]. Following this outbreak, staff were required to increase PPE levels for safety purposes [24], and no further cases were reported. During the same period of increasing community transmission in the surrounding area [28], there were no workplace-acquired infections reported in the critical care wards of hospital D. Staff vaccination coverage was 92% at the relevant time [30].

4. Discussion

There is variable public reporting of HCW infections due to workplace exposure to SARS-CoV-2. Due to this, we utilized open-source data to extract more detailed information on workplace outbreaks [5]. There were 171 HCW infections attributed to workplace-acquired sources by NSW Health, and this study examines outbreaks involving 20 of those cases. This is a descriptive study; therefore, while associations may be drawn, positive correlations with statistical significance have not been established.

We have shown that differences in PPE policy across different wards may contribute to healthcare staff risk of SARS-CoV-2 infection. The guidelines in operation during the study period recommended airborne precautions in critical care wards and no workplace-acquired infections in these settings were reported in open-source media or publicly available reports. In contrast, reported outbreaks occurred in general wards (geriatric, neurology, oncology, and orthopedics) where surgical masks were recommended during the same periods of high community transmission. Exposure of HCWs in emergency departments, intensive care units, and COVID-19 wards was likely, due to the high levels of community transmission; however, there were no HCW clusters reported in open-source media or publicly available reports in these clinical areas during that time. The guidelines used in NSW assumed that airborne transmission only occurs in selected situations such as aerosol-generating procedures; however, SARS-CoV-2 is airborne [7]. Approximately 35% of infections present as asymptomatic [34], and in addition, the presymptomatic stage of infection is highly contagious [35]; therefore, in times of increasing community transmission, precautionary PPE should be available. With a high rate of hospital staff vaccination in the Sydney metropolitan area, it is possible that the differences seen in this study could be attributed to differences in the types of PPE used in the differing clinical areas.

Australian HCWs are up to three times more likely to have SARS-CoV-2 infection than the general population [5, 6]. The Victorian second wave in 2020 reported that 63.4% of cases were acquired in a healthcare setting, 19.3% in the community, and 17.3% were unable to be determined [6]. In NSW, there was less information about attribution and almost half were classified as “unknown” sources. This suggests a potential attribution bias, which may function to minimize the true picture of workplace transmission in NSW hospital settings, and could underestimate the impact of inadequate use of PPE.

There were high rates of HCW vaccination in NSW, in part due to eligibility, and also as a public health order mandating COVID-19 vaccination at least one dose of a COVID-19 vaccine by 30 September 2021 and both doses by 30 November 2021, as a condition of employment [36]. At the time, two doses of the COVID-19 vaccine were considered “fully vaccinated.” By 31 August 2021, staff in metropolitan hospitals in Sydney had a vaccination rate of 81% vaccinated with two doses and 5% partial vaccination (one dose) [20]. However, it has been shown in other locations that even in highly vaccinated healthcare workforce, vaccine effectiveness decreases over time, in part due to characteristics of the circulating variant and in part due to waning immunity [37]. Vaccination should not be the only focus of COVID-19 control in high-risk settings such as hospitals, and respirators should be prioritized to protect HCW [37].

The WHO formally acknowledged that SARS-CoV-2 was spread through airborne transmission in May 2021 [7]. During times of increasing community transmission, HCWs are at a higher risk of acquiring workplace infections [5]. Changes in guidelines governing the provision of PPE can be expected to follow. In June 2021, the Infection Control Expert Group (ICEG) published national guidelines for the use of face masks by HCW in Australia [38]. The guidelines stated that respirator and eye protection should be used if the patient was known or suspected to be COVID-19 positive, if there was a current transmission in the community (especially if there were unlinked cases), if the duration of care was prolonged or at close proximity if there were other transmission risk factors such as the patient coughing or shouting, or if there was inadequate ventilation or sudden air movements (including a door opening or closing) [38].

The Clinical Excellence Commission in NSW updated the infection control and PPE guidelines on several occasions in 2021; however, the recommendations regarding the use of N95/P2 respirators did not change [10]. Therefore, it remained in the NSW hospital system that airborne protection (the use of N95 and eye protection) was to be used with patients with suspected or confirmed COVID-19 or close contact with COVID-19 cases as determined by the PHU [10].

These guidelines may not have been sufficient to protect HCWs in noncritical care wards during the pandemic [11]. Following the HCW clusters and severe staffing shortages, the relevant local health districts (LHDs) moved independently to require their workforce to wear PPE during all clinical interactions, overriding the CEC guidelines [21, 22, 24, 27]. Burnout, illness, and mass furloughing have created severe health workforce shortages during the

pandemic. Therefore, there is a benefit beyond the protection of the individual to mitigating the airborne transmission of SARS-CoV-2 in healthcare facilities.

5. Limitations

The lack of formal reporting on health worker infections necessitated the use of open-source data for this study. Although the number of HCW cases was provided in Health bulletins, other information was not available, and the attribution of the source of infection was not described, with the majority of cases classed as "unknown." Compliance with the outbreak measures by HCWs was also assumed and it is unknown what strategies were employed to measure it. The quantitative measure of compliance rates and qualitative data on the reasons for compliance with infection control measures could provide more depth to our understanding of the transmission of the SARS-CoV-2 virus among HCWs in a tertiary hospital setting. Further limitations to the study include the use of open-source data, including media articles, government reports, and documents, which may vary in completeness of case information and impact validity. The quality of the data used may be further improved by verification of the open-source data by hospital authorities or formal reports being issued, similar to the state of Victoria. This study conducted a descriptive analysis by comparing case counts of workplace-acquired HCW SARS-CoV-2 infections in noncritical care wards and critical care wards within the same hospital over the same period, as well as investigating HCW infections at times of increasing community transmission. While the variables under study (lack of policy requirement to use respirators in the work environment and workplace-acquired infection and community transmission and HCW infections) appear to have a relationship, no statistical analysis was performed, and therefore, a positive correlation between the variables cannot be concluded.

6. Conclusions

In this descriptive study, we analysed four hospital outbreaks affecting 20 HCWs during the Delta wave of SARS-CoV-2 in Sydney, Australia. All the identified HCW clusters were in general wards who utilized surgical masks as PPE. Differences in PPE policy across different wards may leave healthcare staff at a disproportionate risk of SARS-CoV-2 infection. All hospital HCWs should be provided with respirators during periods of increasing community transmission of SARS-CoV-2. To meet work health and safety obligations toward HCW, healthcare-acquired infections should be reported.

Authors' Contributions

Danielle Hutchinson wrote the original draft, conceptualised the study, proposed the methodology, and performed the formal analysis. Mohana Kunasekaran and Haley Stone reviewed and edited the manuscript, proposed the methodology, and performed the formal analysis. Xin Chen reviewed and edited the manuscript and proposed the methodology. Ashley Quigley reviewed and edited the manuscript and performed the formal analysis. Aye Moa reviewed and edited the manuscript, supervised the study, and proposed the methodology. C Raina MacIntyre conceptualised the study, reviewed and edited the manuscript, and supervised the study.

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DETAILS

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Professional Values of Undergraduate Students at a Nursing School in South Africa

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ABSTRACT (ENGLISH)

Background. Nursing schools play an important role in instilling nursing professional values in undergraduate nursing students and ensuring that they produce professional nurse graduates. Several studies in various countries have been conducted to describe the professional values held by nursing students, but this has not been explored in detail in South Africa. **Aim.** The purpose of this study was to describe the professional values held by undergraduate degree students at a nursing school in South Africa. **Methods.** A cross-sectional survey using a self-administered questionnaire was conducted. With a population of 1,233 undergraduate nursing students across four years in the degree programme at the nursing school, a sample of 294 was calculated as the representative (95% CI, 5% error, and 50% response distribution). The 26-item nurses professional values scale revision (NPVS-R) with five value dimensions was used to collect the data. Means, frequencies, and confidence intervals were used to describe the values and Mann–Whitney *U* tests and Kruskal–Wallis independent sample tests were used to compare the findings with the demographic characteristics. **Results.** A total number of 245 respondents completed the questionnaire (response rate of 83.3%). Overall, the nurse professional value score was high (113.1 ± 13.1). The values of trust (4.46 ± 0.61), justice (4.39 ± 0.57), and caring (4.38 ± 0.55) were rated significantly higher than those of professionalism (4.23 ± 0.64) and activism (4.22 ± 0.57). First- and final-year students had significantly higher professional value scores. **Conclusion.** The study results describe the professional values of undergraduate nursing students in the school and confirmed the importance of trust, justice, and caring as the key professional values in the

South African setting. *Clinical Relevance*. Nursing education should embed and monitor nursing professional values in the curriculum. Instilling nursing professional values in undergraduate nurses during formal training programmes improves quality patient care and service delivery for clinical practice.

FULL TEXT

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1. Introduction

Professional nursing values are the foundation of daily nursing care practice [1] and a corner stone in the selection and training of future nurses [2, 3]. To ensure quality ethical nursing care [4, 5], these values serve as a guideline for their professional behavior [6]. These values reflect the integrity and professional identity of the nurse and reinforce performance in practice [6]. As a new nursing student, it is important for students to start the process of professional values on entry as there is a relationship between the level of nurses' education and professional values [3, 7]. This was also supported by Arries [8], Bijani et al. [2], and Green [9], who suggest that the level of maturity of, i.e., junior and senior students, plays a role in the formation of professional values and was recommended for consideration for curriculum development [10, 11]. For new nursing students, professional values are rooted in personal values derived from their own culture and society [6] and are influenced by many other factors such as education, attitude, religion, ethnicity, and culture [6, 12].

The responsibility of professional nursing programmes therefore is to embed and integrate professional values throughout the nursing curriculum and monitor the process of acquisition and practice of core values that occurs throughout the nurse's lifetime [7, 13–15]. The paradigm of nursing and nursing education emphasises the need for professional values such as trust and caring [12] and the importance of nurse graduates to be able to demonstrate these values in practice [9].

Embedding professional values in the curriculum requires the need to monitor professional values as an educational objective in nursing education. Research scholars have developed valid and reliable quantitative scales to measure nurses' professional values with the most utilized instrument being the nurses professional values scale-revised (NPVS-R), developed by Weis & Schank [16] and based on the 2001 American Nurses Association's Code of Ethics for Nurses. The aim of this cross-sectional study was to describe the values held by undergraduate learner nurses in a school of nursing in South Africa, by using the nurses professional values scale which was developed by Weis and Schank [16].

2. Participants and Methods

2.1. Aim

The purpose of this study was to describe professional values held by undergraduate degree students at a nursing school in South Africa.

2.2. Design

A cross-sectional survey using a self-administered questionnaire was conducted with undergraduate student nurses at a university in the Western Cape in South Africa.

2.3. Study Population and Sampling

The study population had 1,233 nursing students registered for the undergraduate nursing program at a school of nursing at a university in the Western Cape in South Africa at the time of the survey. Using a 95% confidence level, a 5% margin of error, and a 50% response distribution, a sample of 294 was calculated, and using quota sampling per year level, all students were asked to participate.

2.4. Data Collection

This study utilizes data from a larger data collection project on values-based leadership. Data were collected, with permissions from the university and the school of nursing, through face-to-face self-administered questionnaires from 29th October 2019 to 5th November 2019. Appointment schedules were drawn up to meet with year-level coordinators of six-year levels to arrange for an information session and a suitable timeslot in which the nature and

purpose of the project were explained to the participants. They could then ask clarifying questions about the project. Written permission was obtained from participants who chose to voluntarily participate in the project. Academic staff administered the questionnaire after class sessions.

The inclusion criteria were that all students had to be registered in the legacy four- or five-year degree program. Only 245 participants completed the questionnaires. Forty-nine students of the calculated sample of 294 voluntarily decided not to partake in the study.

2.5. Instrument

The questionnaire included the validated nursing professional values scale (NPVS-R-5) (Weis & Schank, 2009). The NPVS-R has previously been used in South Africa and comprises 26 items representing five professional value dimensions, namely, justice (five statements: 1, 2, 9, 14, and 15), trust (statements: 3, 12, and 13), professionalism (four statements: 5, 6, 7, and 8), caring (nine statements: 16, 17, 18, 20, 21, 22, 23, 24, and 25), and activism (five statements: 4, 10, 11, 19, and 26). The NPV-R scale used a 5-point Likert scale rating the importance of each individual statement with 1 rated as not important, 2 somewhat important, 3 important, 4 very important, and 5 most important. The overall professional value score is out of 130 with a range of 26–130. More importance an individual ascribes to a value statement was reflected in a higher total score, with scores below 43, between 43 and 86, and above 86 classified as overall low, medium or moderate, and high importance of professional values, respectively [7]. Studies conducted in Nigeria, Iran, Israel, Spain, and Turkey demonstrated scale reliability of the scale with a range of Cronbach Alphas from $\alpha=0.81$ to $\alpha=0.96$ [1, 3, 7, 9, 13]. This was also confirmed in this study ($\alpha=0.941$). To further ensure reliability, a pretest study was conducted with 10 student nurses in their third year of study. No changes were made to the tool following the pretest, and the responses were included in the results.

2.6. Data Analysis

Data were analyzed using SPSS version 28. Demographics and scale dimensions were reported using descriptive statistics (frequency, percentage, mean, 95% confidence intervals, and standard deviation) and Mann–Whitney U and Kruskal–Wallis independent sample tests to compare scores across demographics. The level of significance was set at $p<0.05$.

3. Results

A total number of 245 respondents completed the questionnaire (a response rate of 83.3%). The respondents had an average age of 22.2 (± 3.6) years, and most of the respondents were female (210, 85.7%). The respondents were evenly distributed across year levels with 62 (25.3%) in year 1, 62 (25.3%) in year 2, 62 (25.3%) in year 3, and 58 (23.7%) in year 4 (Table 1). Respondents reported having been in the school on average for 2.7 ± 1.3 years, ranging from 1 to 7 years.

Table 1

Demographics and NPV-R scores ($n=245$).

	<i>n</i> (%)	Mean (sd)	Test	p value
Gender ($n=245$)				
Male	35 (14.3)	109.4 (14.6)	$U=1.6$	0.102
Female	210 (85.7)	113.7 (12.8)		
–				
Year level ($n=244$)				

Year 1	62 (25.3)	115.9 (10.1)	$K=11.1$	0.025
Year 2	62 (25.3)	112.8 (14.3)		
Year 3	62 (25.3)	109.6 (11.8)	Year 4	58 (23.7)

Overall, the importance of professional values from the respondents' perspectives was high (113.1 ± 13.1), with no significant differences between genders ($p=0.102$, Table 1). Nearly, all respondents rated professional values as very important (197 (80.4%)) and only 11 (4.5%) as medium important. There were significant differences between year levels with year 1 and year 4 respondents (115.9 and 114.2, respectively) reporting significantly higher levels of importance of professional values than years 2 and 3 (112.8 and 109.6, respectively, $K=11.1$, $p=0.025$) (Table 1). In terms of the professional values, trust (4.46 ± 0.61), justice (4.39 ± 0.57), and caring (4.38 ± 0.55) were rated significantly higher than professionalism (4.23 ± 0.64) and activism (4.22 ± 0.57) (Figure 1).

[figure(s) omitted; refer to PDF]

The most important values from the respondents' perspective were "Maintaining confidentiality of patients" (4.59 ± 0.71), "Safeguarding patients' right to privacy" (4.58 ± 0.68), and "Protect moral and legal rights of patients" (4.53 ± 0.69) from the caring dimension, "Promote equitable access to health care" (4.53 ± 0.71) from the trust dimension, and "Maintain competency in area of practice" (4.53 ± 0.74) from the justice dimension (Table 2). The least important rated values were "Participate in peer review" (3.96 ± 0.90) from the professional dimension, "Participate in public policy decisions affecting distribution of resources" (3.88 ± 0.92) from the activism dimension, and "Refuse to participate in care if in ethical opposition to own professional values" (3.82 ± 1.16) from the caring dimension.

Table 2

Value dimensions and statements.

Value dimensions and statements	Rank	Mean (sd)
<i>Activism</i>		
Participate in activities of professional nursing associations	13	4.4 (0.77)
Advance the profession through active involvement in health-related activities	16	4.36 (0.74)
Recognize role of professional nursing associations in shaping healthcare policy	20	4.3 (0.76)
Participate in nursing research/implement research findings appropriate to practice	22	4.18 (0.82)
Participate in public policy decisions affecting distribution of resources	25	3.88 (0.92)
—		
<i>Caring</i>		
Maintain confidentiality of patient	1	4.59 (0.71)
Safeguard patients' right to privacy	2	4.58 (0.68)

Protect moral and legal rights of patients	4	4.53 (0.69)
Provide care without prejudice to patients of varying lifestyle	6	4.48 (0.77)
Practice guided by principles of fidelity and respect for person	7	4.45 (0.73)
Act as a patient advocate	11	4.41 (0.76)
Protect rights of participants in research	14	4.4 (0.81)
Confront practitioners with questionable or inappropriate practice	23	4.17 (0.91)
Refuse to participate in care if in ethical opposition to own professional values	26	3.82 (1.16)
–		
<i>Justice</i>		
Maintain competency in area of practice	5	4.53 (0.74)
Accept responsibility and accountability for own practice	8	4.45 (0.77)
Seek additional education to update knowledge and skills	9	4.43 (0.76)
Request consultation/collaboration when unable to meet patients' needs	15	4.36 (0.8)
Engage in ongoing self-evaluation	21	4.21 (0.8)
–		
<i>Professionalism</i>		
Promote and maintain standards where planned learning activities for students take place	17	4.33 (0.74)
Establish standards as a guide for nursing practice	18	4.33 (0.77)
Initiate actions to improve environments of practice	19	4.32 (0.78)
Participate in peer review	24	3.96 (0.9)
–		
<i>Trust</i>		
Promote equitable access to health care	3	4.53 (0.71)

Assume responsibility for meeting health needs	10	4.42 (0.75)
Protect health and safety of public	12	4.41 (0.8)

4. Discussion

This current study has shown high ratings of the importance of professional values by the nursing student respondents (113.1 ± 13.1) in this setting, similar to other studies that reported high scores for nursing students, as well as nurses' (who were at different levels of education and generations) professional values, using the NPVS-R [7–9]. This suggests that according to this scale, undergraduate nursing students in this school have achieved success in embedding professional values in nursing during the nurse training programme. This study also confirms another older South African study (Weis & Schank, 2009) who found high overall levels of professional values. The most important value was trust, with the statement "Promote equitable access to health care," ranked third amongst all the value statements, with a mean score of 4.53 (0.71). A reason for this high score could be attributed to the context of the study where there are still disparities between socioeconomic groups in South Africa [17], and many respondents come from low socioeconomic communities with poor access to health care. Access to quality services in South Africa has remained low despite many efforts and approaches by African countries to equalise health care [18].

Within the value dimension of caring, the highest ranked ratings in the scale were for the following: "Maintain confidentiality of patients," "Safeguard patients' right to privacy," and "Protect moral and legal rights of patients" which was rated 4th highest. These findings were congruent with the findings of a study conducted in Iran which compared the professional values of nursing students, nurses, and nursing educators and found overall mean scores for all within the range of relatively important or important. Similarly, from the student nurse's perspective in Iran, statements which relate to caring such as "Maintain confidentiality of patients" and "Protect moral and legal rights of patients" had the highest importance ratings for nursing students [2].

Similar to other studies by Chikeme [3] and Poorchangizi et al. [7], the following statements were rated as less important in the current study: "Recognizing role of professional nursing associations in shaping healthcare policy" (ranked 20th), "Engaging in ongoing self-evaluation" (ranked 21st), "Participating in nursing research/implementing research findings appropriate to practice" (ranked 22nd), and "Participating in peer review" (ranked 24th). Though similar, the respondents in the Poorchangizi et al. [12] study ranked "Recognizing role of professional nursing associations in shaping healthcare policy" 24th, "Engaging in ongoing self-evaluation" 17th, "Participating in nursing research/implementing research findings appropriate to practice" 23rd, and "Participating in peer review" 25th, which could be attributed to certain factors in their settings such as educational semester, low motivation, insufficient affirmation, and low encouragement by nursing educators. Although students in this study are being taught about the importance of participating in peer review during their course of training for quality assurance purposes, no actual opportunities exist in undergraduate programmes where students can actively engage and involve themselves in peer-review activities. However, nurse educators do ensure the presence of the "student voice" during accreditation processes by the regulatory body of South Africa and opportunities where there are formal disciplinary hearings and curriculum reform at the institution of higher learning. However, not all students get the opportunity to be selected when these opportunities arise, and therefore, the majority of students might regard this item "Participating in peer review" as least important amongst the values because of not knowing what it actually entails.

A major concern was the low ranking (26th) of importance of the statement "Refusing to participate in care if in ethical opposition to own professional values," in contrast with Poorchangizi et al. [12], whose respondents ranked this statement more important at 13th amongst the value statements. This statement is from the caring value dimension and is central to ethical decision-making in practice [7]. Our finding may relate to the diverse context in South Africa with most of the student population having varied value orientations, but this would have to be investigated further. Another reason for the low ranking of this value statement could also be due to students not being exposed enough to real-life encounters of an ethical nature in practice, but this also requires more research.

A further concern is the low ranking of the statement "Participating in public policy decisions affecting distribution of resources" which ranked 25th in this study and 26th in the study by Poorchangizi et al. [12]. Health and public policy are essential elements of professional obligations of nurses [19]. Also, the American Nurses Association's [20] nursing Code of Ethics state that nurses have a responsibility to participate in political processes and advocate for their patients [21]. Though respondents rated "Acting as a patient advocate" as an important value under the caring dimension at 11th, "Participating in public policy decisions affecting distribution of resources" was ranked 25th which is considered as the least important, highlighting a difference of a belief and translating this value into practice amongst the respondents. These values are taught in the nursing school, but being a student may provide limited ability to engage in health and public policy activities [22]. In addition, the current programme may not adequately equip students with the analytic, communication, and leadership skills to translate this into practice, but this should be further investigated [12]. This could be the same reason why students in this study scored the statement low, as not enough emphasis is placed on active involvement and engagement in public policy at student level. Also, in the current study, opportunities at policy discussion level are almost nonexistent in the programme and should be further explored by nurse educators to give students more exposure to boost their leadership skills.

There was no significant difference found in this study between professional values and gender ($p=0.102$). Nearly, all respondents rated professional values as very important (197 (80.4%)) and only 11 (4.5%) as medium important. The results of the current study were similar to those of a study that was conducted in Pakistan in 2018, which showed that male and female respondents paid equal attention to professional values [5]. However, the study confirmed previous papers which suggested that the level of education influenced the integration of values [10, 11, 13], with differences due to demographics related to academic levels of study. In all four-year levels, the respondents had high overall scores for professional values, but first- and final or fourth-year level students recorded significantly higher ratings in professional values than students in their second and third years (112.8 and 109.6, respectively, $K=11.1$, $p=0.025$), though they might not consider each value and its corresponding statements as equally important [23]. The findings were in line with a study in Turkey [24] which indicated that the academic year had an effect on the professional values of nursing students, and [9] a study in Israel with novice (first year), advanced (third year), and senior (fourth year) students also found statistically significant differences between these groups. The high ratings in the first year in the current study were consistent with findings by Bleda et al. [13], who found that nursing students rated professional values as highly important when they enter the nursing profession because of some students having inadequate clinical experience to accurately rank the statements. In our study, the high scores of first-year respondents could relate to high levels of preexisting values which then further translate into professional values towards the end of their training [13]. Another reason could also be that South African nursing students come from different cultural backgrounds and enter the university with a set of diverse values that could influence how each student assigned meaning to the importance of professional values and how they scored the statements. The final-year respondents are also more mature students, preparing for practice as new graduates, which may reflect the preparation for practice [13]. Furthermore, the final-year respondents in this current study also have a formal professional practice module in their final year of study which exposes them to further growth and development of these values as they take on more responsibilities as senior students. This professional maturity is linked to chronological maturity as these students have been exposed to the need to make independent judgments in their professional and personal lives [8, 9]. Bijani et al. [2] also found a similar pattern with higher academic levels being associated with higher scores for professional values.

4.1. Limitations

There are some limitations in this study. First, respondents were from one university in the Western Cape Province of South Africa only, and though it confirmed 2009 South Africa study's findings, caution should be taken in generalizing these findings to undergraduate nursing students in South Africa. Furthermore, because of the diverse nature of the study population, religion, cultural background, language, and ethnic origin may influence the development of professional values but are not explored in terms of their association with nurses' professional values in this study. The study did not explore the reasons for the ratings, and further studies are needed to explore

the factors that influenced the low ratings for professionalism and activism values.

5. Conclusion

Professional values in nursing students are central to their training as these values would determine quality patient care service delivery and guide new graduates in their ethical decision-making while in nursing practice. This study showed that the respondents rated professional values highly and that this may be due to the selection process of students entering the programme and the process of embedding professional values in the nursing curriculum.

Additional Points

Clinical Resources. (1) An instrument to measure professional nursing values:

<https://sigmapubs.onlinelibrary.wiley.com/doi/abs/10.1111/j.1547-5069.2000.00201.x>. (2) Importance of professional values in nursing and healthcare: <https://www.heraldopenaccess.us/openaccess/importance-of-professional-values-in-nursing-and-healthcare>. (3) Professional nursing values: a concept analysis:

<https://onlinelibrary.wiley.com/doi/abs/10.1111/nuf.12211>.

Ethical Approval

This study received ethics clearance (BM18/09/20).

Consent

Participants were informed of the nature, purpose, and intention of the study through an information sheet. The respondents completed a signed consent form before participation and were assured of confidentiality and anonymity by using codes on the questionnaires.

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Nurses' Perceptions on How Recovery-Oriented Mental Health Care Can Be Developed and Implemented

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ABSTRACT (ENGLISH)

Aim. This study explored how nurses working in inpatient mental health units perceived the development and implementation of a recovery-oriented mental healthcare programme (ROMHCP). **Background.** The recovery-oriented mental healthcare approach (ROMHCA) in mental health is regarded as the future of mental health services and has been implemented in different countries worldwide. However, regarding developing and implementing the recovery approach, Africa appears to have been left behind by the rest of the continents. **Design.** The study used a qualitative approach to describe how a recovery-oriented mental healthcare approach could be developed. **Methods.** Thirty nurses who worked in Botswana's four inpatient mental health facilities consented and voluntarily participated in the study. Data were collected from February to mid-March 2022 through online focus group discussions and analysed using thematic analysis. The COREQ checklist was used to report the findings. **Results.** Two main themes emerged as follows: (i) developing and implementing a recovery-oriented mental healthcare programme is possible and (ii) certain elements are required to develop and implement ROMHCP. **Conclusion.** The participants believed that people diagnosed with mental illness could recover from the illness and suggested how it could be achieved. They also contended that the programme's success would lie mainly with multisectoral support from policymakers, facilities, hospital personnel, patients, and the community. **Clinical Relevance.** ROMHCP has the potential to benefit people with mental illness in the country. In addition, it would allow nurses to improve their knowledge and skills in managing mental illnesses. **Patient or Public Contribution.** The patients and the general public did not contribute to the study's concept, design, and outcomes. However, the nurses working in mental health facilities volunteered to participate in the study.

FULL TEXT

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1. Introduction

Mental health services, notably the community based, from certain Western high-income countries have embraced ROMHCA as a new dimension for mental health departments when treating people diagnosed with mental illness [1] online [2, 3]. The recovery vision entails rethinking and reforming the current mental healthcare practice, whose approach is predominantly biomedical, to a person-centred approach in providing care to people with mental illness. The biomedical approach in mental health positions the cause of mental illness to brain disorders, thus relating the cause of mental illness to biological abnormalities in an individual, and therefore, one will need pharmacological interventions [4]. Doing so has led to shifting to ROMHCA. ROMHCA recognises the individuality of a person diagnosed with a mental illness. It is entrenched in the principles of self-determination, empowerment, citizenship, love, connectedness, respect, and the installation of hope for the future of people with mental illness [5, 6]. In this model, the patient drives their recovery process.

There is no common understanding of what mental health constitutes. Anthony [7] gave the most popular and widely accepted definition. He explained recovery as living a gratifying life notwithstanding being decapacitated by the

symptoms of mental illness. Ørjasæter and Almvik [8] also described recovery as a multifaceted process through which individuals with mental illness live satisfying and fulfilling lives like any other citizen. This definition validates the personal nature that people attribute to recovery. The literature has revealed that the person centeredness of recovery alone highlights the need for individualised care plans for people with mental illness [9, 10].

Intervention programmes have been developed to facilitate ROMHCA. For instance, in the United States of America, Copeland [11] developed a Wellness Recovery Action Plan (WRAP) programme to teach healthcare workers and people with mental illness how to live with and manage mental illness. WRAP is a framework where healthcare workers use to learn more about mental illness and how to manage it from a recovery-oriented approach, and it has been proven to improve the general well-being of people with mental illness [12]. In England, Bird and Slade [13] developed a REFOCUS intervention to improve the working relationships between the staff and patients. REFOCUS is an intervention focusing on activities promoting recovery and recovery-working practices and relationships among staff for them to connect better with patients [14]. In addition, it coaches staff to understand mental health users' values and treatment preferences to support them in a better recovery process [14].

Flaherty-Jones et al. [15] developed a Steps to Recovery (STR) programme in Australia to improve mental illness by providing information, including instilling hope for the future by providing people with mental illness skills on managing mental illnesses. In Ireland, a psychoeducation programme called EOLAS (Irish for knowledge) was developed in collaboration with peers, family members, and healthcare workers to help support people with psychosis and their caregivers. [16]. EOLAS is delivered in a manual format and teaches people about psychosis, focusing on the biopsychosocial model, relapse prevention, and how families can support patients [16, 17]. The programme improved the understanding of recovery and communication between healthcare workers and other stakeholders [16]. An e-version of EOLAS has been implemented following the COVID-19 pandemic, and it has shown that it was feasible to use and effective [17]. The findings support the usefulness of digital platforms to deliver health education interventions to support people with mental illness [18, 19].

The effectiveness of ROMHCPs is well documented in the literature [20–23]. However, evidence from the literature indicates that the implementation of these programmes is from mainly high-income countries, mainly from the West [3, 24–26]. Other regions, such as Asia and South America, have adopted ROMHCA despite challenges such as poor implementation [27, 28]. Africa is still behind in delivering mental healthcare services, let alone adopting recovery-oriented mental health care services. Studies from Africa have indicated that the delivery of mental healthcare services is hampered by a lack of mental health policy, overreliance on biomedical approaches, and a general lack of knowledge about recovery-oriented mental health care [29–31].

ROMHCA in Botswana has not yet been implemented and uses the biomedical approach, which does little for people with mental illness at the community level but admits them to mental health institutions [32]. The country operates only one psychiatric hospital, Sbrana Psychiatric Hospital (SPH), with a bed capacity of 300 patients. The provision of mental health care is through the mental health policy of 2003, which serves as a reference for integrating mental health into general health care [33]. SPH is backed by eight mental health units, all with a bed capacity of 10–15 patients. There are 11 psychiatrists in the country, and most are based in private practice. Only two are based at SPH. Psychiatric mental health nurses operate most mental health services with the help of general nurses [32, 34].

With the increasing evidence from international studies on the effectiveness of recovery-oriented mental health services [23, 26, 35], Botswana should also position itself to implement the latest evidence-based care approaches in mental health to support people with mental illness in the community. Following admission, patients are discharged to their families without proper preparation to reintegrate them into society. The mental health service continues to face a shortage of mental healthcare personnel. Nurses are the leading providers of mental health care and mostly see patients first on arrival at mental health facilities [36]. The researchers, who are mental health nurse specialists, have observed that “nurses talk about recovery” in their daily interactions with patients. The meaning attached to recovery is mainly symptom reduction and compliance with treatment. The recovery-oriented practice goes beyond symptom reduction and treatment adherence but calls for patient-centred care [9].

Nurses in Botswana must devise or participate in developing interventions to improve the care of people diagnosed with mental illness. Brooke-Sumner et al. [30] from South Africa have attributed the failure of health workers to implement recovery-oriented mental health services to a lack of understanding and involvement of mental healthcare personnel. In addition, a review of how recovery is understood among ethnic minorities by Sofouli [37] concluded that more work should be carried out on the policy so that cultural minorities can access culturally tailored interventions to address their needs. Therefore, this calls for developing interventions informed by findings from the localised data context to accommodate the uniqueness of different communities. To our knowledge, no study has been conducted in Botswana that solicited nurses' views on how ROMHCP can be developed and implemented. Since most mental healthcare professionals in Botswana are nurses, eliciting their views on developing ROMHCP is essential.

2. Methodology

2.1. Design

This qualitative study explored nurses' views on developing a recovery-oriented approach. The qualitative method investigates people in their locality and emphasises how the study participants experience and interpret phenomena [38]. Therefore, the design was appropriate since it described the contextual meaning of the participants of how a recovery-oriented mental healthcare programme could be developed and implemented. This study focused on the following questions and further probing statements from the participants to find more meaning in their responses. The study participants were nurses working in mental health facilities, with at least 3 years of experience. It was believed that the participants would be able to use their experience to provide information about the following objective:

- (1) What are your views on developing a recovery-oriented programme for Botswana?
- (2) How could a recovery-oriented mental healthcare programme be developed?

2.2. Context

The study was conducted in Botswana in four sites offering inpatient mental health care to people with mental illness. Among the four sites was the country's only mental health referral hospital in southeastern Botswana, Lobatse. The other three sites were psychiatric units attached to district hospitals. Of the three sites, one was in the far north west of Botswana Maun, one in central north east Botswana Francistown, and the last in the south west of Botswana, Molepolole. The three mental health units provide care to clients daily, with a bed capacity of 15–20 patients each. However, since they are small units, most of their patients are referred to the main psychiatric hospital, which has a bed capacity of 300.

2.3. Population and Sample

The study's population was all the nurses in the four sites actively treating patients with mental illness for at least three years. Thirty-two nurses were purposively selected out of 149 who consented to participate in the study. All the selected nurses consented to participate in the focus group discussions (FGDs). The number of FGDs was determined by data saturation.

2.4. Data Collection

Data were collected through online FGDs with nurses with at least three years of experience treating people diagnosed with mental health challenges. Microsoft Teams was used to conduct the FGDs since data were collected during the active phase of the COVID-19 pandemic. Two FGDs had seven participants, and the other two had 8. According to Nyumba et al. [39], six–eight people are ideal for FGDs. The FGDs were preferred for this study due to their ability to produce an interactive atmosphere that allows the participants to produce diverse information quickly from multiple participants [40]. One FGD was conducted per site, and in total, four FGDs were conducted across the four sites.

The steps to recruit nurses and study participants are described below. Through an identified mediator and independent person in each facility, meetings were set, and the purpose of the study was explained to potential participants following the study advertisement. Then, each potential participant was given information about the study and a consent form by an independent person. The nurses who eventually consented to participate voluntarily

provided their phone numbers to the researcher through the help of an independent person. All participants consented to be virtually and audio-recorded. K.M.K., a lecturer and a mental health nurse specialist, conducted the FGDs. K.M.K., a PhD student, had undergone training in qualitative data collection methods and had conducted qualitative interviews as a lead investigator in one study before conducting the interviews. K.M.K. was also supervised by two study supervisors experienced in qualitative research methods.

The FGDS were conducted in a private, secure place, and participants participated from their homes. The interviewer used an interview guide pilot tested with the participants from one mental health unit that was not part of the study. The pilot test offered insight into probing to get rich responses. FGDs were conducted in English and Setswana, the local language, allowing the participants to express themselves in the language they felt comfortable in. However, English remains Botswana's official language in workplaces. Besides, all the nurses have undergone intensive training in English. The FGDs lasted between 60 and 80 minutes. The interviewer took notes as the participants expressed their views, summarised each interview, and shared the summary with the participants to validate the content during the interview.

Data saturation was reached at FGD number three although the researcher went on to complete the last FDG to confirm the recurring themes. According to Hennink et al. [41], data saturation refers to a point at which issues become repetitive to the point of redundancy. Furthermore, Saunders et al. [42] conceptualised data saturation as “a matter of identifying redundancy in the data, with no necessary reference linked to these data; saturation appears to be distinct from formal data analysis.” As such, in this study, at the end of the third FGD, it became clear that no new data were identified, confirming that data saturation had been reached. Therefore, the fourth FGD was conducted to confirm the themes.

2.5. Data Analysis

Data were analysed using Tesch's eight steps of data analysis [43] as it provides a detailed eight-step guideline for organising unstructured data. First, the interviewer transcribed visual recordings. The interviewer masked the participants' names to ensure confidentiality by using P0–P8. Following data transcription, the researcher (K.M.K.) read all the data carefully to make sense of the transcribed data and notes. Some notes were scribbled on the side of the script. At this point, the researcher generated and wrote topics on the margin of the script. A similar process of note writing was completed for all of the scripts. Then, similar ideas and topics were grouped into columns. Once the ideas were grouped, the researcher took the completed list and revisited the data. Abbreviations were used to code the topics and put them next to the text representing that particular code. That exercise helped to tell if any new codes and categories emerged. The researcher used descriptive words to name and group the topics into categories. At this stage, related topics were grouped to reduce the number of topics. The researchers labelled each category and arranged the codes alphabetically. Data were assembled according to a category it belonged to for preliminary analysis. The repeating data informed the grouping of categories, and irrelevant data were discarded. The researcher then sent raw data to the cocoder for an independent analysis. The cocoder was an experienced mental health specialist qualitative researcher identified and recommended by the study's supervisors.

Subsequently, a meeting was set to discuss the themes and categories, and a consensus was reached. The results were further discussed with the study's participants to ensure that the emerging themes reflected the study context. A virtual meeting was held with the participants and nurses in each site through Microsoft Teams to validate the themes. The participants validated the themes orally and confirmed the descriptions of the sites by raising their hands to confirm that they represented what had been said during the interviews. In addition, the study's supervisors, professors E.M. and S.M., together with experienced qualitative nursing researchers, also checked, validated, and confirmed the themes.

2.6. Measures to Ensure Trustworthiness

To ensure the trustworthiness of this qualitative study, the researchers demonstrated thoroughness in credibility, transferability, dependability, authenticity, and confirmability [44]. Credibility was ensured through triangulation and visual recording of the FGDs. Researcher triangulation was achieved by reviewing the visual recordings and comparing them with the emerging themes and subthemes. In addition, credibility was further ensured through

prolonged engagement with the study's participants. To achieve that, the interviewer took time, for example, to meet and set an appointment with participants for the FGDs to form and strengthen relationships to build rapport. In addition, the researcher had one virtual meeting with the study's participants to validate the themes and subthemes (member checking). For transferability, the researchers gave a thick description of the context, the study participants, and quotes from the participants. Authenticity was ensured by giving a complete description of the study context and engaging the cocoder to verify the themes. Finally, the researchers documented a detailed description of the research process to ensure dependability and confirmability. Moreover, the research supervisors, EM and SM, monitored the research process throughout data collection and analysis to ensure confirmability. The study was reported based on the consolidated criteria for reporting qualitative research (COREQ) [45].

2.7. Ethical Considerations

Fleming and Zegwaard [46] posit that all human research must be approved before data collection to protect the participants and demonstrate good research conduct. Therefore, North-West University Health Research Ethics Committee cleared the study to be conducted. The participants were given information about the study and voluntarily consented to participate. The researcher used codes to protect the anonymity of all those who participated. All participants consented to the visual recording of the data collection procedure. All COVID-19 protocols were adhered to during the phase of study promotion and recruitment of the study participants. The researcher compensated each participant with P200.00 (\$12) since they used their data to participate in the online FGDs.

3. Results

Thirty nurses participated in the FDGs. The age of the participants ranged from 26 to 53 years. Twenty-five nurses (83.3%) had a diploma in nursing, 14 (46.66%) had a diploma in psychiatric mental health nursing, 3 (10%) had a degree in nursing, and 2 (6.66%) had a master's degree in nursing qualification. Only two 2 (6.66%) nurses were nurse managers. The average experience of working in mental health facilities ranged from 4 to 13 years. All the nurses had more than three years of experience working directly with patients diagnosed with mental illness.

3.1. Themes and Subthemes

Participants indicated that Botswana's recovery-oriented mental healthcare programme could be developed and implemented. Table 1 includes the following themes: (a) "developing and implementing of a recovery-oriented mental healthcare programme," (b) "elements needed to develop a recovery-oriented mental healthcare programme," and (c) elements needed to implement recovery-oriented mental healthcare programmes.

Table 1

Showing how a recovery-oriented mental healthcare programme can be developed and implemented.

Themes	Subthemes	Categories
(1) Development of a recovery-oriented mental healthcare programme is possible	(1) Implementation of recovery-oriented mental health care is possible if it is supported	(1) Recovery is possible and achievable
(2) Prioritise mental health initiatives	(3) Provide funding for mental health	.
(2) Elements needed to develop and implement recovery-oriented mental healthcare programmes	(1) Having proper policies and up-to-date guidelines and SOPs within and between facilities	(1) Having policies in place

(2) Have a consistent standard of operations	(3) Develop guidelines to support the implementation of a recovery programme	(2) The inclusion of external stakeholders in the recovery plan of patients
(1) Provision of holistic care in mental health services	(2) Include pastors, traditional healers, herbalists, spiritual healers	(3) Have policies on the inclusion and regulation of spiritual care
(3) The importance of aftercare	(1) Have proper discharge and follow-up policies	(2) Have proper linkages in the community for continuity of care
(4) Education among the community and the patients themselves (psychoeducation) and stigma eradication	(1) Develop educational programmes for mental health awareness	(2) Provide education to patients, families, community/society, nurses, and other healthcare workers on mental health issues

3.2. Theme 1 Development and Implementation of a Recovery-Oriented Mental Healthcare Programme

3.2.1. Implementation of Recovery-Oriented Mental Health Care Is Possible if It Is Supported

Participants believed that Botswana's mental health facilities could implement the recovery-oriented mental healthcare programme.

F, P4: "I believe this is all possible if we can all come on board, from family, community and leadership levels and prioritise mental illnesses or mental health services as much as we prioritise other health services. So, it can be achieved if we can all come on board."

In addition, the participants indicated that mental health recovery-oriented care could be developed and implemented if prioritised and well-funded. However, there was a belief that that could only be possible if there was support from the government, hospital managers, and the community.

L, P0: "Yes, it is possible to have a mental health programme in our country, provided mental health is prioritised and supported by the top management."

S, P1: "I believe it can happen with support."

3.3. Theme 2 Elements Needed to Develop and Implement Recovery-Oriented Mental Healthcare Programmes

Participants in this study believed that a recovery-oriented mental healthcare programme could be developed and implemented and suggested how this could be carried out. They suggested the following subthemes on how a recovery programme could be implemented. Having appropriate policies and up-to-date guidelines and SOPs within and between facilities, including external stakeholders (e.g., pastors and traditional healers) in the recovery plan, the importance of aftercare, and psychoeducation for the community and patients and stigma eradication regarding mental illness in communities are very important.

3.3.1. Proper Policies, Up-to-Date Guidelines, and Standard Operating Procedures (SOPs) within and between Facilities

The participants felt that for a recovery-oriented mental healthcare programme to be successful, there must be appropriate policies, guidelines, and SOPs to guide its development and implementation. They stated as follows:

L, P5: I believe there should be a team in place that can measure whether care rendered to clients is as per the standards according to our SOPs. I believe commitment to quality care in all facilities should be a priority.

M, P6: There must be detailed guidelines on how the client will be assisted starting from admission until discharge.

3.3.2. Inclusion of External Stakeholders (e.g., Pastors and Traditional Healers) in the Recovery Plan

The participants also felt that external stakeholders such as herbalists, traditional doctors, and spiritual leaders should be involved in implementing the mental healthcare programme. Health involves restoring health from all the client's biopsychosocial sphere, including the spiritual needs often left unattended in mental health, as already discussed. They suggested that policies could be developed and implemented to assess the involvement of external stakeholders.

F, P1: "I will give an example if patients want to be seen by a herbalist, spiritualist or traditional doctor in the hospital, there should be assistance to provide holistic care. Someone from the spiritual perspective can pray for them. All stakeholders must come on board to make the patient's recovery possible."

M, P7: "Spirituality is very important in the recovery of patients. Hospitals should respect the spirituality of patients. Wards and facilities can have policies that regulate at what level patients engage in spirituality."

3.3.3. The Importance of Aftercare

Furthermore, the results also indicated that the participants felt that the programme should have aftercare and follow-up programmes to cater for the clients once they get discharged from mental health facilities. In addition, there should be a link between the hospital and the community to receive the patients and continuity of care.

S, P4: "It is possible to achieve full recovery of this client by ensuring there are linkages or continuity in the community. If they get discharged from a hospital, there should be continuity of care or after-care to support the patients."

L, P3: "Sometimes we find that the patients are just discharged into the society without notifying the local clinics of their whereabouts. We must have proper discharge procedures that link the patients to the clinics where they are discharged."

In addition, one participant emphasised the need for a follow-up plan following the discharge of patients from mental health facilities. For example, the current setup in Botswana needs a better-defined follow-up plan following the discharge of patients from the hospital.

S, P2: "When we discharge patients, there is no follow-up until we see the patient upon readmission. We need personnel that can do follow-ups of patients."

3.3.4. Psychoeducation for the Community and Patients and Stigma Eradication regarding Mental Illness

Furthermore, there was a great emphasis on implementing a recovery-oriented mental healthcare programme with a strong psychoeducation programme targeting individuals, families, and the community at large on issues of mental health and stigma eradication. They further indicated the need to target the cultural misconceptions about mental illness and its causes by involving cultural leaders in psychoeducation interventions as they greatly influence the community members.

M, P1: "The health care workers should do thorough psychoeducation to the individual, the family and the community. Psychoeducation can include many things regarding the diagnosis that can help the individual and what to expect."

L, P3: "First, teach the clients and the family about the condition so that the patient can accept themselves and the family accepts the client. That can happen if there is education about the patient's condition and treatment."

The participants also felt that psychoeducation should be extended to community leaders because of their critical societal roles. There was a belief that because of their influence, they could help dispel the myths and stereotypes that are normally associated with mental illness due to their influence.

S, P4: "Our cultural leaders must be on the same page with modern health. Clients relapse because of the myths surrounding mental health."

S, P2: "There is a way that culture perceives mental illness. We can reach cultural leaders and the community and teach them how culture and mental illness intersect."

The issue of stigma towards mental illness also came very strongly. The participants felt that for our setting to be recovery oriented, issues of stigma must be dealt with.

L, P3: "The patient should know about the stigma in society. Sometimes we need to understand that stigma is one of the factors that contribute to patients rejecting treatment. The patient can sometimes commit suicide because of stigma."

The participants also believed that cultural perspectives and myths surrounding the cause of mental illness influence how patients with a diagnosis of mental illness deal with and facilitate their recovery process.

F, P4: "We still have setbacks regarding mental health issues because of our belief systems. People still hold that mental illness comes as a result of witchcraft. Some believe that you have done something bad to another person and they're trying to fix you. A lot of people have got people with mental illness in their communities and in their families but still fail to accept that mental illness can happen to anyone."

4. Discussion

The study explored how nurses working in four inpatient mental health units in Botswana perceived the development and implementation of a recovery-oriented mental care programme for Botswana. The study used an explorative, descriptive, and qualitative method and FGDs to collect data on nurses' views on the phenomenon.

Participants in this study believed that developing and implementing a recovery-oriented mental healthcare programme could be possible for Botswana nurses to guide the care of people diagnosed with mental illness. The participants further believed that the programme's success could be realised if all stakeholders came on board in support of the programme. Similar findings were reported in a study from Indonesia by Nurhayati et al. [47], where stakeholders indicated that a mental health community recovery programme could be applied in community settings. On the other hand, they averred that the care of people diagnosed with mental illness is still addressed through hospital admissions, where medication is the preferred choice of treatment.

On the important elements in facilitating the development of a recovery-oriented mental healthcare programme, the participants in this study highlighted the importance of having proper policies and guidelines on the proposed programme. In addition, they underscored the need for mental health interventions to be prioritised in terms of funding. The same findings were established in a study by Nurhayati et al. [47]. The participants indicated that there must be supporting policies on the recovery programmes and the availability of funds to ensure their success. A lack of funds for mental health initiatives was reported in a study from Taiwan in [27]. In the study, the staff proposed more resources in implementing recovery-oriented mental health services.

It is crucial for countries implementing a recovery-oriented mental health approach to have proper guidelines and policies to guide its implementation [2, 3, 48, 49]. Policies are effective in enforcing what is on paper. For example, staff and peer workers expressed concern about implementing recovery-oriented care in an organisation that does not support it in terms of having policies and procedures in place [50]. They contended that such a care project was unlikely to succeed. However, nurses in this study believed that the programme could be developed. Nonetheless, the implementation would require policies, procedures, and standards in place.

Other views on essential elements in developing the recovery-oriented mental healthcare programme were the involvement of other stakeholders such as traditional doctors, herbalists, and spiritualists. According to studies conducted in South Africa and Botswana, people diagnosed with mental illness usually seek help from traditional doctors, herbalists, and spiritual healers before they can resort to modern health [31, 51]. In concurrence, nurses in this study suggested that mental health facilities should provide for the spiritual needs of clients in a mental health facility. The participants suggested that patients' spiritual needs could be provided for by having spiritualists, herbalists, and traditional doctors in the facilities to avoid situations where clients might end up overusing the prescriptions they might get from such services, which may be fatal. One participant suggested that the facilities could develop guidelines on how spiritual care could be incorporated and regulated into the mental health services in Botswana.

The importance of aftercare, proper follow-up, and planned home of patients was mentioned by participants as essential in implementing the programme. Participants expressed the need for proper discharge and follow-up channels following discharge from the mental healthcare facility. To corroborate this study's findings, patients in a study conducted in Norway highlighted the importance of follow-up plans for continuity of care [52]. In addition, the

participants in the same study suggested that follow-up plans should be communicated on time, be flexible, and include the service users and their families. Findings from Indonesia from a study by Nurhayati et al. [47] also back the study as stakeholders in their study emphasised that home visits were essential to support the recovery of people diagnosed with mental illness. In Botswana, mental health service has a discharge and follow-up plan; however, when patients are discharged, they are not followed and reintegrated into the community. There is a need for this gap to be closed and that could be achieved through developing a functional recovery-oriented mental health programme.

Some recovery-oriented mental healthcare programmes are aftercare programmes that help facilitate patients' recovery and reintegration into the community following discharge from a mental healthcare facility [5, 53]. Being cared for in a community setup has been demonstrated to be effective in helping patients recover from mental illness. Fletcher et al. [53] evaluated the effectiveness of residential recovery-oriented facilities that helped people with severe mental illness from recidivism in Australia. The services effectively provided community-contextualised care that aligned with the recovery principles of empowerment and inclusion in line with the Australian mental health policies of a recovery-oriented approach. In addition, the services were well appreciated by clients as they felt they were supported and valued by staff. The findings were further supported by Heyeres et al. [54], as their study also indicated that residential facilities were recovery focused and complied with the recovery policies set by their government. The findings on the importance of community mental health services in caring for people diagnosed with mental illness could be why nurses in this study felt there should be aftercare and follow-up in place.

Lastly, the participants raised the importance of a functional and practical programme. In their view, the programme should have a psychoeducation programme targeting the staff, the patients, families, and the community. The participants felt a general lack of awareness about mental illness and mental health issues. In addition, stigma towards mental illness and cultural misconceptions about the causes and management of mental illness could hinder the successful implementation of the programme. Similar views were echoed in a study from Tanzania, which reported a general lack of awareness of mental illness and its causes in the community [55].

Furthermore, caregivers in the same study indicated that the community needed to be educated on handling people with mental health problems. The findings are further supported by findings of a study from Taiwan where health workers expressed the need for families and public health education on mental health issues with the hope that once the public is informed, they could be a major contributor to stigma reduction and hence better understanding, leading to the better outcomes for patients [27]. Moreso, the Taiwanese study, emphasised the need for health professionals to be educated on the recovery-oriented mental health approach to enhance their competencies and confidence in caring for clients with mental illness.

A study from Botswana on beliefs on the cause of HIV and mental illness by Becker et al. [32] associated the cause of mental illness with witchcraft. The study further indicated that people diagnosed with mental illness were viewed negatively as dangerous, untrustworthy, and discriminated against in the workplace. The study recommended training and public sensitisation on mental health issues to align rehabilitation services to a recovery-oriented care approach. In addition, a metasynthesis on the beliefs and perceptions about mental health issues by Choudhry et al. [56] associated mental illness with punishment from God. The authors recommended that mental health services develop clinical interventions to address cultural beliefs by encouraging dialogue with traditional leaders and developing strategies for involving them.

In the same vein, the participants in this study suggested that a recovery-oriented mental healthcare programme should include a psychoeducation training component for people with mental illness, families, and mental healthcare personnel on stigma in mental illness. Moreover, a systematic review by Waqas et al. [57] on interventions to reduce stigma in higher education indicated that psychoeducation programmes successfully reduced the self and public stigma of students with mental health problems.

These findings, therefore, emphasise the need to educate the community on mental health issues to dispel stigma and misconceptions about mental illness. Thus, a recovery-oriented mental healthcare programme developed for Botswana should be inclusive and consider elements such as funding, a training plan, the interplay of different

stakeholders, and a strong psychoeducation programme to improve its effectiveness.

5. Conclusion

This study is a preliminary exploration of factors that could enhance the development and implementation of mental health recovery in Botswana. The study is the first to be conducted in Botswana. It provides insight into how nurses in four inpatient units perceive the implantation of a recovery-oriented approach in mental health services. The study suggested essential factors for consideration for the success of the approach, including the development of mental health policies that support the recovery-oriented approach; revising hospital admission, discharge, and follow-up plans for people diagnosed with mental illness; revitalising the community mental health services; and involvement of other stakeholders such as traditional leaders, herbalists, traditional healers, and spiritualists. In addition, nurses recommended developing health education programmes to reduce the stigmatisation of mentally ill patients in the community. Besides, other influential people such as community cultural leaders such as chiefs and ward men would be targeted for inclusion in the programme. They would help change people's perceptions towards the causes and management of mental illnesses.

5.1. Recommendations

Mental health problems remain a burden and a significant public health concern. Unfortunately, mental health programmes remain the least funded among health programmes, especially in low- and middle-income countries [58]. For example, in Botswana, mental health still operates under 1% of the national health budget. The participants in the study recommended that the programme could be developed and implemented if it received funding, involved multiple stakeholders, and had a psychoeducation programme targeting all the major stakeholders, community leaders, mental health personnel, and the patient's families. In a meeting hosted by the WHO in conjunction with the World Bank Group in 2016, Global Mental Health included mental health as one of the sustainable development goals, which underscores the need to prioritise mental health and well-being at all ages [58]. To meet the goal, mental health initiatives should be prioritised in terms of funding.

5.2. Relevance to Clinical Practice

The recovery-oriented mental healthcare programme has the potential to benefit people with mental illness in the country. In addition, it would allow nurses to improve their knowledge and skills in managing mental illnesses. Findings might also inspire policy change in Botswana and other countries with limited resources as they move to adopt the recovery-oriented approach and guide its implementation.

Additional Points

What Does This Paper Contribute to the Clinical Community? The paper has the potential to (i) contribute to the transformation of mental health care in Botswana to recovery oriented and (ii) reduce the scarcity of the literature on developing and implementing recovery-oriented mental healthcare programmes in Botswana.

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The Relationship between Bullying and Emotional State among Undergraduate Nursing Students: A Cross-Sectional Correlation Study

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ABSTRACT (ENGLISH)

Introduction. Bullying behavior by nursing students is a serious problem that has contributed to the drop in numbers in the nursing profession. *Aim.* The study investigated the relationship between bullying and the emotional state of undergraduate nursing students. *Methods.* The study used a cross-sectional correlation design with a sample of 286 undergraduate nursing students from multiple nursing colleges located in the western region of Saudi Arabia. The 21-item depression, anxiety, and stress scale (DASS-21) was used to measure the study outcomes. A revised version of the Bullying Assessment Questionnaire was used to assess bullying experiences. Statistical analyses, including a *t*-test, Pearson correlation coefficient, and a one-way between-subjects ANOVA, determined the significance of the relationship between study variables. *Results.* There was a high prevalence of depression, anxiety, and stress symptoms among Saudi nursing students. Most of the respondents reported mild to extremely severe symptoms of depression (58.7%), anxiety (58%), and stress (44.8%). Around 90.1% of the nursing students

reported exposure to a form of bullying over the previous 12 months. The most common items reported as part of this behavior included continually being assigned tasks beyond their capacity. Family members were the most frequently reported source of bullying (29.8%), followed by nursing faculties (20.9%). Bullying behavior was positively correlated with students' scores for depression, $r(284)=0.49$, $n=286$, $p<0.01$; anxiety, $r(284)=0.54$, $p<0.01$; and stress, $r(284)=0.56$, $p<0.01$. *Conclusion.* The study's findings raise concerns and highlight the importance of decreasing the risk of depression, anxiety, and stress among undergraduate nursing students. Nurse educators must ensure that students receive psychological support to decrease these psychological outcomes. Regularly monitoring bullying behavior is essential to maintain students' psychological stability, which could eventually reduce professional dropout rates.

FULL TEXT

DETAILS

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Midwives' and Diabetes Nurses' Experience of Screening and Care of Women with Gestational Diabetes Mellitus: A Qualitative Interview Study

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ABSTRACT (ENGLISH)

Background. Gestational diabetes mellitus (GDM) is increasing and is associated with adverse outcomes for both mother and child. The metabolic demands of pregnancy can reveal a predisposition for type 2 diabetes mellitus (T2DM), and women with a history of GDM are more likely to develop T2DM than women with normoglycemic pregnancies. **Aim.** The aim of this study was to explore midwives' and diabetes nurses' experience of their role in screening, care, and follow-up of women with gestational diabetes mellitus and, further, to explore their opinions and

thoughts about existing routines and guidelines. *Method.* Individual interviews were performed with ten diabetes nurses and eight midwives working in primary and special care. Qualitative content analysis was done according to Graneheim and Lundman. *Results.* The analysis of the interviews resulted in the overall theme “An act of balance between normalcy and illness, working for motivation with dilemmas throughout the chain of health care.” Difficulties in carrying out the important task of handling GDM while at the same time keeping the pregnancy in focus were central. Women were described as highly motivated to maintain a healthy lifestyle during pregnancy with the baby in mind, but it seemed difficult to maintain this after delivery, and compliance with long-term follow-up with the aim of reducing the risk of T2DM was low. The women came to the first follow-up but did not continue with later contact. This was at a time when the women felt healthy and were focusing on the baby and not themselves. A lack of cooperation and easy access to a dietician and physiotherapist were pointed out as well as a wish for resources such as group activities and multiprofessional teams.

FULL TEXT

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1. Introduction

Gestational diabetes mellitus (GDM) is increasing globally and is associated with adverse outcomes for both mother and child, such as greater risk for type 2 diabetes mellitus (T2DM), macrosomia, and pre-eclampsia [1, 2]. Globally, 14% of all pregnant women develop GDM according to a pooled prevalence number [3], and in Sweden, the prevalence was 5.2% in 2020 [4]. The metabolic demands of pregnancy can reveal a predisposition for T2DM, and women with a history of GDM are more likely to develop T2DM than women with normoglycemic pregnancies [5, 6]. A review from 2020 [5] showed a 10-fold higher risk for developing T2DM, and another review about the incidence of T2DM showed an estimated risk of 19.7% after 10 years and nearly 30% after 20 years [6].

As for other types of diabetes, an increased plasma glucose level is used to diagnose GDM [2]. WHO has changed its recommendations and lowered the cutoff for diagnosing GDM [2]. In 2020, seven of Sweden's 21 regions used the lower cutoff [4]. The CDC4G study [7] is in progress in Sweden to further evaluate whether to implement the lower cutoff recommended by WHO. Screening to detect GDM is performed at the maternity health clinic, based on risk factors such as heredity and overweight, but a few regions offer screening to all pregnant women [4].

Recommendations for screening differ between regions in Sweden [4]. When diagnosed, the woman is referred to a diabetes nurse in special care during pregnancy and for follow-up with the diabetes nurse in primary care postpartum. A lower cutoff for GDM diagnosis would result in an increased number of women with GDM, and this will entail demands on health-care organisations and resources. Therefore, it is important to study how health-care professionals today experience their work with this group of women.

Earlier research is limited concerning health-care professionals' experience of treating women with GDM. In interviews with midwives about their experience providing care and counselling to pregnant women with GDM, Persson et al. [8] identified fear of failure as a central factor affecting the midwives' choice of strategies. On top of their ordinary work tasks, the midwives felt that they needed to give specific counselling regarding GDM and to initiate lifestyle changes. Persson et al. reported a need for a more supportive organisation.

Interviews with Swedish midwives about strategies for handling challenging dietary counselling situations presented ambiguous strategies. The information focused on GDM prevention, but extra challenges were raised when counselling women who were obese, on special diets, had eating disorders, or came from different cultures. Those challenging situations demanded other strategies. The researchers concluded that further education towards a more person-centred approach was needed as well as possible cooperation with dietitians [9].

In a Norwegian study, midwives at a special care unit for women with diabetes mellitus were interviewed. They described a conflict owing to lack of time, where medical issues were prioritised, and person-centred care with a midwifery focus was given less space and time [10].

A qualitative study from Denmark interviewed health-care professionals who met women with GDM during and after pregnancy. They found that collaboration and information between the different clinics and different health-care

professionals need to be improved. It was unclear who was to be mainly responsible for long-term follow-up work to prevent T2DM. Due to a lack of guidelines and poor knowledge about existing guidelines, the women received very different care [11].

Examples of the few existing studies [8–11] indicate organisational issues and a clinical struggle to handle and balance different situations and work tasks in a tight time schedule. Thus, a need for further research within the area to map and increase understanding/knowledge about work with patients with GDM is necessary, during pregnancy as well as after delivery. In this study, we want to investigate further how consultations take place in different parts of the chain of health care, and during pregnancy as well as after delivery, both from the midwives' perspective and diabetes nurses' perspective. The results of this study can increase knowledge about daily work in the clinic and thus give important information for possible improvements and changes.

2. Aim

The aim of this study was to explore midwives' and diabetes nurses' experience of their role in screening, care, and follow-up of women with gestational diabetes mellitus and, further, to explore their opinions and thoughts about existing routines and guidelines.

3. Method

3.1. Study Design

A qualitative method with an inductive approach was chosen since we wanted to gain deeper insight into participants' personal experiences [12]. Semistructured individual interviews were performed to explore midwives' and diabetes nurses' experience of their role in screening, treating, and following up on women with GDM. Opinions and thoughts about existing guidelines were also explored.

3.2. Participants

All midwives and diabetes nurses in primary care and in special care units working with women with GDM in a region in the northern part of Sweden were invited to participate. This study used a purposive sample [12]. Potential participants were contacted through coordinating personnel and/or the responsible chief of the respective professions, and information was distributed among their contacts. Permission to participate in the interviews during working hours was given by the regional management. Ten diabetes nurses (age 27–61 with median age 46.5, work experience 2–15 years with a median of 5.6) and eight midwives (age 34–63 with median age 47.5, work experience 3–33 years with a median of 15.5) chose to participate in individual interviews. The participants were equally spread between rural and central areas in both groups. Two declined participation due to lack of time, one due to a feeling of lack of experience, and four did not reply to our contact.

Information about the study was given orally and in writing, and participants were able to ask questions. Informed consent was signed before entry into the study.

3.3. Data Collection

Data were collected through individual interviews conducted by phone or online, depending on the participants' choice. Face-to-face sessions were not possible due to the ongoing pandemic. All interviews were conducted by the first author, S.K., between May and July 2021. A semistructured interview guide with open-ended questions was used. A pilot interview was performed, and only minor adjustments to the interview guide were made; thus, pilot data were included in the study. The interviews were recorded digitally (Olympus VN-541 PC) and lasted between 12 and 28 minutes with a mean of 20 minutes. There was no time restriction, and the participants were asked at the end whether they had anything to add. Participants agreed to be contacted again later should any questions come up during the analysis, but no such need occurred. Transcripts were not returned to the participants for comments.

3.4. Data Analysis

The interviews were recorded digitally, transcribed verbatim by S.K., and deidentified and analysed using qualitative content analysis according to Graneheim and Lundman [13–15]. Qualitative content analysis emphasises variation, through similarities and differences in the material [13–15].

The analysis started with repeated readings of the material to get a sense of its entirety and content. Meaning units were identified and condensed to shorten their content, while preserving their core content, and then, they were

labelled with codes to capture their essence. The codes were then grouped and abstracted into categories and subcategories by their commonalities on a manifest level. Further interpretation and abstraction resulted in a theme that exposes the latent content in the material. To ensure dependability, S.K. and R.S. read the material, identified meaning units and coded the material separately, and then compared and discussed the differences until a consensus was reached. Cocreation in the analysis is often described as consensus [14]. Codes were then grouped into categories and subcategories separately, compared and discussed, and adjusted separately and then discussed again until reaching consensus. To further ensure dependability, this material was discussed in the whole group who had read parts of the material. An overall theme was created after discussions. Quotations were chosen to exemplify and clarify. All steps of the analysis process were managed manually. An example of the analysis is shown in Table 1.

Table 1

Example of the analysis.

Meaning unit	Condensed meaning unit	Code	Category	Subcategory
It's not only, I meet other patients with diabetes with foreign background, and there are difficulties with the language... Then it's good that you can take information from the Internet in their own language	Meet other with diabetes with foreign background. Language difficulties. Good to have information on the Internet in their language	Language difficulties Information in native language	Complexity of counselling situation	Language and cultural differences

3.5. Ethics

Ethical approval for the study was obtained from the Swedish Ethical Review Authority, Dnr 2021-00179. All participants gave signed informed consent before the start of the study. Data materials were kept in computer files behind two-factor authentication, and transcripts were kept in a locked cabinet.

4. Results

The analysis resulted in four categories, nine subcategories, and one theme (Table 2).

Table 2

The results of the analysis.

Category	Subcategory	Theme
Structure within and between caregivers	Caregivers' role and cooperation throughout the chain of health care	
Thoughts about routines and guidelines		-
Content of the daily tasks	Screening and testing/sampling	An act of balance between normalcy and illness, working for motivation with dilemmas throughout the chain of health care

Promote healthy lifestyle and encourage the normal	Inform and increase knowledge of risks and consequences	Compliance and course of action at follow-up
-		
Complexity of counselling situations	Challenges in the daily work	
Obstructive physical impact of pregnancy		Language and cultural differences
	-	
Professional competence and need for further education		

From the categories to subcategories, the theme *“An act of balance between normalcy and illness, working for motivation with dilemmas throughout the chain of health care”* was abstracted and interpreted. The theme originates from the participants' stories about difficulties providing necessary information about the patients' illness while maintaining focus on positive aspects of this special time during pregnancy. They also spoke about difficulties later, at follow-up in addressing the risk of future illness and health risks at a time when the woman is “healthy.” This was a challenge at all parts of the chain of health care, and being supportive and encouraging was regarded as a central issue. The participants expressed different motivational challenges depending on occupation and place in the chain of care.

4.1. Structure within and between Caregivers

Different ways of cooperation between caregivers and parts of the chain of health care were described, but so were a lack of cooperation and uncertainty about details in routines and guidelines. Participants described flexibility in the care and contact and possibility to adapt to the patient as important.

4.1.1. Caregivers' Role and Cooperation throughout the Chain of Health Care around the Women

The participants described their role in the care of the women, what their work assignments were, how they referred patients to other caregivers, and/or how patients were referred to them by others. They further reported on different forms of contact, for example, in person, by phone or online, according to the needs and preferences of the individual women. Midwives in primary care felt that their role was central during pregnancy but that their part in considering GDM was small; they set the diagnosis and then referred to “professionals” at the diabetes clinic. Well, if we detect GDM we refer, we get professional help. We contact the diabetes clinic and then they start doing controls. The women continue with us according to the base programme. You are a key contact from the start to catch and find, and then refer... #13

All women diagnosed with GDM were referred to diabetes nurses in special care for regular contact during pregnancy. However, diabetes nurses in primary care are responsible for the follow-up after delivery (up to a year after delivery), a time when many women consider themselves healthy; the GDM is in the past.

Good experiences of quick nurturing after set diagnosis were common and well spread in the interviews, as were accounts of easy contact between primary care and special care nurses and then prompt contact with the woman after diagnosis. Due to long distances in parts of the area where the interviews were conducted, special care and primary care cooperate in special cases, for example, by having personal meetings with primary care close to home instead of travelling long distances for each visit or having contact by phone.

In primary care, the diabetes nurses felt alone with these patients and had no active cooperation with other caregivers at the clinic.

Some of the midwives communicated to the diabetes nurse at their clinic when a woman was diagnosed with GDM,

but this was an individual initiative and not routine. A recurring opinion was that there was no access to a dietician and that this category of competence would be important and beneficial in the work with those women. Also, cooperation with a physiotherapist was lacking, as were group activities, which many participants thought would be beneficial for this patient group. The opportunity to meet others in the same situation and support each other was thought to be very rewarding.

4.1.2. Thoughts about Routines and Guidelines

Even within the same profession, there were different opinions about existing routines and guidelines. Some thought they were clear and easy to follow, while others saw a need for clarification and improvement. It was apparent that there were some details that needed clarification, based on diverse stories about how, for example, referrals should be made.

Our routines are a bit fuzzy when it comes to screening for GDM. A bit vague. I have pointed that out before; maybe it will change... #17

Some differences were seen in the layout of the work, and several participants expressed a wish for clearer guidelines to ensure equal care. Some had developed local guidelines on how to perform follow-ups at their clinic to provide clarity when the regional guidelines were considered unclear and/or not updated.

Different tools and resources were used to accomplish the work tasks. Some used the diabetes handbook available online [16] along with other patient information also available online. The women were, therefore, getting more diverse information than they might have if there had been more detailed regional guidelines.

A recurrent notion that came up in the interviews was that some women might be missed and that the routine of referring women with previous GDM to a special care diabetes nurse directly at the enrolment meeting with the midwife needed clarification. The participants also indicated uncertainty about glucose tolerance tests and said there was a need to clarify the routine and follow-up requirements. Another lack in the routines that came up was that the diabetes nurses in special care do not have access to the medical journals of midwives in primary care, which may impede the communication between caregivers.

There were questions and uncertainty about potential new cutoff limits for the diagnosis of GDM in the future. This raised thoughts about a possible need for a change in organisational responsibilities due to a growing number of patients.

4.2. Content of the Daily Tasks

Different work tasks were described in the interviews. All caregivers focused on a healthy lifestyle as well as screening and follow-up.

4.2.1. Screening and Sampling

Collecting and handling blood samples was described as an important part of the work tasks, first to diagnose GDM and then to follow blood glucose levels over time during pregnancy as well as during long-term follow-up after delivery. Screening and sampling were seen as essential in order to detect GDM and prevent further illness.

Screening is done based on risk factors and is important for detecting GDM, but several midwives said that many cases are found by the random testing of blood glucose that is performed during pregnancy.

It can be during our consultations that blood glucose shows that you need to progress to do an OGTT or you do it due to previous risk factors. And a GDM turns up. #4

After diagnosis, the women with GDM are taught to self-monitor blood glucose levels regularly and report to their diabetes nurse at the special care unit. After delivery, the routine is to offer recurrent follow-ups with the diabetes nurse in primary care, and blood samples are also an important part of this.

4.2.2. Promote a Healthy Lifestyle and Encourage the Normal

All participants saw the provision of lifestyle information as a central task in their daily work and talked about how to promote a healthy lifestyle, saying that this should be presented as the normal way of living and taking care of yourself. Healthy eating and physical activity were viewed as the main objectives.

In general we inform everybody about lifestyle factors. When you are pregnant, you are prone to making lifestyle changes, this we know. Many start exercising, start to be aware of weight and not gaining too much, thinking about

what they are eating. Many think about what they are eating.... It's quite general, regardless of whether you are a diabetic or not... #8

For the midwives in primary care, despite the GDM, the emphasis was on keeping the pregnancy and baby in focus and giving the mother-baby connection priority.

Providing support and reassurance while giving women the opportunity to ask questions was important in getting the information out effectively. The desire to do everything possible to ensure the baby's well-being during pregnancy was perceived as a key motivator for the women to adopt lifestyle improvements before childbirth. Later, after childbirth, this could be more difficult since the focus shifts to the baby and family and is not so much on the mothers themselves. Many spoke of the importance of having healthy habits for the future and indicated that further support is needed to help mothers maintain a healthy lifestyle.

4.2.3. Inform and Increase Knowledge of Risks and Consequences

Another important work task the participants described was providing information and increasing knowledge about diabetes and its risks and consequences. The importance of continuing this work after delivery, when most women consider themselves healthy, was seen as a key issue.

I think it is very important to follow up. Since they have such a big risk of developing T2DM... Yes, it is important to follow up and to inform them. #5

The midwives perceived that increasing body mass index prepregnancy is getting more prevalent, and mental health issues are more common. This makes the work, and helping mothers become role models for their children even more important.

4.2.4. Compliance and Course of Action at Follow-Up

The participants expressed that compliance was generally good during pregnancy, but it became more difficult with the follow-ups after delivery. Many participants described a long time delay between delivery and the first follow-up. They found that the women would come to the first visit for follow-up but would not continue with regular appointments in the long run, since they were feeling healthy at this point and were focused on the baby and the family. Attempts had been made to customise follow-up routines according to individuals' needs and preferences, but the compliance was still low.

I think it is easy as a patient to think that I have good blood sugar and that there is nothing to worry about now. But you still have to make them understand that the risk of developing T2DM is quite big. #6

The informants described uncertainties and differences concerning strategies and the interval when it came to follow-ups in primary care after delivery. The diabetes nurses expressed that, in the end, it came down to the woman's own responsibility. The low compliance for long-term follow-up was considered problematic.

4.3. Complexity of Counselling Situations

Obstacles, challenges, and difficulties of course occur in the contacts with these patients. Motivational work, normal impacts of pregnancy, and cultural differences, including language barriers, were the main subjects spoken about.

4.3.1. Challenges in the Daily Work

Different challenges were reported in the interviews. A recurrent topic was difficulties concerning motivation. Participants indicated that health education and motivation were time-consuming and that time was lacking. The work of changing habits and lifestyles is also time-consuming, so the same problem with lack of time is connected to this. Anxiety was quite common among the mothers-to-be, with different levels of worry among the women, both for the coming babies and for themselves. Anxiety could be a difficulty and an impediment, but it could also motivate women to change and to maintain new habits. Many participants reported that motivation was higher during pregnancy than after delivery.

To keep them motivated, it is different while they are pregnant; then they have someone else to think about./... /It is the same as that you transmit good lifestyle to the children, that is what I think about, teaching the children to be physically active along with eating healthy. #9

It was a big challenge to try to keep a recurrent contact over time after delivery. Maintaining healthy eating and physical activity was considered a challenge. Another challenge was complex counselling situations on delicate

matters such as weight and being monitored with a scale, which was very sensitive for many of the women. The participants felt that they could do better if they had more time and resources.

4.3.2. Obstructive Physical Impact of Pregnancy

A recurrent topic in the interviews concerned the physical strains and events that normally occur during pregnancy that could be a complicating factor for lifestyle changes. For example, nausea and cravings make it even harder to keep a healthy diet, and pregnancy-related lumbopelvic pain can make physical activity harder. Even during a healthy pregnancy, there are many emotions and bodily events to manage.

To encourage them to exercise. Sometimes they get stuck in that they cannot walk because of pain from joint loosening in the pelvis and all that. So there is that... To get them more physically active early. #10

4.3.3. Language and Cultural Differences

Many of the women the participants meet are immigrants, and this often raises difficulties related to language and communication as well as cultural differences such as different food cultures and customs when it came to physical activity.

Dietary habits and general... this with cultural differences... You can notice big differences in what people eat and that there are different cultures. #4

Communication via interpreter was described as an aggravating factor in the consultation situations that made it more difficult to connect with the mother and to ensure that all the vital details in the conversation were clearly relayed.

Moreover, some women are illiterate and therefore cannot assimilate written information indicating, for example, the carbohydrate content in various products or other written information which would complement and repeat oral information. In addition, the numbers displayed on the blood sugar tester might not be understood by women in this group.

When you don't speak the same language and perhaps need an interpreter. And the interpretation does not always work well. Now during COVID-19 there have only been telephone interpreters, and you do not always reach all the way. Then there are many who can't read or count; if the woman is illiterate, that is very difficult. #12

4.4. Professional Competence and Need for Further Education

The participants had a varying number of years in the profession and the desire for further training varied, not always connected to longer or shorter experience. Many wanted further education to be given the opportunity and time to learn about new findings and new knowledge within the area.

I would be grateful for more education since this... I meet so few patients that I feel I don't... I don't work with it so much that I feel so very secure in what I do. The more you meet a group of patients the more secure you get within that area. And there are not that many patients, so it would have been nice to get some updates and more education. #16

A recurrent wish was to have the opportunity to learn more about areas that were not their speciality, for example, more knowledge about pregnancy for the diabetes nurses and so on. This would enable them to answer questions from the women, but they also wanted the information to increase their own understanding. A need for further education about cultural differences and, for example, food cultures was expressed as well as further training in conversation methodology.

5. Discussion

5.1. Result Discussion

This study aimed to explore midwives' and diabetes nurses' experiences of screening and care of women with GDM during and after pregnancy. The participants were active in different phases, according to their profession and placement in the chain of health care. Descriptions of the act of balancing between normalcy and illness came up several times in the interviews, and this has also been reported in previous research concerning health-care professionals' experience working with women with GDM [8, 10]. This balancing act was described in different ways; for example, that a lack of time puts the illness in priority instead of the pregnancy and also that it was important to emphasise that lifestyle advice should be considered for everybody, thus as something normal and not specifically

because of their GDM. The informants thought this was an important group of patients that need time and care, and also that it was important to consider that the health of the mother would affect the health of the baby and family for a long time to come.

It was noticeable in the material that there were different opinions about routines and guidelines among the informants and that there were some misunderstandings about who does what and thinking that certain tasks were someone else's responsibility. There was a lack of knowledge and understanding of how work tasks and information were organised and distributed between professions and between parts of the chain of health care. Similar difficulties were pointed out in a Danish study [11], where suggestions about an overview of organisation, collaboration, and information transfer were made. A study from 2009 [17] showed low compliance with guidelines about risk factor-based screening. Only 30.7% of women with one or more risk factors were exposed to OGTT. Different primary health-care centres had developed their own, more specific, routines, which caused diversity between units. This was time-consuming work that, in a situation with well-functioning routines, should not have been necessary, and it led to a risk of unequal care. A related issue that should be possible to solve more effectively was that most participants found written information online to hand out to their patients since no such things were in the local guidelines. Of course, this provided opportunities to adapt the information to individual women, taking into consideration language and depth of information, but it could also be time-consuming and lead to unequal care. Besides the local guidelines, there are also national guidelines published by the National Board of Health and Welfare (Socialstyrelsen) concerning the prevention and treatment of unhealthy lifestyle habits. These guidelines can be of some help in ensuring the provision of equal treatment and care. The national guidelines stipulate person-centred care adapted to the individual, with a focus on patient education and support [18]. This was a focus that the informants spoke about frequently.

Cooperation concerning referrals from primary care midwives who had diagnosed women with GDM to diabetes nurses in special care seemed to be fast and effective, although there were some uncertainties about the correct way to make a referral. Beyond this, there was very little cooperation between special care and primary care and between occupational groups within primary care. Several participants remarked on the lack of a dietician and expressed a wish for further cooperation with a physiotherapist. It would be beneficial to have access to a multiprofessional team [19].

In both special and primary care, participants expressed a wish to be able to offer different group activities/treatments in order to take advantage of the strength in a group, where patients can share experiences and support each other. Previous research has shown the benefits of groups, which can improve maintenance and adherence [20]. Identification has been pointed out as an important factor when attending a group treatment, and a facilitator is needed for successful treatment [21, 22]. A review shows the effect of social identification-building on health, offering the possibility to identify with and belong to a group [21].

A clear organisational detail that would simplify and secure the work for diabetes nurses in special care would be to enable them to read midwives' reports from the women's primary care appointments. This was not possible at the time of the interviews.

A key challenge was communication since many women are immigrants and have no or only a limited ability to communicate in the Swedish language. Communication through professional interpreters or with the help of a relative is a complicating factor in the personal meeting and makes it more difficult to create a relationship and to empower the woman [23]. Furthermore, immigrants may bring different cultural customs when it comes to food and physical activity and different opinions about how women should take care of themselves during pregnancy [23, 24]. Transcultural understanding and competence are important, and health-care professionals need to get proper education in this to be able to meet those patients [24, 25]. Previous research also points out the importance of education and competence on how to collaborate with an interpreter, which is vital for a successful communication [24, 26]. The diabetes nurses also talked about challenges concerning women who are illiterate and who therefore have difficulties understanding what the numbers on the blood glucose tester mean. This leads to difficulties in getting the daily feedback that those measures are supposed to provide. The inability to interpret those results leads

to the need for resource-intensive recurrent personal meetings that would otherwise often be managed by phone or digital messages. It has been previously pointed out that illiteracy is a complicating factor that adds to the workload, and that cultural differences create a need for information that is adapted to be made more broadly accessible [27]. The diabetes nurses in primary care felt alone with those patients, women previously diagnosed with GDM, and came in contact with the women quite late after delivery, without having had former contact or any relationship with them. A known facilitator for compliance with recommendations given at consultations is connection and continuity with the caregiver, and this could be a factor here [28, 29]. The compliance following such consultations was experienced to be low, which has also been highlighted in previous studies [29–31]. Often the woman came to the first consultation after delivery but then as time passed, the attendance rate decreased. These consultations are introduced when the woman feels healthy, the baby and the family are in focus, and the risk of T2DM feels distant and no longer relevant. Kim et al. describe how women, despite knowing that GDM gives an increased risk of developing T2DM, did not see themselves as having an increased risk [32]. The consultations are voluntary, and a lot comes down to the woman's own responsibility and interest. Interviews with women treated for GDM report a lack of coordination, unclear responsibility for follow-up among health-care professionals, and absence of individual focus as factors contributing to low compliance with long-term follow-up [29].

If the lower cutoff for diagnosing GDM is implemented, the number of women diagnosed with GDM will increase, leading to new demands on health-care resources and organisations. An organisation where diabetes nurses in primary care have contact with the woman during pregnancy could improve continuity and might improve compliance with long-term follow-up. Continuity in contact and a person-centred approach are facilitating factors [28, 29].

Opinions about more education were varied. Different thoughts about the need and wish for knowledge about the part that was not the focus of one's own profession affected opinions about whether or not more education is needed, for example, for midwives to learn more about diabetes, or for diabetes nurses to know more details about pregnancy and its effects.

5.2. Methodological Discussion

The study's aim to explore participants' experiences led to the choice of qualitative method, more specifically, interviews analysed according to Graneheim and Lundman [13–15]. With interviews, there is a chance to go deeper into the subject with supplementary questions, which is not a possibility when using a survey. In this study, semistructured individual interviews were conducted by phone or online. Face-to-face sessions were not possible due to the ongoing COVID-19 pandemic. Bryman [12] discusses the pros and cons and possible differences in results between face-to-face interviews and interviews by phone or other means. There have been concerns that phone interviews might be less rich in content compared to face-to-face sessions, but according to Bryman [12], this has not been shown. By phone, there is a lack of body language, but you can still hear, for example, changes in tone and speed of talk. In an online interview, you can observe body language to some extent. Not conducting interviews face-to-face can be time- and cost-effective and might enable participation despite long distances. The participants in this study could choose which format they considered most convenient, and even over long distances, this made it equally easy for everybody in the area to participate, which is seen as an advantage.

The original plan was to hold focus group interviews, but this was changed to individual interviews due to the pandemic, which prevented in-person meetings. Holding focus group meetings online or by phone was not considered adequate since it would be very difficult to get a good group dynamic and discussion by those means. Focus groups would have been interesting, giving the possibility to observe how individuals act as members of a group discussing a special topic and how they react to others' opinions and experiences [12, 33].

There is no consensus on how many informants are needed in qualitative research and no way to calculate this compared to how participants are calculated in quantitative research. Kvale recommends 5–25 informants, to be able to overview the text material [33]. Too many informants and a big set of data could make it difficult to analyse all data as deeply as needed, while too few or thin materials do not give the necessary richness to the material [12, 33, 34]. The 18 interviews in this study were considered to provide a good amount of data, offering material with

richness and to be able to have an overview of the material, analysing similarities and variation.

A purposive sample was used as the researchers turned directly to the group of professionals actively working with this patient category and who thus have knowledge of and experience with the topic [12]. The participants were equally spread between midwives and diabetes nurses, working in rural and central areas, and they were spread among ages and years of work experience. This contributed to the width of the content of the interviews, which is important for the credibility as well as transferability of the study [13, 35].

The use of a semistructured interview guide ensured similar questions and topics in all interviews while still maintaining a flexible interview process. The questions do not have to be asked in the same order to all informants, which gives space and possibility for the informants' opinions and wishes to share [12]. The questions were not distributed beforehand so there was no chance to prepare specifically, but knowing the purpose of the interview made it possible to prepare more generally and consider what they wanted to share. This gives spontaneous answers, which are considered preferable. A pilot interview was conducted to test the interview guide and to make sure that it gave rich answers correlating with the aim of the study. This strengthens the study's credibility [35]. The analysis was done manually, without software. As described in the Method section, the analysis was performed in specific steps and with discussions, cooperation, and consensus between the authors. No member check was performed, since there were no specific questions and because this type of control is criticised [12]. The inclusion of more than one researcher in the analysis strengthens dependability [13, 35]. Furthermore, the process—from recruiting participants, through the analysis and production of finished result—is thoroughly described, which enables the reader to follow along and thereby to judge the study's transferability and credibility. Different steps and examples of the analysis are presented, and the results are clarified in the text and confirmed with quotations, which further strengthens dependability as well as transferability [13, 35]. Quotations help to show that the text in the results comes from the collected data, strengthening conformability as well as credibility [35].

As described in the Method section, the research group was involved in the analysis.

An interview is considered to be a cocreation between the interviewer and the interviewee and later between researcher and text through interaction in the situation [14, 33]. This makes it important for the researchers to be aware of preunderstanding that might affect the process. The authors have strived to be objective. The interviewer had no previous experience working with GDM and does not have the same occupation as the informants.

6. Conclusion

Our results demonstrate how women with GDM postpartum, with normalised glucose parameters and a new life situation, often have problems holding on to a healthy lifestyle and that they are often lost to follow-up from the health care. The participants describe that their care organisations have a lack of structure, coordination, and sometimes the knowledge to meet the specific needs linked to follow-up after GDM aiming at long time follow-up, health promotion, and diabetes prevention. If the lower cutoff recommendations from WHO for GDM would be implemented in Sweden, with an increasing number of GDM diagnoses, the urge for organisational changes will be even more relevant.

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Psychosocial Problems among Psychiatric Nurses for Caring Patients with Mental Disorders during the COVID-19 Pandemic

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ABSTRACT (ENGLISH)

COVID-19 has a negative effect on the psychological well-being of psychiatric nurses. Thus, examining the psychosocial response of nurses is important for preventing more serious mental health problems and disruption of the quality of nursing care. This study aimed to evaluate the psychosocial problems of nurses who provided nursing care to patients with mental health disorders during the COVID-19 pandemic. A quantitative study with a cross-sectional design was conducted. The 101 nurses at Central Mental Health Hospital who provide nursing care to patients with mental health disorders were recruited through consecutive sampling. The instruments used were the demographic questionnaire, the Expanded Nursing Stress Scale, Zung Self-Rating Anxiety Scale, and The Connor-Davidson Resilience Scale 25. Univariate and bivariate analyses were used to process the data. The mean score of 45.1 (± 24.3) was obtained for the ENSS; around 97% of nurses have a work stress score below the average, 4.95% have mild-moderate anxiety, and 28.7% have a low level of resilience. Work stress and contact frequency, work stress and gender, anxiety and contact frequency, as well as resilience and contact frequency all correlated significantly (p value < 0.05). The Pearson test showed a significant positive correlation between work stress and anxiety (p : 0.002, r : 0.299). However, there was no significant correlation between anxiety and resilience (p : 0.643, r : 0.47), nor between work stress and resilience (p : 0.643; r : 0.47). Psychosocial disorders that psychiatric nurses face include occupational stress, mild-moderate anxiety, and low resilience. The government can create specific infection control guidelines for the mental health setting, and hospital management or ward leaders can also provide support to psychiatric nurses to increase resilience in reducing psychosocial problems.

FULL TEXT

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1. Introduction

The COVID-19 pandemic developed into a global health crisis with a considerable increase in cases and a high death rate worldwide. It is a challenge for health workers, especially nurses. Along with these issues, nurses are prone to internal problems relating to severe workloads, insomnia, conflicts among health workers, moral concern, and professional dilemmas [1, 2]. COVID-19 does not only influence physical health problems but also on psychosocial health. The impact of the COVID-19 pandemic on psychosocial aspects includes symptoms of stress,

anxiety, depression, and posttraumatic stress disorder [3]. Psychiatric nurses frequently lack knowledge about infectious disease management and must process a large amount of information about COVID-19 in a short period of time, while also having fears of transmitting the disease to patients, limited personal protective equipment, and conflicts among health workers, which causes psychosocial disorders to nurses [4, 5].

Several research articles have proven that nurses experience high levels of stress and anxiety during COVID-19. Anxiety was assessed in 89.7% of Iranian nurses, as was stress in 54.9% of them [6]. Huang et al. [7] found that out of 1,257 health workers caring for COVID-19 patients in 34 hospitals in China, 50% experienced depressive symptoms and 45% ran into anxiety. Nurses must be resilient to deal with challenging conditions that are riddled with problems and challenges. Since resilience is one of the factors that protect nurses from rising when faced with challenges, emotional tiredness, and job dissatisfaction, it allows nurses to retain healthy and stable psychological functions and adapt to the work environment [8]. Research conducted on 824 nurses in Korea reported that nurses with depression experienced lower resilience and were prone to experiencing higher work stress [9].

Preliminary research was undertaken on psychiatric nurses at Central Mental Health Hospital. Researchers conducted interviews with three psychiatric nurses about psychosocial problems during COVID-19. Based on interviews, they encounter a variety of psychosocial disorders, such as difficulty conditioning patients—for instance, those who perform risky behavior like careless spitting—difficulties communicating with patients as a result of the use of personal protective equipment (PPE), and anxiety when other patients or other nurses are confirmed to be positive for COVID-19. Research on psychological aspects has not been widely conducted concerning work stress, anxiety, and the resilience of psychiatric nurses. Therefore, this study aims to provide information about the psychosocial problems of psychiatric nurses who provided nursing care to patients with mental problems during the COVID-19 pandemic.

2. Methods

2.1. Research Design

This research is a descriptive one that uses a cross-sectional design and a quantitative approach. This research was conducted in June 2022.

2.2. Subjects

The population in this study was psychiatric nurses at the Central Mental Health Hospital in Yogyakarta, Indonesia. Psychiatric nurses are defined as nurses who specialize in psychiatric nursing, caring for patients with mental and behavioral disorders holistically, not only providing physical care but also socializing and communicating with patients to improve their physical and psychosocial well-being. They also provide comprehensive care to individuals, families, groups, and communities. Meanwhile, Bowers et al. [10] define psychiatric nurses as a group of nurses who interact face-to-face with patients in inpatient settings who experience stress and/or frustration at applicable restrictions, which include actions or procedures to maintain security, seclusion, restraint, and enforced medication. Consecutive sampling was used as the sampling method. The inclusion criteria were that the nurses had to have at least a Diploma in Nursing and be willing to participate in the survey. They also had to have provided nursing treatment to patients with mental problems at Mental Health Hospital during the COVID-19 pandemic. Nurses on leave from their employment were excluded from the sample. The total population of nurses who provide nursing care to patients with mental disorders is 122. The researcher determined the sample size using the Slovin formula with a 50% margin of error (e : 0.05), so that the minimum sample size was 94 nurses. A total of 101 nurses were accepted as participants in this study.

2.3. Instruments

The Expanded Nursing Stress Scale (ENSS) is an instrument used to measure the work stress of nurses. There are 27 questions on it, and the results are divided into scores above and below average. The ENSS instrument has a Cronbach's alpha of 0.956 with a reliability coefficient 0.3181. The Zung Self-Rating Anxiety Scale (Z-SAS) measures anxiety levels which are divided into normal/not anxious, mild to moderate, severe, and panic [11]. At Yogyakarta General Hospital, 75 nurses participated in a construct validity test using the Z-SAS instrument. The results were $r_{count} > 0.3$ and Cronbach's alpha 0.658.

The Connor–Davidson Resilience Scale 25 (CD-RISC 25), which contains 25 statements to measure participant resilience. The data were categorized into low, medium, and high resilience levels [12]. The researcher conducted a construct validity test at Yogyakarta General Hospital and Surakarta Regional Mental Hospital and obtained a reliability coefficient of 0.281–0.766 and Cronbach’s alpha 0.917.

2.4. Data Collection

This research was conducted at the Central Mental Health Hospital in Yogyakarta for psychiatric nurses. Questionnaires were given in printed form and digital form via links which contained data on participant characteristics and research instruments.

2.5. Data Analysis

Participants’ answers were analyzed using univariate and bivariate analyses. The independent *T*-Test, Mann–Whitney, and Kruskal–Wallis tests were used to compare the work stress levels of the participants’ using the ENSS instrument. The Mann–Whitney test was utilized to examine data from the Z-SAS, while the chi-Square and Fisher tests were used to examine the CD-RISC25 instrument. The correlation between work stress and anxiety as well as the correlation between work stress and resilience were examined using the Pearson product-moment correlation test. Furthermore, the correlation between anxiety and resilience was examined using Spearman’s rank correlation test.

2.6. Ethical Considerations

This research was approved by the Ethics Commission of FK-KMK UGM with number KE-FK-0044-EC-2022.

3. Results

3.1. Sample Characteristics

A total of 101 nurses participated in this study. A total of 4 questionnaires were given to all participants. The instruments we provided included demographic data, ENSS, Z-SAS, and CD-RISC 25. The researchers gave questionnaires and explained how to fill them out to all participants and they agreed to consent and completed all questionnaires. Table 1 shows that characteristics are dominated by those between the ages of 41–65 (56.4%). Most of the nurses were female (67.3%) and married (96%). The proportion of nurses who worked more than 15 years is 71.3%, and most participants contacted patients >5 times (57.4%) each shift. Additional demographic characteristics at baseline of the study sample are shown in Table 1.

Table 1

Demographic characteristics (*n*=101).

Demographics	Sample	Percentage (%)
Age		
19–40 years	44	43.6
41–65 years	57	56.4
Gender		
Male	33	32.7
Female	68	67.3
Marital status		

Married	97	96
Single/divorced	4	4
Education background		
Diploma	80	79.2
Bachelor	21	20.8
Working experience		
≤15years	29	28.7
>15 years	72	71.3
Contact frequency		
≤5 times	43	42.6
>5 times	58	57.4

3.2. Level of Work Stress, Anxiety, and Resilience

Based on the data, the work stress score was 45.1 (SD=24.3). The prevalence of psychiatric nurses who experienced work stress with a lower than average score is 97% and only 3% have a score higher than average. Most nurses do not experience anxiety or have normal anxiety (95.05%), and only 4.95% of nurses experience mild anxiety. Meanwhile, 51.5% of nurses have moderate resilience, 28.7% still have poor resilience, and just 19.8% have high resilience (see Table 2).

Table 2

Distribution levels of work stress, anxiety, and resilience of nurses (n= 101).

Variable	Mean±SD	Median	Min-max	Sample	(%)
Work stress					
Score	45.1±24.3				
Score lower than average				98	97
Score higher than average				3	3
Anxiety					
Score		26	20-39		

Normal/Not anxious				96	95.1
Mild-moderate				5	4.9
Severe				0	0
Panic				0	0
Resilience					
Score		81	69–100		
Low				29	28.7
Moderate				52	51.5
High				20	19.8

3.3. Differences between Work Stress, Anxiety, and Resilience with Demographics

Table 3 shows there were significant results for gender characteristics ($p=0.013$) and contact frequency ($p=0.002$) on the work stress variable. However, there was no significant difference in the correlation between work stress and age, marital status, level of education, and the length of work experience. Nurses with higher stress scores were aged 19–40 (45.77 ± 22.84), married (45.54 ± 23.22), worked ≤ 15 years ($47.9 \pm 23, 82$), female, and had contact with the patient more than five times.

Table 3

Different tests of work stress, anxiety, and resilience based on the demographic characteristics of nurses ($n=101$).

Demographics	Work stress			Anxiety		Resilience			
Median (min–max)	Mean $\pm$ SD	pvalue	Median (min–max)	pvalue	Low (%)	Moderate (%)	High (%)	pvalue	Age
									19–40 years
	45.77 $\pm$ 22.84	0.808 ^(a)	26 (20–39)	0.205 ^(b)	27	52.7	20.3	0.606 ^(d)	41–65 years
	44.58 $\pm$ 25.55		24 (20–39)		33.3	48.2	18.5	Gender	
								Male	29 (11–127)

	0.013 ^{*(b)}	24 (20–39)	0.335 ^(b)	15.2	66.6	18.2	0.229 ^(d)	Female	47 (5–87)
		26 (20–39)		35.3	44.1	20.6	Marital status		
							Married		45.54 ± 23.22
0.376 ^(a)	26 (20–39)	0.847 ^(b)	29.9	50.5	19.6	0.322 ^(e)	Single/ divorced		34.5 ± 27.33
	25.5 (20–39)		0	75	25	Education background			
						Diploma		43.96 ± 23.17	0.361 ^(a)
26 (20–39)	0.146 ^(b)	30	48.7	21.3	0.964 ^(d)	Bachelor		49.43 ± 28.39	
23 (20–39)		23.8	61.9	14.3	Work experience				
					≤15 years		47.9 ± 23.82	0.465 ^(a)	26 (20–39)
0.608 ^(b)	31	55.2	13.8	0.444 ^(d)	>15 years		43.97 ± 24.56		26 (20–39)
	27.8	50	22.2	Contact frequency					
				≤5 times	53 (5–105)		0.002* c	28 (20–39)	0.000* b

34.9	58.1	7	0.019*d	>5 times	61 (11–11 7)			24 (20–3 9)	

Notes: (a) independent *T*-test, (b) Mann–Whitney, (c) Kruskal–Wallis, (d) chi-square, and (e) Fischer test. * Significant ($p < 0.05$).

3.4. The Domains of ENSS, Z-SAS, and CD-RISC 25

The ENSS is reported to be made up of nine domains (see Table 4). The highest average scores were uncertainty concerning treatment (25.91 ± 15.33), followed by problems with patients (24.07 ± 10.77). In the Z-SAS instrument, the domain of affective symptoms has the highest median value. The hardiness aspect has the highest median resilience score of all other factors.

Table 4

Score on work stress, anxiety, and resilience of nurses based on domain on the ENSS, Z-SAS, and CD-RISC 25.

Domain	Mean $\pm$ SD	Median	Min–max
Work stress (ENSS)			
Death and dying	22.81 ± 12.19		0–60.71
Conflict with doctors	17.67 ± 12.64		0–60.00
Inadequate optional preparation	19.97 ± 14.44		0–58.33
Problems with peer support	13.2 ± 12.31		0–50.00
Problems with supervisors	16.55 ± 13.36		0–57.14
Uncertainty concerning treatment	25.91 ± 15.33		0–72.22
Problem with patients	24.07 ± 10.77		6.25–62.50
Workload	20.65 ± 11.96		0–63.89
Discrimination	4.29 ± 9.17		0–41.67
Anxiety (Z-SAS)			
Affective symptoms		6	5–10
Somatic symptoms		4	3–9
Cardiovascular system		2	2–5
Respiratory system		4	4–8

Gastrointestinal system		1	1–3
Genitourinary system		1	1–3
Skin		3	2–6
Central nervous system		2	2–5
Resilience (CD-RISC 25)			
Hardiness		23	17–28
Coping		16	9–20
Adaptability/flexibility		10	6–12
Meaningfulness/purpose		13	9–16
Optimism		6	3–6
Redulation of emotion and coping		6	4–8
Self-efficacy		6	6–8

3.5. Correlation between Work Stress, Anxiety, and Resilience

Pearson product-moment test results showed a significant association between work stress and anxiety (p value <0.05). The r value of 0.299 indicates a positive relationship between work stress and anxiety (see Table 5).

Spearman's rank test stated that there was no significant correlation between anxiety and resilience (p value <0.643 , r 0.47). Work stress and resilience had no significant correlation (p value: 0.643, r 0.76).

Table 5

The correlation test between work stress, anxiety, and resilience in nurses.

Variables	Median (min–max)	Mean $\pm$ SD	R	p value
Work stress score		45.1 $\pm$ 24.3	0.299	0.002*a
Anxiety score	26 (30–39)			.
Anxiety score	26 (30–39)		0.47	0.643 ^(b)
Resilience score	81 (69–100)			.
Works stress score		45.1 $\pm$ 24.3	0.76	0.643 ^(a)

Notes: *Significant ($p < 0.05$); (a) Pearson's test, (b) Spearman's rank test; r , coefficient correlation.

4. Discussion

4.1. Levels of Work Stress, Anxiety, and Resilience in Nurses

In this current study, most psychiatric nurses during the COVID-19 pandemic had work stress lower than the average score (<45.1). Research by Mo et al. [13] showed that 22.2% of nurses had scores >50 , with the average work stress experienced by nurses of 39.91 points. Meanwhile, Baye et al. [14] stated that 90% of nurses in psychiatric wards are less likely to experience work stress than nurses working in outpatient care. The low level of work stress for health workers during the pandemic proves that they show professional devotion and altruism [15]. In line with the study by Ko et al. [16] in Taiwan, many nursing staff were dedicated to their work under the professional responsibility of caring for patients, even volunteering to be involved on the front lines during the SARS pandemic. However, these findings contradict the findings of Alnazly et al. [17], who discovered that 35% of nurses who handled patients with COVID-19 suffered severe stress.

In some mental health hospitals, inpatient psychiatric patients are placed in wards with many other patients. This condition makes social distancing hard to implement in inpatient wards because the rooms occupied by several patients are cramped and crowded. This suggests maintaining a social distance of 2 meters is less applicable and impractical for proper infection control in inpatient wards [18]. Furthermore, nurses tolerate aggressive behavior exhibited by patients, such as breaking protective glasses, tearing masks, and even spitting. The lack of preparedness in dealing with the COVID-19 pandemic has become a major source of stress for nurses. Foye et al. [18] stated that the use of PPE is a real challenge in emergencies; for example, the act of restraining a patient, where nurses may not have time to wear PPE or even PPE that pose a risk to nurses. So, devotion to the use of PPE guidelines as infection control is not maximally done. There is a need for further attention, guidance, and support for nursing staff in trying to manage the challenges of using PPE on the wards of patients at risk of suicide and keeping patients and staff safe. Many of them also have conflicts with professional ideals, such as feeling sad for not being able to treat patients as well as nurses in the ICU and dread spreading the virus to family members [4]. The stressors above significantly increase work stress for nurses.

Normal anxiety was assessed in 95.05% of participants, and none of them experienced severe anxiety or panic. Similar to the study of Neupane et al. [19] which found that 88.4% of nurses experienced normal anxiety and another 10.5% reported mild to moderate levels of anxiety. A survey in China revealed that less than half of healthcare personnel, notably female nurses caring for patients, exhibit signs of anxiety [2]. The findings of this study contrast with those of a meta-analysis performed by Al Maqbali et al. [20]; which revealed that 37% of nurses reported having anxiety across all 93 journals examined.

After all, the COVID-19 pandemic has been going on for more than two years. The Indonesian Ministry of Health set guidelines for the prevention and control of COVID-19 infection in 2020, whereby all health services are no exception to implementing these regulations including the use of PPE, infectious zones, flow of services, and so on. However, these guidelines often confuse nurses because they are hard to apply in psychiatric hospitals where the patients there have different criteria from other general patients. Meanwhile, the first COVID-19 vaccine for health workers began in early 2021. Until these data were collected, psychiatric nurses had received three doses of the vaccine. PCR swabs are carried out if the nurse shows symptoms or has contact with a COVID-19 patient. The Central Mental Health Hospital already follows the guidelines, which helps them reduce the level of anxiety among the nurses there. This supports the results of other studies by Hennein et al. [21] and Yeung et al. [22] that the absence of COVID-19 control guidelines in hospitals correlates with higher symptoms of anxiety.

The resilience level of nurses is mostly in the moderate category. Moderate resilience means that nurses have demonstrated a positive adaptation function in dealing with adversity during a pandemic. Nurses with higher resilience may be able to adapt to the difficulties of working during a pandemic and are less at risk of experiencing symptoms of trauma and disruption at work [23]. However, some nurses in this study lacked resilience (28.7%). Low resilience may be a sign that one needs to develop coping and adaptive skills to deal with adversity [12].

4.2. Differences in Work Stress, Anxiety, and Resilience in Nurses Based on Demographic Characteristics

Significant results were found regarding the difference between work stress and gender. Women have higher work stress scores than men. This is in line with the findings of Tsegaw et al. [24] in their research which revealed that

one of the factors is the higher role of women in the family and society. Therefore, there is a significant difference in contact frequency and work stress. Nurses who interact with patients more than five times each shift typically experience significant levels of stress. In this study, it was found that it is common for nurses to interact with patients more than ten times in a shift. According to Kisely et al. [25], the more frequently nurses contact patients, the more vulnerable they are to experience stress disorders, especially during a pandemic because nurses contact confirmed patients more often.

Participants aged less than 40 years showed a higher average stress score. Senior nurses can adopt healthy stress-coping strategies because they are more aware of the possibility of a pandemic and are more responsive to patients [26]. Kuo et al. [27] in their research found no relationship between work stress and education level. They continued by explaining that this occurred because the pandemic produced new issues that had never been encountered before, causing nurses with high and low educational levels to experience the same psychological effects.

Anxiety has a significant relationship with contact frequency. Tang et al. [28] reported that the correlation between contact frequency and traumatic stress experiences can make nurses more anxious. In this study, the more often nurses contacted patients, the lower the anxiety score. Higher anxiety scores occur in the age group under 40 years. This study is in contrast to the findings of Wang et al. [29], which stated that at age above 40, anxiety is 0.4 times higher than at age below. This indicates that as experience increases, the ability to regulate psychology will increase.

In this study, work experience did not significantly affect resilience either, but groups with >15 years of work experience showed higher levels of resilience. The results of this study are different from studies by Foster et al. [30] on mental health nurses in Australia which show a significant relationship between resilience and length of service. According to research by Wu et al. [31], nurses with more than 15 years of experience were more resilient. About 31% of the nurses in this study with fewer than 15 years of experience reported having low resilience. Nurses struggle to handle pressure, the risk of infection, the increased workload, and the risk of mental health disorders since they are less skilled at their professions [32].

Nurses who come with a diploma degree have lower resilience levels than those with a bachelor's degree. The difference between a diploma degree and a nursing bachelor's degree in Indonesia is that a diploma degree, also called vocational education, is more focused on practice and takes three years. Meanwhile, a bachelor's in nursing takes four years, focusing more on understanding theory and critical thinking. Also, nursing bachelors who will work in hospitals must go through clinical stages as an implementation of theory and practice in the field. The findings of Afshari et al. [33] on 387 nurses diverge from this result in that resilience and education level differed significantly. According to Ang et al. [34] and Jamebozorgi et al. [35], nurses have greater resilience with more education. The higher nurses' education level, the more efficiently they use social resources, such as learning to access resources and increasing their use, resulting in greater resilience. As stated by Afshari et al. [33], training is required for nurses to strengthen their skills and knowledge in dealing with the COVID-19 pandemic.

The previous study stated that males generally have a higher level of resilience than females [36, 37]. The same finding is found in this study that females have lower resilience. Male and female nurses differ in their resilience due to variances in coping methods in a cultural setting where women are responsible for the home and job while men are more focused as nurses [36].

4.3. The Domain of Work Stress, Anxiety, and Nurse Resilience Instruments

In this study, the first rank of work stress in the ENSS domain is uncertainty concerning therapy. The doctor's absence during a medical emergency, exposure to workplace safety and health, insufficient information from the doctor regarding the patient's medical state, and insufficient time to perform nursing assignments are all factors that could have an impact. The second is the problem with the patient domain. Nurses' work stress is increased by the patient's unreasonable requests and inappropriate behavior, which is typically verbal [5]. There are many psychiatric wards where patients are free to move around and interact with other patients. Nurses had difficulty isolating patients with behavioral deregulation from symptoms of mania and active psychosis during the COVID-19 pandemic. They also have difficulty explaining the risk of COVID-19 infection to patients and convincing them to follow

quarantine guidelines such as wearing masks and protective clothing, and performing COVID-19 tests [38, 39]. Affective symptoms of anxiety, such as fear, nervousness, and restlessness are associated with an increased risk of migraines, headaches, and muscle tension. In the current study, nurses have the highest median value on the hardiness aspect of the CD-RISC 25. According to Maramis and Cong [40], hardiness is a personality trait that has a defense function, so that when someone faces problems and workloads, they can do things that are considered appropriate to solve them. The results of this study indicate that nurses have low self-confidence, emotional regulation, and self-efficacy. A nurse needs to increase confidence in their abilities and control when facing a crisis or difficulty [41]. Characteristics such as self-control, expectations, and self-efficacy are significant contributors to nurse resilience [36, 41].

4.4. The Correlation between Work Stress and Anxiety, Resilience with Anxiety, and Work Stress with Resilience

These results support research in China and Turkey which shows that there is a significant relationship between work stress and anxiety; a positive value means that the higher the work stress, the higher the anxiety felt [13, 42]. Nurses who feel higher stress and anxiety will feel dissatisfied with their lives; besides that they experience physical and psychological exhaustion. Anxiety is an unpleasant emotional response to stress resulting from threats characterized by feelings of worry [43].

Pearson's correlation test showed no significant relationship between work stress and resilience. These results are different from those of the research by Hong et al. [9] in Korea. This happened because the nurses' work stress score in this study was below the average, while the research in Korea was conducted at the beginning of the pandemic, so it showed different results. Resilience is an adaptive coping strategy that can help reduce work stress and mental burden on health workers in response to treating patients infected with COVID-19 and preventing them from being infected with the virus during a pandemic [9].

Resilience is proven to have an important role in overcoming work pressure. In this study, there was no significant relationship between anxiety and resilience. According to studies conducted in Israel by Mosheva et al. [32], anxiety and resilience have a negative correlation. This implies that a nurse's resilience will be reduced the more anxious they are. This discrepancy in results came about because, in this study, most nurses did not experience anxiety.

5. Conclusions and Recommendations

This study provides information on the impact of COVID-19 on the psychosocial problems of psychiatric nurses. Nurses who provided nursing care to patients with mental disorders at the Central Mental Health Hospital during the COVID-19 pandemic had lower work stress scores than the average, experienced normal anxiety, and had moderate resilience scores. Work stress differs significantly depending on gender and contact frequency. Anxiety and contact frequency are significantly different, as are resilience and contact frequency. Work stress and anxiety have a considerable positive correlation. However, it should be noted that the sample was less diverse, and the number of participants was small. This study also presents the perspective of a psychiatric nurse.

We emphasize the findings in this study that psychiatric nurses need infection control guidance on infectious diseases such as COVID-19 in ward service settings in mental health hospitals because patients and nurses have the right to safety and comfort from disease transmission. Also, when a pandemic occurs, the nurses do not need a long time to adapt to the illness, so the well-being of patients with mental disorders is not disturbed. Even though the results show moderate work stress and normal anxiety, they also need local support from ward leaders or hospital management in increasing their mental resilience and overcoming their psychosocial problems during a pandemic. Future research should consider demographic variations, larger sample sizes, and government policies regarding infectious outbreak guidelines. Apart from that, the psychosocial problems of psychiatric nurses can also be further investigated when there is no pandemic.

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The Relationship between Metacognitive Beliefs with Clinical Belongingness and Resilience among Novice Nurses in Neonatal Intensive Care Units

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ABSTRACT (ENGLISH)

Background. The neonatal intensive care unit (NICU) is a sensitive ward for nurses. However, the low nurse-to-patient ratio has led to the hiring of novice nurses into the critical areas such as NICUs. These nurses are in need of help in the clinical environment as they have no much experience caring the neonates in the real clinical setting. Therefore, it is necessary to address the individual and psychological capacities with the help of which a person can overcome the difficult situations. This study aimed to investigate the relationship between metacognitions, clinical belongingness, and resilience of novice nursing staff in NICU wards. **Method.** This study is a descriptive-analytical study, and the research samples were composed of 78 novice nursing staff of Neonatal Intensive Care Units from teaching hospitals. Samples were selected via a purposive sampling method. Research tools included demographic, Wells and Hatton metacognitive beliefs, Jones Levitt belonging, and Connor–Davidson resilience questionnaires. SPSS 22 software was used for data analysis. **Results.** The mean score of metacognitive beliefs in novice nursing staff was 92.67 ± 13.69 , and it was 116.69 ± 19.11 for belongingness and 78.78 ± 14.73 for resilience. There is positive and significant relationship between metacognitive beliefs and belongingness ($p < 0.019$, $r = 0.265$). In addition, the relationship between metacognitive beliefs and resilience in novice nursing staff was positive and significant ($p < 0.001$, $r = 0.359$). **Conclusion.** There is a positive relationship between metacognitive beliefs with belongingness and resilience of novice nurses; nursing managers can consider educational metacognition workshops to enhance the sense of belongingness and resilience of novice nursing staff leading to improve their clinical performance in neonatal care.

FULL TEXT

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1. Introduction

Nurses are the first to recognize the risks and critical situations of infants and take action to address them in the Neonatal Intensive Care Units [1]. Nurses are one of the largest health care providers [2], but nursing shortage has led to the use of novice nurses in the health care system, who often enter real situations early, and caused job and environmental stress and reduced their satisfaction [1, 3]. In one study, the average ratio of nurses to infants in the Neonatal Intensive Care Unit in Tehran, the capital of Iran, one nurse for more than 4 babies, was reported [1]. Novice nurses have many problems in context, including having difficulty in concentrating, lacking focused attention, and failing to maintain moment-to-moment awareness. Novice nurses in clinical settings need help and do not know what is expected of them in real settings [4, 5]. In this way, they are not able to understand their situation and solve problems effectively [6]. However, novice nurses, in order to creatively solve problems, need skills that can help them in the proper and correct use of their information [7]. The novice nurses' past experiences acquired through their academic studies include factors to enhance them, and one factor is metacognition or having the talent or skill of metacognitive ability, which helps novice nurses use these experiences in new situations [8]. Metacognition is a

multifaceted concept that includes beliefs (knowledge), processes, and strategies that evaluate, monitor, or control cognition [9]. This knowledge is beliefs and theories held by people about their thinking, such as beliefs about the meaning of certain types of thoughts, the efficiency of memory, and cognitive control, and they are responsible for controlling healthy and unhealthy thoughts [10]. The results of some studies have shown that metacognitions are effective factors in the state of mental health. We can improve the situation by changing the metacognitions that increase the maladaptive ways of negative thoughts or increase the general negative beliefs [11, 12]. Thus, we can help people to structure their thinking and prepare themselves to accept their future roles [13]. Moreover, maintaining meaningful relationships with others is a permanent desire in humans, and people tend to communicate with each other for optimal performance [14].

The sense of belonging is one of the basic human needs that creates a sense of security and comfort. In general, people are trying to be accepted by others because the lack of communication with others has many cognitive, emotional, and behavioral consequences [15]. One nursing concept analysis defines the sense of belonging as the experience of a person's involvement in a system or environment so that a person feels that she is an integral part of that system or environment [16]. The absence of a sense of belonging can lead to problems such as low self-esteem and satisfaction, anxiety, depression, high level of stress, and increased tension in clinical practice [17, 18]. Belongingness is an important effect factor in workplace satisfaction, and this type of satisfaction is one of the main factors that determine nurses' resilience in difficult situation [19].

Resilience is one of the main abilities of humans enabling them to resist difficult conditions and mental pressures through effective adaptation to changes and stressful factors [20]. Warelo and Edward stated that 21st-century nurses need to skillfully develop their resilience to face professional challenges and ensure their mental health because resilience and resilient behaviors potentially help individuals to overcome negative experiences and turn these experiences into positive experiences [21].

Considering the annual employment of a large number of novice nursing staff in the medical care system and their predefined problems, it is necessary to provide solutions to improve their skills. The role of metacognition in solving problems, attitude towards problems, resilience against them, and clinical relevance in the path of gaining experiences and lack of research on the role of metacognition necessitates determining the role of each of these variables and in case of the presence of effective role to design programs to improve them. The lack of research studies that has investigated the relationship between metacognitive beliefs, belongingness, and resilience, especially in novice nurses, caused that this study was conducted to investigate the relationship between metacognition, belongingness, and resilience in novice nursing staff in Neonatal Intensive Care Units (NICUs).

2. Methods

The present study was a descriptive correlational study. The samples included 78 novice nursing staff working in Neonatal Intensive Care Units of three hospitals affiliated to Shiraz University of Medical Sciences. After obtaining permission from the Ethics Committee and Vice Chancellor for Research of Shiraz University of Medical Sciences, the researcher referred to the mentioned hospitals and selected the novice nursing staff who were eligible to enter the study by the purposive sampling method. It was decided that nurses with less than one year of work experience in NICU wards through the purposive sampling method entered the study. Other inclusion criteria for this study were as follows: having at least a bachelor's or master's degree in nursing or midwifery, working in the Neonatal Intensive Care Units of mentioned hospitals, and signing the informed consent form.

After obtaining informed consent from the samples, researcher provided the relevant questionnaires to novice nurses to complete. The ethics code of this research (IR.SUMS.REC.1400.217) was obtained from the Ethics Committee of Shiraz University of Medical Sciences.

In order to achieve the objectives of this study, demographic characteristic questionnaires, Wells and Hatton metacognitive beliefs, Jones Levitt belonging, and Connor–Davidson resilience questionnaires were used:

(1) *Demographic Information Questionnaire*. This questionnaire contains questions such as age, sex, marital status, field of study, and type of ward; the face validity of which has been approved by several professors and experts in neonatal nursing field.

(2) *Wells and Cartwright-Hatton Metacognitive Beliefs Questionnaire*. This questionnaire was designed in 2004 and has 30 questions in which each person answers four-choice questions (disagree, slightly agree, relatively agree, and strongly agree). These options are scored 1, 2, 3, and 4, respectively. This questionnaire has 5 subscales: cognitive conflict measures positive beliefs, cognitive self-awareness, uncontrollability, and the danger of thoughts and the need to control thoughts. A high score on this scale indicates a strong level of metacognition in the individual. A score between 30 and 60 indicates a weak level of metacognition, a score between 60 and 90 indicates an average level of metacognition, and a score between 90 and 120 indicates a strong level of metacognition in a person. Hatton and Wells have reported the Cronbach's alpha coefficient of this questionnaire and its components in the range of 0.72 to 0.93 and its retest reliability coefficient (with an interval of one month) of 0.73 [22]. Osoli et al. reported an internal consistency coefficient of 0.86 for this questionnaire [23]. Gharayeli and Saberi calculated the reliability of the tool using Cronbach's alpha test, which was 0.79, 0.77, 0.81, 0.80, and 0.83 for positive beliefs about worry, cognitive confidence, cognitive self-awareness, negative beliefs about the uncontrollability of thoughts, and beliefs about the need to control thoughts, respectively [24].

(3) *Levett-Jones Belongingness Questionnaire*. This questionnaire was developed by Levett-Jones and Lathlean in Australia in 2008. The questionnaire has 34 items and three subscales of self-esteem, continuity, and efficiency in the Likert scale with 5 options (1=never, 2=rarely, 3=sometimes, 4=often, and 5=always) [25]. A higher score indicates a greater degree of belongingness of the respondent to the clinical environment. The self-esteem subscale items include items 1, 3, 4, 7, 9, 10, 14, 17, 21, 23, 24, 27, and 33, and the subscale attachment includes items 8, 13, 15, 16, 25, 26, 28, 29, 30, and 34, and the subscale efficiency includes items 2, 5, 11, 18, 19, 20, 31, and 32. Items 6 and 12 do not include any subscales. The minimum and maximum scores are 32 and 160. This questionnaire has been translated and validated by Ashktorab et al. in Iran for the optimal use of other researchers. The stability of the tool was checked with the help of a test-retest, after two weeks and by completing the questionnaire by 25 nursing students and the internal consistency method using Cronbach's alpha method. The reliability of the tool was obtained by the test-retest repeatability method, $r=0.70$. Cronbach's alpha for the whole tool was 0.90 and it was 0.88, 0.75, and 0.84 for the subscales of self-esteem, coherence, and efficiency, respectively. In the Persian version, the terms 26 and 10 were removed from the dimension of attachment and self-esteem according to the results of the factor analysis and are not included in the analysis of the results [26]. This questionnaire has been translated and validated by Mohammad et al. in Malaysia for the optimal use by other researchers. Twenty items from the original tool to measure the participants' belongingness experiences with colleagues, twelve similar items to measure the participants' belongingness experiences with other members of the health care team at work, and eight items were created through a literature review of previous studies on nursing and organization. Then, the content validity of the final questionnaire was tested and evaluated by a group of nursing personnel from two different hospitals. The revised scale has a Cronbach's alpha value of 0.93, and in further analysis, it was (0.89), (0.83), and (80/0) for 20 items on colleagues, 12 items on other members of the health care team, and 8 items on the organization [27].

(4) *Connor-Davidson Resilience Scale*. This scale was developed by Connor-Davidson in 2003. This scale includes 25 items based on factor analysis; five subscales including individual competence and adequacy (8 items), tolerance of negative effects and strength against stress (7 items), positive acceptance of change (5 items), self-control (3 phrases), and spiritual effects (2 phrases) are assigned. Scoring is also based on the Likert scale between completely incorrect=0 and always true=5. The maximum score is 100 and the minimum score is 0. For Connor-Davidson Resilience 25 questions, Normah in Iran showed that Cronbach's alpha coefficient of all questions is 0.88. The questions have good consistency with 8 questions which were 0.81 and 0.76, respectively, and Cronbach's alpha reliability coefficients for the subscales of stubbornness, belief, and optimism were reported to be 0.60, 0.55, and 0.36, respectively [28]. Javadian and Fathi reported the reliability of the resilience scale using Cronbach's alpha method as 0.86 [29]. Regarding its validity, using the factor analysis method, the calculation of each score with the total score showed that, except for the three questions that were higher, the coefficients of the other questions were between 0.51 and 0.61 [30].

2.1. Ethical Considerations

Ethical approval was obtained from the Local Research Ethics Committee of Shiraz University of Medical Sciences, Iran (Approval No. IR.SUMS.REC.1400.217). In the beginning, a verbal description of the study objectives was provided for novice staff and after the assurance of the confidentiality of their information, the written informed consent was obtained from participants.

3. Results

From 78 novice nursing staff working in Neonatal Intensive Care Units (NICUs), 43.6% of the staff are working in internal wards of NICUs with 93.5% of the novice nursing staff aged less than 31 years. All novice nursing staff in NICUs were female (no male nurses have worked in the Neonatal Intensive Care Units during this study) and 55.1% of them are single. The majority of these staff (97.4%) had a bachelor's degree (Table 1).

Table 1

Demographic characteristics among novice nursing staff of neonatal intensive care units.

Variables	Category	Frequency	Percentage
Age (years)	20–25	26	33.3
	26–30	47	60.2
	31–35	5	6.4
	36–40	-	-
Gender	Female	78	100
	Male	0	0
Marital status	Single	43	55.1
	Married	35	44.9
Education	Bachelor	76	97.4
	Master or PhD	2	2.6
Total	78	78	100

The lowest score recorded for metacognition in novice nursing staff was 63 and the highest score was 125 with an average of 92.67, which indicated the high score of metacognitions. The lowest recorded score for the belongingness in novice nursing staff was 46 and the highest score was 141 with an average of 116.69, which indicated high belongingness in novice nursing staff. The lowest score of resilience in novice nursing staff was 14 and the highest score was 95 with an average of 72.87, which indicated high resilience in novice nursing staff (Table 2).

Table 2

The means and standard deviations of metacognition, belongingness, and resilience among novice nursing staff in NICUs.

Variables	N	Min. Score	Max. Score	Mean	SD
Metacognition	78	63	125	92.67	13.69
Belongingness	78	46	141	116.69	19.11
Resilience	78	14	95	72.87	14.73

Given the quantitative nature of the two indicators, Pearson's correlation test was used to determine the relationship between metacognition and belongingness. Pearson correlation coefficient of 0.265 shows a positive relationship between metacognition and belongingness. The significance level of Table 3 ($p < 0.05$) shows the significance of this correlation coefficient at the 5% error level. In general, the results show that there is a relationship between metacognition and the belongingness of novice nursing staff in NICUs. Also, given the quantitative nature of the two indicators, Pearson's correlation test was used to determine the relationship between metacognition and resilience. Pearson correlation coefficient of 0.359 shows a positive relationship between metacognition and resilience. The significance level of the above table ($p < 0.001$) shows the significance of this correlation coefficient at the 5% error level. In general, the results show that there is a relationship between metacognition and the resilience of novice nursing staff in NICUs (Table 3).

Table 3

The relationship between metacognition with belongingness and resilience among novice nursing staff in NICUs.

Variables	Description	Belongingness	Resilience
Metacognition	Correlation coefficient	0.265*	0.359
Significance level	0.019	0.001	No.

*Pearson correlation coefficient test.

According to the correlation coefficient ($r = 0.265$), the relationship between metacognition and belongingness is positive and significant (Figure 1).

[figure(s) omitted; refer to PDF]

According to the correlation coefficient ($r = 0.359$), the relationship between metacognition and resilience is positive and significant (Figure 2).

[figure(s) omitted; refer to PDF]

4. Discussion

This study examined the relationship between metacognition with belongingness and resilience in novice nursing staff in Neonatal Intensive Care Units in three hospitals. The results showed that there was a significant relationship between metacognition and belongingness. The results of this research are consistent with the study of Mousavi and Alvani [31] and Chamanabad et al. [32]. In fact, nurses involved in difficult issues and problems need to simultaneously use metacognition to understand concepts, find creative solutions, and make the decision, as well as belongingness to increase clinical skills. Both of the abovementioned variables will help nurses in difficult situations; thus, the two skills will help to solve problems more favorably. Some studies have shown that cognitive skills and knowledge enable people to understand concepts, solve problems, and make decisions [33, 34]. In other words, through metacognition, novice nursing staff can solve their problems when problems arise and cause confusion. This power in solving problems and overcoming problems increases the sense of belonging as an important factor in clinical learning.

The results showed that there was a significant relationship between metacognition with resilience. In a study by

Han in Korea, a significant relationship was established among metacognition, shared leadership, and resilience [35]. This study was consistent with the results of Hasani's study [36] and the study of Yoosefi and Karimipoor [37]. In explaining these findings, it can be said that belief and awareness of individual abilities and inabilities, which are considered to be part of the characteristics of the metacognition system, strengthen motivation, and initiate a series of actions to win the task. Before a person chooses a job and starts his or her efforts, she/he first collects and evaluates information about his or her capacities and abilities in that particular case. Doing this step allows him/her to consciously review themselves, whether she/he can adapt to perform a certain behavior in the face of problems or not. Also, it is also specified that how much she/he will try despite the existing problems and how long she/he will continue efforts in the specific field. In these conditions, people will achieve sufficient self-efficacy (characteristic of resilience) and will be able to cope with unpleasant or complex events more effectively, and finally, optimism and positive thinking will become active in the resilience process. By achieving resilience, people are more steadfast in their efforts, they have more confidence in their abilities, they do not drown in the waves of their doubts, they persevere in doing their tasks, and often the result of their performance is at a high level. Also, the activation of positive metacognition makes people less tense. It should be noted that the experience of tension in people causes them to engage in incompatible coping strategies (avoidance and suppression of thoughts) and the use of these strategies intensifies stress and negative emotions. This process makes people overestimate environmental threats and not have the ability to deal with problems, and this leads to a decrease in their resilience; therefore, it can be concluded that having metacognition knowledge can increase resilience.

The main limitation of this research is that the results cannot be generalized due to the small number of samples and hospitals.

5. Conclusion

This study showed that there is a significant relationship between metacognitive beliefs with clinical belongingness and resilience of novice nursing staff in NICU wards. In other words, the more metacognition a novice nurse has in the clinical environment, the better her/his belongingness and resilience. This also increases the belongingness to the clinical environment and increases the motivation of novice nursing staff to learn at the clinic. Therefore, it is suggested that health professionals improve the clinical belongingness and resilience of novice nursing staff in NICUs by developing training programs for novice nurses to increase the quality of care for neonates through the increasing of belongingness and resilience in nurses.

Disclosure

This article was extracted from M.S. thesis of the second author.

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DETAILS

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Psychometric Evaluation of the Postoperative Recovery Profile

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ABSTRACT (ENGLISH)

Aim. To further evaluate the postoperative recovery profile regarding its psychometric properties. *Background.* The postoperative recovery profile is an instrument for the self-assessment of general postoperative recovery that has received increased attention within nursing research. However, psychometric evaluation during development was sparse. *Design.* Psychometric evaluation was done using classical test theory. *Method.* Data quality, targeting, reliability, and scaling assumptions were measured. In addition, confirmatory factor analysis was used to evaluate construct validity. Data collection was made during 2011–2013. *Result.* Data derived from this study showed acceptable quality; however, item distribution was skewed, with ceiling effects in the majority of items. Cronbach's alpha showed high internal consistency. Item-total correlations indicated unidimensionality, whereas six items demonstrated high correlations pointing at redundancy. The confirmatory factor analysis confirmed problems related to dimensionality as the five proposed dimensions were highly correlated with each other. Furthermore, items were largely uncorrelated with the designated dimensions. *Conclusion.* This study shows that the postoperative recovery profile needs to be further developed to serve as a robust instrument within nursing as well as medical research. Arguably, values from the instrument should not be calculated at a dimensional level for the time being because of discriminant validity issues.

FULL TEXT

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1. Introduction

Recovery after a surgical intervention has different meanings depending on whom it concerns. For the anesthesiologist, recovery means the return of vital reflexes when awakening from anesthesia [1, 2]. For a surgeon, short-term recovery equals home-readiness, while long-term recovery is conditioned by normal functioning and the resumption of normal, daily activities [3]. Consequently, there are several instruments measuring postoperative recovery from different points of view. However, patient-reported outcomes (PRO.s) are of utmost importance when measuring postoperative recovery; consequently, several instruments have been developed with that purpose during the past decades.

Patient-reported outcomes are measures that concern patients' health, quality of life, or functional status associated with healthcare or treatment and are reported by patients themselves [4]; (p.62). Acknowledging PROs can contribute to the delivery of high-qualitative, patient-centred care, and for this purpose, the need for patient-reported outcome measures (PROM) have increased. Using PROMs will provide a better understanding about the impact surgery has on patients' lives [5]. This, together with medical improvements, can advance the field of surgical care. Within the sphere of surgical research, there are numerous PROMs frequently used, for example, the Medical Outcome Study 36-Item Short-Form Health Survey (SF-36) [6]; the EuroQoL 5-Dimensions (EQ-5D) [7]; and the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC-QLQ) [8]. However, these are generic measures of health and should not be used if postoperative recovery is the specific outcome of interest. Instead, instruments that are developed with that specific purpose needs to be used and, most importantly, such instruments should be valid and reliable. Despite this, the majority of instruments are claimed to fail in robustness, leading to uncertainties when using the information provided [9]. In a systematic review aiming at evaluating psychometric properties of PROMs used in research for measuring recovery after abdominal surgery, Fiore et al. [10] found 22 different PROMs. In the review, 74% of the PROMs received only poor or fair quality ratings. Most frequently appraised were the three versions of quality of recovery (QOR-9, QOR-15, and QOR-40) and the abdominal surgery impact scale (ASIS); however, both instruments showed significant limitations regarding psychometric properties, except for the ASIS, which showed a high content validity. The use of PROMs for the evaluation of postoperative recovery is highly relevant. However, using instruments that are developed for a different reason or are poorly functioning might be counterproductive and result in low-quality care and reduced opportunities for enhancing patients' recovery. Most importantly, it will not benefit the patients.

One PROM that has increased in use within nursing research during recent years is the postoperative recovery profile (PRP) by Allvin et al. [11]. The instrument has been used for patients recovering from general and orthopedic surgery [12–15], heart and lung transplantation [16, 17], upper abdominal cancer surgery [18], gastric bypass [19], colorectal cancer surgery [20–22], trauma [23], and coronary artery bypass grafting [24]. The PRP was developed in Sweden, but the instrument has also been translated and used in the United States [25]. In the systematic review by Fiore et al. [10], the PRP received high ratings regarding content validity, but it could not be judged regarding another psychometric aspect since information in published studies from the development was missing. The PRP was developed based on a concept analysis that provided a definition of postoperative recovery [26] as well as from focus group interviews with patients, nurses, and surgeons describing their understanding of postoperative recovery [27]. From the formulated definition and subsequent interviews, the developers selected 19 items and divided them into five dimensions. The PRP was assigned features to serve as a multi-item, multidimensional instrument for the self-assessment of general recovery after surgery. The PRP has been evaluated regarding content and face validity, reliability, and construct validity. The initial evaluation resulted in a minor revision of the layout, and the instrument showed high test-retest reliability [11]. Construct validity was tested on the final version pointing at a good construct validity [28]. However, later studies using the PRP have expressed concerns, especially about the scoring procedure when analyzing and interpreting results from the PRP, suggesting that the scoring might be insensitive, both at the item and dimensional levels [20, 21]. Further potentially problematic issues arise from reviewing the developmental process in more detail. First, despite some reported validity and reliability issues for two of the 19 initial items (*appetite changes* and *interest in surroundings*), all items were included in the final version of the instrument [11]. Second, it is unclear how the items were divided into five dimensions as that process is not described. Furthermore, the objective behind the scoring procedure at a dimensional level is not explained or justified.

The increasing use of the PRP within nursing research demonstrates a continuing need for an instrument that adequately measures PRO after surgery. However, to ensure the trustworthiness of studies building their results on the PRP, the instrument needs additional evaluation.

2. Methods

2.1. Aim

This study aims to further evaluate the postoperative recovery profile regarding its psychometric properties.

2.2. Design

A psychometric evaluation of a 19-item questionnaire intended to measure postoperative recovery.

2.3. Participants

This study utilizes data from a larger data collection prospectively following the recovery process in patients after colorectal cancer surgery. A consecutive recruitment was made at a university hospital in Sweden. Eligible patients had a cancer in the colon or rectum and were planned to undergo surgery to remove the tumor. Hence, participants were recruited at their preoperative informational visit before surgery. The inclusion criterion was the ability to understand and respond to the instrument in Swedish.

2.4. Data Collection Procedure

Patients who agreed to participate received the PRP instrument one month after surgery. The PRP was distributed by regular mail together with a prepaid envelope for return. Two reminders were sent to those who did not return the instrument.

2.5. Instrument

The PRP consists of 19 items that represent symptoms that can arise during the postoperative recovery process, for example, *pain*, *nausea*, or *problem with emptying the urinary bladder*. The items are formulated as statements, and patients are asked to indicate how much they experience each symptom, for example, “right now I feel a pain that is....” The response alternatives are “none,” “mild,” “moderate,” and “severe.” The recommended scoring at the item level is made by counting all the items responded to by “none.” The number of “none” responses constitutes an indicator sum and equals the level of recovery (Table 1). In order to assess recovery at a dimensional level, the

developers have described that level of recovery in each dimension should be based on the most severe problem reported by the patient [29]. For example, the dimension *physical function* includes five items. According to the proposed scoring procedure, level of recovery should be assessed as “severe” if the patient reports “none,” “none,” “severe,” “mild,” and “mild” since the most severe problem direct the scoring.

Table 1

Correspondence between number of items responded by “none” and level of recovery constituting the original scoring procedure as recommended by Alvin et al. [28].

Number of items	Level of recovery
19	Fully recovered
15–18	Almost fully recovered
8–14	Partly recovered
7	Slightly recovered
0–6	Not at all recovered

The instrument has a second version with 17 items instead of 19. It excludes the items concerning *sexual activity* and *reestablishing everyday life* and is intended to measure recovery while patients are hospitalized. For this current study, the version with 19 items was used since included patients responded to the instrument after discharge from hospital.

2.6. Data Analysis

According to the original recommended scoring procedure of the PRP at an item level, as described above, recovery should be evaluated by calculating an indicator sum based on items responded by “none.” However, there have been concerns about this scoring procedure because it excludes all possible answers except the “none” answers. To better reflect the full range of recovery, the scoring procedure at the item level was revised in this current study to include all response alternatives. Hence, a total score was calculated according to the following: “severe”= 1, “moderate”=2, “mild”=3, and “none”=4. Thus, the total score could range between 19 and 76. A higher total score means better recovery. Current study did not propose a revised scoring procedure at the dimensional level.

The data were initially analyzed using classical test theory (CTT) to explore data quality, targeting, reliability, and scaling assumptions. In addition, a confirmatory factor analysis (CFA) was performed to evaluate construct validity. Classical psychometric tests were made using the IBM SPSS Statistics (version 28) and the CFA using IBM SPSS Amos (version 28).

2.7. Data Quality

A high proportion of missing data leads to uncertain results. Therefore, data quality was examined regarding missing data for items and computable scale scores. The proportion of missing data for items should be less than 10%, and in case of missing items, the scale score was considered as computable if more than 50% of the items were completed [30].

2.8. Targeting

In order to evaluate whether the PRP instrument targeted the full variance within the sample, floor and ceiling effects as well as skewness were calculated. Floor and ceiling effects were considered as present if the proportion of answered response alternatives exceeded 20%. Furthermore, the skewness range should be between –1 and 1 [30, 31].

2.9. Reliability

Because this study is based on previously collected data, no test-retest reliability was measured. Therefore, reliability was measured only regarding internal consistency using Cronbach's alpha. Alpha coefficients >0.8 were considered as acceptable [30, 32].

2.10. Scaling Assumptions

In a unidimensional scale, all items contribute equally to the total score. Furthermore, Likert-based items can be legitimately summed if they have approximately the same mean values and standard deviations (SD) [30]. To evaluate this, item response distributions were reviewed. In addition, item-total correlations were calculated. The correlation values were considered as satisfactory when ranging between 0.40 and 0.70 [31].

2.11. Construct Validity

To examine construct validity of the PRP dimensions and how well items represented the dimensions, a CFA was performed. Cases with missing items were excluded from the CFA; thus including 122 cases.

To indicate how well the five dimensions, proposed by Allvin et al. [28], fitted the sample data, the model fit was assessed using relative/normed chi-square statistics (CMIN/DF), goodness-of-fit statistics (GFI), adjusted goodness-of-fit statistics (AGFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Furthermore, a comparative fit index (CFI) was used to test the hypothesis that all dimensions in the model were uncorrelated, thus pointing at good discriminant validity [33, 34]. Table 2 present the thresholds for model fit. In addition, correlations between dimensions as well as item loading scores were examined. As the PRP is supposed to be multidimensional, assessing different aspects of postoperative recovery, its dimensions were expected to be uncorrelated with each other. In contrary, the items within each dimension were expected to show high correlations with their respective dimension. Correlations between dimensions should therefore not exceed 0.80, and item loadings should be above 0.70.

Table 2

Model fit measures with recommended thresholds.

Measure	Results	Thresholds [†]
CMIN/DF	1.898***	<3 good
CFI	0.895	>0.95 great, >0.9 acceptable, and >0.8 sometimes acceptable
GFI	0.810	>0.95
AGFI	0.746	>0.8
SRMR	0.0672	<0.09
RMSEA	0.086***	<0.05 good, 0.05-0.1 moderate, and >0.1 bad

[†]Thresholds as recommended by Hu and Bentler [34]. ***p value <0.001.

2.12. Ethical Considerations

The study was approved by the Swedish Ethical Review Authority before the study started (No. 2011/451; 2021-06818-02). It was also conducted in line with the ethical principles expressed in the Declaration of Helsinki [35]. All eligible patients were approached with verbal and written information containing the aim of the study, a description of the study procedure, an assurance of confidentiality, and the right to withdraw at any time. Patients who did not return the instrument despite two reminders were considered as having withdrawn and did not receive further reminders.

3. Results

In all, 154 patients participated in the study. Those were equally distributed based on gender with a mean age of 69.4 years (SD 10.9). The majority of patients had undergone a low anterior resection of the rectum. Further participant characteristics are displayed in Table 3. Results from the psychometric evaluation are presented below.

Table 3

Patients' characteristics.

Characteristics	
Gender (<i>n</i> , %)	
Male	79 (51.3)
Female	75 (48.7)
–	
Age (years)	
Mean (SD)	69.4 (10.9)
–	
Length of stay (days)	
Mean (SD)	10.1 (4.9)
–	
Duration of surgery (minutes)	
Mean (SD)	276.9 (119.7)
–	
Type of surgery (<i>n</i> , %)	
Low anterior resection of rectum	59 (38.3)
Abdominoperineal rectal resection	31 (20.1)
Colectomy	2 (1.3)
Left-sided hemicolectomy	5 (3.2)
Right-sided hemicolectomy	34 (22.1)
Sigmoid resection	23 (14.9)

–	
PRP total score [†]	
Mean (SD)	61 (10.5)
Md	64
Min-max	27–76

PRP: the postoperative recovery profile, [†]total score was used as a scoring procedure in the current study.

3.1. Data Quality

The percentage of missing data for items was acceptable varying from 0 to 1.9%, except for the item *sexual activity*, which had 15.6% missing data (Table 4). The proportion computable scale score was 79.2%.

Table 4

Descriptive statistics for the items within the PRP instrument.

Item	Frequency distribution of response categories [†] , %				Missing, n(%)	Valid, n(%)	Item mean	Item SD	Md	Skewness	Item-total correlation
1	2	3	4	#1. pain	2.0	13.8	45.4	38.8	2 (1.3)	15.2 (98.7)	3.21
0.751	3	–0.653	0.515	#2. Nausea	0.6	5.2	15.6	77.9	1 (0.6)	15.3 (99.4)	3.72
0.590	4	–2.174	0.509	#3. Gastrointestinal function	4.5	13.6	33.1	46.8	3 (1.9)	15.1 (98.1)	3.25

0.864	3	-0.93 8	0.35 5	#4. Fati gue	3.2	32.5	45.5	17.5	2 (1. 3)	15 2 (98 .7)	2. 78
0.771	3	-0.04 3	0.65 5	#5. Mus cle wea knes s	3.9	22.1	48.1	26.0	0 (0)	15 4 (10 0)	2. 96
0.799	3	-0.39 6	0.65 5	#6. App etite chan ge	5.8	13.0	34.4	46.8	0 (0)	15 4 (10 0)	3. 22
0.887	3	-0.96 1	0.63 1	#7. Slee ping diffic ultie s	7.1	22.1	35.1	35.7	0 (0)	15 4 (10 0)	2. 99
0.932	3	-0.52 6	0.59 8	#8. Anxi ety and worr y	7.1	16.9	30.5	44.8	1 (0. 6)	15 3 (99 .4)	3. 14
0.946	3	-0.79 8	0.72 7	#9. Feeli ng dow n	7.8	13.0	31.2	46.8	2 (1. 3)	15 2 (98 .7)	3. 18
0.945	3	-0.95 0	0.76 9	#10. Ree stabl ishin g ever yday life	11.0	22.7	37.7	27.9	1 (0. 6)	15 3 (99 .4)	2. 83

0.965	3	-0.408	0.709	#11. Sexual activity	22.1	9.7	14.9	37.7	24 (15.6)	130 (84.4)	2.81
1.258	3	-0.436	0.530	#12. Social activities	5.2	14.9	31.2	46.8	3 (1.9)	151 (98.1)	3.22
0.894	3	-0.900	0.725	#13. Personal hygiene	5.2	20.8	73.4	99.4	1 (0.6)	153 (99.4)	3.69
0.567	4	-1.650	0.646	#14. Interest in surroundings	1.3	3.9	9.7	83.8	2 (1.3)	152 (98.7)	3.78
0.574	4	-2.937	0.536	#15. Bladder function	3.9	9.1	20.8	64.9	2 (1.3)	152 (98.7)	3.49
0.822	4	-1.554	0.442	#16. Mobilization	2.6	13.0	35.7	48.1	1 (0.6)	153 (99.4)	3.30
0.795	3	-0.913	0.729	#17. Feeling lonely/abandoned	2.6	8.4	18.8	70.1	0 (0)	154 (100)	3.56

0.758	4	-1.73 0	0.71 3	#18. Dep end ence on othe rs	1.3	11.7	23.5	54.5	0 (0)	15 4 (10 0)	3. 40
0.746	4	-1.00 3	0.67 4	#19. Diffi culti es in conc entr ation	0.6	8.4	32.5	57.8	1 (0. 6)	15 3 (99 .4)	3. 48

n=number; SD=standard deviation; md=median; †response categories were 1=severe, 2=moderate, 3=mild, and 4=none.

3.2. Targeting

Regarding the total score, there were no floor and ceiling effects present (0.6% and 3.9%, respectively). However, the item distribution was skewed (-1.167) with a total mean score (62.27) close to the maximum value. Reviewing each item revealed considerably high proportion of ceiling effects in all items except one (ranging from 17.8% to 84.9%), pointing to the instrument being unspecific (Table 4).

3.3. Reliability

Cronbach's alpha was 0.927, indicating high internal consistency in the sample. If the item *gastrointestinal function* was deleted, the alpha would only be slightly improved (0.929).

3.4. Scaling Assumptions

In general, mean scores were high (ranging from 2.78 to 3.78), but item response distributions showed relatively equivalent mean scores and SDs, justifying the items to be summed. One item, *sexual activity*, presented an SD of 1.258, which was considerably higher than those for other items. Item-total correlations exceeded 0.40 for all items except one with a slightly lower, but still acceptable, correlation (0.355). This indicates that the instrument might be unidimensional. Moreover, there were six items with a correlation >0.70, indicating a potential redundancy (Table 4).

3.5. Construct Validity

In the CFA, model fit showed a generally acceptable fit to sample data (Table 2). The GFI and AGFI were lower than the desirable amount. The CFI was close to acceptable.

As displayed in Figure 1, high correlations between dimensions were shown, except between the dimension physical function and dimension psychological function (0.71) and between the dimension psychological function and dimension social function (0.79). Furthermore, most items showed low correlations with their respective dimensions. The highest correlations were seen for item 8 (*anxiety and worry*) and item 9 (*feeling down*) and the dimension *psychological function* (0.88; 0.93), proving them useful for measuring the psychological aspects of recovery. Moreover, item 12 (*social activities*) showed acceptable correlation with the designated dimension *social function* (0.80).

[figure(s) omitted; refer to PDF]

4. Discussion

The study by Fiore et al. [10] indicates that there is an apparent risk that weak instruments are being applied in research and for clinical decision making. When the PRP was developed, it initially demonstrated promising results regarding its psychometric properties, but it was never fully evaluated. The results from this study clearly show that the PRP has potential but needs to be further developed.

A good instrument should have the ability to target the full variance within the sample. If not, valuable information is lost. Therefore, the previously suggested scoring procedure, namely counting the “none” responses to produce an indicator sum, is problematic as it only considers one response option. Hence, targeting becomes limited. In addition, by using such a scoring procedure, it could be argued that one does not measure postoperative recovery. Instead, it measures patients that are more or less fully recovered, and doing so is of minor scientific and clinical value. Scientifically, there is a need to discover the normal pattern of recovery, and clinically, there is a need to identify patients who do not follow the expected, normal pattern. In this study, the total score was calculated, and the results showed that the data had a positive skewed item distribution. Although there were no ceiling effects regarding the total score, the total mean was close to the maximum score. At an item level, there was a considerable high proportion of ceiling effects for almost all items. This is another argument for not using the previously proposed scoring procedure, only accounting for the “none” options, but beyond that, the results suggest that the scaling does not satisfy criteria for acceptability [30]. Despite changing the scoring procedure, there are still problems with covering the entire range of the scale. It might be that the response options are too few, although it has been discussed whether an increase in the number of response options will enhance validity if the response options are unable to distinguish differences [36]. If going forward with the development of the PRP, it would be beneficial to test an expansion of the response alternatives to include at least five options as well as check that the wording of the items functions as intended. Skewness and ceiling effects could, of course, also depend on the respondents feeling quite well one month after surgery and therefore selecting the “none” response alternative more frequently, although, this is not the most likely explanation, as colorectal cancer surgery is a major procedure. Despite ceiling effects at the item level, all response alternatives were used for all items. In addition, there was an acceptable rate of missing items, pointing to good data quality. One exception was the item measuring *sexual activity*. This item demonstrated a high proportion of missing answers. Questions concerning sexuality are known to be sensitive and sometimes experienced as intrusive. Consequently, respondents might refrain from answering [37]. Earlier research has acknowledged sexuality as a problem area after colorectal surgery that is often disregarded by healthcare [38, 39]. Therefore, questions about sexuality and sexual function should be asked in a proper way to encourage respondents to answer. This underpins the importance of checking the wording of items during an instrument’s development, for example, by conducting cognitive interviews.

The PRP was developed as a multidimensional instrument that includes five dimensions. However, it is not described anywhere how the division was made, and in this study, item-total correlations showed signs of unidimensionality. The following CFA confirmed problems with discriminating dimensions as the proposed dimensions were strongly correlated with each other. This indicates that the dimensions cannot be calculated separately because they likely do not reflect different aspects of recovery. In addition, most items had low correlations with their designated dimensions, which means that they are weak indicators. The PRP is intended to measure aspects of postoperative recovery. However, theoretical conclusions that can be drawn from such models are dependent on the direction of the causality between items and dimensions, and misspecification can lead to Type I or Type II errors [40]. Because the multidimensionality of the PRP is associated with great uncertainty, recovery should not be calculated at a dimensional level when using the current version of the PRP.

4.1. Methodological Limitations

A potential methodological limitation is the relatively low sample size ($n=154$). According to the COSMIN study design checklist, a sample of at least 100 persons would be sufficient to produce methodologically sound estimates [41]. Regarding the CFA, it has been argued that model fit measures are sensitive to sample size. For example, chi-square statistics performed in large samples tend to reject the models, whereas small samples result in lack of statistical power. However, the measures for model fit that were reported in this study function well with small samples [33].

5. Conclusions

The PRP is an instrument that has shown promising properties during development and initial testing. However, the results of this study indicate that the instrument needs to be further developed and undergo a thorough psychometric

evaluation before it can be used as a reliable and valid tool. As a suggestion, future studies should test measurement functioning in more depth, preferably using modern test theory. Furthermore, future studies should also focus on a revision of the scoring procedure at a dimensional level. However, discriminant validity issues need to be solved first, and meanwhile, recovery should not be calculated or reported at a dimensional level.

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Discharge against Medical Advice at a Teaching Hospital in Ghana

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ABSTRACT (ENGLISH)

Introduction. Discharge against medical advice is a global phenomenon where patients voluntarily terminate their consent to medical care before the medical team declares them fit for discharge. The phenomenon adversely affects the delivery of quality health care. **Methods.** A retrospective study was conducted at a Ghanaian teaching hospital involving patients who were admitted to the emergency settings within a 2 years period. Data were retrieved from the hospital records and patients discharged against medical advice were identified and studied. Data were cleaned and coded with Excel application and analyzed with SPSS version 23. **Results.** A total of 8,565 admissions were made into the ward within the period under review with 210 patients been discharged against medical advice. The prevalence rate was 2.5% with high prevalence seen in male and younger populations. Fractures and head injuries were the commonest conditions for which patients requested to be discharged against medical advice, whilst financial constraints and preference for herbal treatment were the major factors for which patients requested to be discharged against medical advice. **Conclusion.** Discharge against medical advice exists and negatively affects the delivery of quality health care in the Ghanaian health sector. Education especially towards at-risk groups such as the younger populations and patients with fractures as well as effective communication between medical team and patients and their families are some proposed measures to reducing the prevalence and negative impacts associated with discharges against medical advice.

FULL TEXT

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1. Introduction

Often times, physicians are challenged with patients and family who demands to be discharged home when it is obvious the conditions are not medically fit for discharge [1]. Discharge against medical advice (DAMA) is a global phenomenon with a prevalence rate of more than 2% of all hospital admitted cases according western literature. The prevalence rates may range from 0.3% to 25.9% depending on factors such as geographical history, medical condition, and social status of patients [2]. In comparison, DAMA cases are reportedly higher in developing countries than developed nations. A study conducted in Nigeria reported that, 53.1% of participants requested DAMA within the first 24 hrs of admission [3].

DAMA is defined as the situation where by a patient and family abruptly terminate their consent to treatment and hospitalization before the medical team declares them fit for discharge. The situation usually present as an ethical dilemma to the medical team, considering the patients autonomy to treatment and the medical team's intention to do good [4].

Terminating treatment before being medically fit has unavoidable consequences. Individuals discharged against medical advice forms an at-risk group of both mortality and morbidity [5]. Asthmatic patients who were discharged against medical advice had a four times higher risk of returning to the emergency unit within a month. Most often than not, patients who leave against medical advice return to the health facility with almost always the same illness for which they were initially admitted [6]. In a retrospective study of patients with myocardial infarction (MI), patients who were discharged against medical advice had a 40% higher risk of death or readmission for MI or angina within two years of after discharge.

Several factors compel patients to seek discharge against medical advice. Understanding these factors enables health providers to identify patients at higher risk of seeking DAMA and into intervene appropriately [4]. Cost of treatment, hospital protocol, lack of health insurances, preference of other treatments to modern medicine, fear of amputation, and treatment near home were cited as the major reasons patients seek DAMA [7].

Some prevention strategies to help reduce the prevalence of DAMA have been reported in various literatures. Health providers are advised to formulate management plans that includes the patient in his or her care. Including patients in clinical decisions can help address their extraclinical concerns leading to an agreement with management plan [6]. A 30% decrease in DAMA was reported when a nurse plays the advocacy role for psychiatric patients. The

responsibilities of the nurse advocate was to address patients' concerns and fears about their admission [4]. Positive attitudes to clients, reducing waiting time at health facilities and involving social workers have been identified as some factors to reduce the incidence of DAMA [6].

The phenomenon of DAMA has not been adequately explored in Ghana [8], this study therefore seeks to lay the foundation for future studies on discharge against medical advice. The study seeks to explore the prevalence of DAMA in a Ghanaian tertiary health care facility, the at-risk groups for DAMA and the factors that compels patients and families to request for DAMA.

2. Methods

2.1. Study Design

A descriptive retrospective study was conducted involving a review of admissions into the accident and emergency unit from January 2020 to December 2021. Patients who were discharged against medical advice, children, adults and the aged, were identified and included in the study. However, patients who requested for DAMA and later rescinded on their decision upon counselling from the medical team were excluded from the study.

2.2. Study Settings

The study was conducted at the Accident and Emergency unit of the Tamale Teaching Hospital, a Tertiary Health Care referral facility located in Tamale, the administrative capital of the northern region of Ghana. The hospital was established in 1974 to serve as a regional hospital for the northern region. In 2005, the Ministry of Health, Ghana Health Service (GHS) in partnership with the northern regional coordinating council upgraded the facility to a Teaching Hospital, the third in Ghana. The facility serves as the main referral center for the five regions of the north and sections of volta and Ahafo regions [9].

As the third largest tertiary health facility in the country, the hospital has specialized medical, surgical, and gynecological departments. As a teaching hospital, the facility engages in the training of all caliber of health personnel as well as a center for medical research.

The accident and emergency ward is an international standard emergency ward with approximately 50 bed capacity. The accident and emergency ward follows the international triaging system, where patients are categorized and attended to according to the severity of their conditions. The ward is divided into four units, often referred to as zones which includes triage, red, orange, and yellow zone. The triage zone is the unit where patients reporting to the facility are received, attended to, and sorted according to the severity of their conditions. The red zone refers to the resuscitation room for emergency management. Patients admitted into the red zone should obtain a triage score of 7–9. Orange zone refers to the patient waiting area for urgent management. To be admitted into this zone, patients should obtain a triage score of 5–6. The yellow zone refers to the patient waiting area for management. Patients must obtain a triage score of 3–4 to be admitted into this zone [10]. Patients are into the various zones according to the severity of their conditions which is decided by their triage scores. The ward receives cases referred from the various regions of the north and sections of volta and Ahafo regions. The ward manages both adult and paediatric medical and surgical conditions.

The Ghanaian health systems uses the national health insurance system, where subscribers are expected to be provided with some basic services at a cost covered by the insurance providers. However, challenges confronting the insurance system results in subscribers paying out of pocket for services such as medications, laboratory investigation, and treatment [11].

2.3. Sample Size Determination

All patients who requested for DAMA at the accident and emergency ward and were discharged against medical advice during the period under review were included in the study. This was obtained by reviewing electronic records that were obtained at the time of granting the DAMA request.

2.4. Data Analysis

Data retrieved from the records department of the facility was analyzed. Data was first entered into Excel application, cleaned, coded, and transferred into Statistical Package for Social Sciences (SPSS) version 23 for analysis.

2.5. Ethical Consideration

Before the data was retrieved and analyzed, permission was requested from the management of the facility to use the data. Permission was subsequently granted before the analysis proceeded. However, been a retrospective study, the authors lacked the opportunity to seek consent from individual patients as they had already been discharged during the study.

3. Results

3.1. Participant's Demographics

A total of 8,565 admissions were made into accident and emergency ward within the 2 year period under review. A total of 210 patients requested and were discharged against medical advice, a total of 165 of the patients who were discharged against medical advice were males. This constitutes 78.6% of the total DAMA patients. The female population was 42 patients, representing 20.3% of patients. Most of the patients who were discharged against medical advice were the middle age population. Patient below the ages of 50yrs were 159, which constitutes a vast 84.5%. The elderly population, those above the age of 50yrs constitutes the remaining 15.5%.

For educational level, patients whose consent forms were signed were regarded as been educated whilst those whose consent forms were thumb printed were regarded as not educated. In this regard, 33.3% of patients discharged against medical advice were educated whilst 26.2% had no formal education. The results are presented in Table 1.

Table 1

Patient demographics.

Demographics	Frequency	Percentage (%)
Gender		
Males	165	78.6
Female	42	20.3
Missing	3	1.2
Total	207	98.8
—		
Age		
0–10	17	8.1
11–20	28	13.3
21–30	51	24.3
31–40	43	20.5
41–50	29	13.8

51–60	10	4.8
61–70	8	3.8
71–80	10	4.8
81–90	3	1.4
Missing	11	5.1
Total	199	100
–		
Education		
Educated	70	33.3
Not educated	55	26.2
Missing	85	40.5
Total	210	100

According to the accident and emergency system, patients are admitted into various wards described by color codes according to the severity of their conditions. The red zones receive patients who require immediate and urgent care as their conditions are severer. The orange zone receives patients with less severe conditions than the red zone, whilst the yellow zone receive patients with the least severe conditions among the three. The color codes used are red, orange, and yellow. 25.2% of the patients were admitted to the yellow zone, 63.8% were admitted to the orange zone, whilst 5.2% were admitted to the red zone as illustrated in Table 2.

Table 2

Various zones at the emergency and their rates of DAMA.

Zone	Frequency	Percentage (%)
Yellow zone	53	25.2
Orange zone	134	63.8
Red zone	11	5.2
Missing	12	5.7
Total	210	100

Majority of the patients 39.0%, prior to been discharged against medical advice have been managed for various degrees and types of fractures. 11.4% have been managed for head injuries, 8.6% for CVA, 4.3% for respiratory conditions such as pneumonia, asthma, and COPD, 8.6% for various degrees of lacerations, and 21.4% for various other conditions such as burns, snake bites, and esophageal cancer. 6.7% of the patients did not have their medical diagnosis documented. The results are shown in Table 3.

Table 3

Common conditions for which DAMA was requested.

Condition	Frequency	Percentage (%)
Fracture	82	39.0
Head injury	24	11.4
CVA	18	8.6
Lacerations	18	8.6
Respiratory conditions	9	4.3
Others	45	21.4
Missing	14	6.7
Total	210	100

Several factors compelled patients to request for discharge against medical advice. Notable among them was financial constraints. This was so widespread that it was categorized according to what patients were constrained to afford, such as medications, investigations, and surgery. Other compelling factors were the preference for herbal treatment, domestic issues, fear of interventions etc. The results are displayed in Table 4.

Table 4

Factors influencing DAMA.

Factors	Frequency	Percentage (%)
Prefer herbal treatment	59	28.1
Cannot afford investigations	49	23.3
Cannot afford medications	12	5.7
Cannot afford surgery	5	2.4
General financial constrains	20	9.5

Fear of interventions	6	2.9
Domestic issues	5	2.4
Others	9	4.3
Missing	45	21.4
Total	210	100

4. Discussions

A total of 8565 patients were admitted within the period under review. The prevalence rate of DAMA was observed to be 2.5%. This prevalent rate is similar to that reported from Nigeria, where 4.7% were reported to have been discharged against medical advice [12]. This may be attributed to the similarities in socioeconomic state of the study settings. In neighboring Ivory coast, however, DAMA prevalence was reported to be as high as 8.6% [7] This prevalence rate is, however, higher than a similar retrospective study conducted in Saudi Arabia, which reported a DAMA prevalence of 1% [13].

The male gender constituted a larger percentage of those who requested for DAMA. This can be attributed to the fact that, most of the patients were been managed for fractures and head injuries resulting from road traffic accidents (RTAs) involving motorbikes, of which males are mostly victims. Men are challenged with socioeconomic responsibilities of family upkeep. Females are also reported to be more compliant with medical staff than their male counterparts. Similar findings were also reported from a study conducted at an emergency department in Lebanon [14].

Children below the ages of 20yrs and the aged above 50yrs constitute 30% of DAMA patients. This may be due to the fact that, children are mostly under parental care, and hence lacks the consent to request for DAMA. The elderly on the other hand are more compliant with medical treatment. Age has been reported to be significantly associated with DAMA [15]. Majority of the patients who requested and were granted DAMA were observed to be educated. Similar findings were also reported from Nigeria [15] and Iran [16].

The mean period of stay within which DAMA was requested was five days on admission. Patients and their families are expected to have exhausted the finances within this period, hence their decision to opt for DAMA.

Prior to their request to discharge against medical advices, majority of the patients were managed for fractures and head injuries. This is attributed to the fact that, the commonest mode of transportation within the Tamale metropolis is motorcycles which mostly results in RTAs. Other notable conditions for which patients were discharged against medical advice were CVA, hypertension, and respiratory conditions such as pneumonia and chronic obstructive pulmonary disease (COPD). Burns, snake bites, electrocution, esophageal cancer, and hemorrhoids were also among the conditions for which patients sought DAMA. These findings agreed with a similar study in Nigeria where 88.5% of patients who were discharged against medical advice were cases of fractures [5]. Studies from Lebanon, however, reported that only 9.8% of patients discharged against medical advice were as a result of trauma, thus fractures [14].

Various reasons were observed to have pushed patients and their families to seek for DAMA. Notable among these compelling factors was financial challenges. Financial constraints have been cited as a major factor for DAMA, especially in African countries [3]. Financial constraints were of varying degrees. Some patients and their families were financially constrained in their abilities to purchase prescribed medications, others were constrained to undergo surgical procedures, whilst others could not afford to undergo various laboratory investigations, yet some other patients were generally constraint and could not afford neither medications nor investigations. Financial constraints was however not a major contributor to DAMA as it only accounted for 7.9% of DAMA cases in Lebanon [14]. Another major factor that compelled patients to request for DAMA was their preference for herbal treatment.

Preference for herbal treatment has been reported in DAMA studies involving orthopedic patients [17]. This can be attributed to the general belief that; traditional bone setters are more effective in managing fractures than the modern system of medicine. Despite the level of counselling from the medical team, nothing seems to dissuade patients with fractures from heading to herbal healers. In neighboring Nigeria, 77.1% of patients who took DAMA indicated that, their next destination of care will be herbal medicine practitioners and traditional bone setters [5]. Studies on DAMA from an orthopedic hospital in Nigeria reported that, 62.1% of patients who requested for DAMA indicated traditional bone setters as their next destinations [17].

Other compelling DAMA issues worthy of note includes domestic issues such as the need to take care of families, the need for treatment near home, patients not feeling comfortable in the wards, perceived recovery, perceived poor prognosis, and fear of interventions such as chest tube thoracotomy.

5. Conclusion and Recommendations

Discharge against medical advice has a high prevalence in Ghana and its consequences in the delivery of quality health care cannot be overemphasized. The trend which is more prevalent in developing and emerging economies including Ghana adversely affects health care delivery, causing complications and mortalities as well as increasing cost of care. Hospital administrators, clinicians, and other health care workers should make efforts to increase awareness on the consequences of DAMA such as preventable deaths, increased cost, and patient readmissions. Stakeholders in health can develop comprehensive legislations to clinicians and health institutions to regulate the prevalence and consequences of DAMA. Public education on the need to comply with medical care, streamlining the activities of traditional medicine dealers, efficient and effective communication between staffs and patients, and most importantly, providing financial assistance to needy patients are some proposed measures to reduce the impacts of DAMA.

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Investigation of Caring Behavior and Caring Burden and Their Associated Factors among Nurses Who Cared for Patients with COVID-19 in East Guilan, the North of Iran

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ABSTRACT (ENGLISH)

Background. Nurses experience caring burdens, which can affect their caring behaviors. Caring for highly infectious patients, in particular COVID-19, is a new phenomenon and little is known about it. Considering that caring behaviors can be influenced by various factors and cultural differences of the society, it is necessary to conduct studies about caring behaviors and caring burdens. Thus, this study aimed to determine caring behavior and caring burden and their relationship with some associated factors among nurses who cared for patients with COVID-19.

Materials and Methods. This cross-sectional, descriptive design study was conducted by census sampling on 134 nurses working in public health centers in East Guilan, the north of Iran, in 2021. The research instruments included the Caring Behavior Inventory (CBI-24) and the Caregiver Burden Inventory (CBI). Descriptive and inferential statistics were used to analyze the data using SPSS software version 20 with a significant level of 0.05.

Results. The mean score of caring behavior and caring burden in nurses was 126.50 (SD= 13.63) and 43.65 (SD=25.16), respectively. There was a significant relationship between caring behavior and some demographic characteristics (education, place of living, and history of COVID-19) and between caring burden and some demographic characteristics (housing status, job satisfaction, intention to change job, and history of COVID-19) ($p<0.05$).

Conclusions. Findings showed that despite the new emergence of COVID-19, the caring burden on nurses was moderate and they had good caring behavior. Despite these results, it is necessary for the relevant managers to pay special attention to protecting health workers during a national crisis such as COVID-19 so that they experience less caring burden and improve caring behavior.

FULL TEXT

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Violence against Emergency Nurses in Kermanshah-Iran: Prevalence and Associated Factors

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ABSTRACT (ENGLISH)

Background. Violence against emergency nurses is a global concern with undesirable physical and psychological consequences. This study was conducted to investigate the characteristics of physical and verbal violence against emergency nurses in Iran. **Methods.** In this cross-sectional study, 150 nurses working in seven hospitals affiliated to Kermanshah University of Medical Sciences were included in the study using the stratified random sampling method. The data collection tools included a personal information form and a researcher-made questionnaire. Violence-related characteristics were assessed using descriptive statistics. Logistic regression was used to identify factors related to physical and verbal violence. **Results.** The frequency rates of physical and verbal violence during the past 12 months were equal to 62% ($n=93$) and 94.7% ($n=142$), respectively. In both types of physical violence (49.5%, $n=46$) and verbal violence (40.4%, $n=57$), the nursing station was the most common place of violence. In both physical ($n=40$, 43.0%) and verbal violence ($n=101$, 71.1%), the most common perpetrator was the patient's family. Most physical violence (57.0%, $n=53$) and verbal violence (35.2%, $n=50$) occurred in the night shifts. No statistically significant relationship was found between physical and verbal violence and gender, age, marital status, type of employment, and work experience. **Discussion.** The results indicate the seriousness of workplace violence against nurses. It is necessary to adopt a global approach along with providing sufficient manpower and psychological empowerment of nurses. Further studies with a forward-looking approach are suggested.

FULL TEXT

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1. Introduction

Workplace violence (WPV) against emergency nurses is a global problem [1]. According to the International Labor Organization, WPV includes ill-treatment and threatening or abusive behavior, including physical or psychological violence [2–6]. WPV varies from verbal aggression and sexual harassment to physical assault, of which the verbal type is the most common form of healthcare-related aggression, and about two-thirds of nurses worldwide have experienced this type of violence [7].

By definition, physical violence is the intentional use of physical force against an individual or a group that results in physical or psychological harm. Verbal violence is a behavior that leads to humiliation or disrespect for a person's dignity [8]. Evidence suggests that healthcare workers, especially nurses, are the most vulnerable to violence due to their daily exposure to patients and their families [9]. In this regard, the results of a study in Pakistan (2021) showed 29 cases of violence against doctors and nurses committed by the patients' relatives from April to August 2020. The reasons for the violence were the deaths of patients, the nonadmission of patients, and the lack of trust in medical personnel [10].

In a study in Kenya (2021), the prevalence of violence against emergency nurses in one year was 73.2%, and the perpetrators of most of the violence were patients and their relatives. The most common type of violence was verbal abuse [11]. In a study conducted in Saudi Arabia (2022), the prevalence of violence against emergency nurses during the previous two years was 73.7%, and the most common type of violence was verbal abuse. The perpetrators in 88.3% of cases were patients' family members or relatives [12].

Moreover, a study in China (2021) indicated that 29.1% of violence occurred against emergency department clinicians, and a negative correlation was reported between WPV and quality of care [13]. In another study in Turkey (2022), the prevalence of violence against emergency nurses was 90%, and verbal abuse was the most common type of violence. The perpetrators of most of the violence were the patients' relatives, and the cause of violence in most cases was the long waiting time to receive care [14]. The results of a study in Taiwan (2021) showed that the prevalence of violence against emergency nurses was 54%, and the most common type of violence was mental violence [1].

WPV may increase the risk of physical, psychological, and behavioral problems in nurses, including sleep disorders,

fatigue, pain, fear, anxiety, depression, post-traumatic stress disorder, substance abuse, communication problems, and job burnout [7, 15], also aggravating the nurse shortage problem [1].

Since WPV is a growing phenomenon and a major threat to nurses [16], it is necessary to take practical measures to reduce violence in this walk of life, and the first step in this direction is to know the prevalence of violence [9, 17]. In this regard, several studies that have investigated the prevalence of WPV and its related factors in emergency nurses in Iran [2, 5, 6] and around the world [1, 3, 14, 18] have reported different results. This difference may be related to cultural differences and psychological characteristics of patients and their relatives, as well as the nurses' behavioral and emotional balance [1]. Accordingly, the present study was conducted to investigate the prevalence of WPV and its related factors in emergency nurses.

This study sought to answer the following questions: (1) What is the prevalence of physical and verbal violence against emergency nurses during the past 12 months? (2) What are the factors related to violence against emergency nurses? (3) What is the response of emergency nurses to violence? (4) What are the strategies for preventing and managing WPV? and (5) What are the characteristics of WPV?

2. Methods

2.1. Study Design

This research is a cross-sectional descriptive-analytical study. In this type of study, the outcome and exposure variables are collected simultaneously; therefore, it is not possible to determine the cause-and-effect relationships between these variables [19]. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement was used to report the results [20].

2.2. Sample and Sampling Method

The study population included nurses ($n=300$) working in the emergency departments of seven hospitals affiliated to Kermanshah University of Medical Sciences (KUMS). Considering the prevalence of violence against nurses in the study of Honarvar et al., with a rate of about 90% [3], 5% accuracy, and a 95% confidence level, the sample size was estimated to be 143 nurses, and with 5% nonresponse, the sample size was increased to 150. The inclusion criteria were a bachelor's degree or higher in nursing and at least one year of experience in the emergency department. For sampling, first, the sampling frame of each hospital was received from the nursing office. The participants were recruited by stratified random sampling method. In this method, the research population is divided into several subgroups or strata based on common characteristics. Then, within each group, the necessary sample size is randomly selected. In the current study, seven emergency departments of KUMS-affiliated hospitals formed the strata. Within each stratum, simple random sampling was performed using a table of random numbers. Incomplete completion of the questionnaire was regarded as the exclusion criterion. It should be pointed out that no one was excluded from the study.

2.3. Measurement Instrument

The study tool was a researcher-made questionnaire that was designed using previous studies [2–5]. The questionnaire consisted of two parts. The first part was about the participants' demographic information, including age, gender, marital status, work experience, and type of employment. The second part consisted of 15 questions on the frequency of physical and verbal violence during the past 12 months, the availability of instructions on reporting the violence, the level of concern about the occurrence of violence in the workplace, the perpetrator's characteristics, the place of violence, the time of violence, the perceived causes of violence, and the nurses' response to violence. At the end of the questionnaire, an open-ended question was placed, and the nurses were asked to express their ways of preventing and managing WPV.

Questions were of the multiple choice, yes/no, likert, and open-ended types. Some of the questions were: "Have you been physically abused in the past twelve months? Yes/No," "What was the gender of the perpetrator?

Male/female," "Who was the perpetrator? Patient, patient's relatives, patient's friends, patient's family, and colleague," "Does your workplace have guidelines for reporting cases of violence? Yes/No," "How concerned are you with workplace violence? Never, very little, little, moderately, very much," and "In your opinion, what are the ways to prevent and manage workplace violence against nurses?" To score the questionnaire, the simple and

relative frequency and standard deviation of the responses were calculated.

Quantitative and qualitative content validity methods were used to evaluate the validity of the measurement tool. In the qualitative section, the tool was provided to 15 faculty members, their corrective opinions regarding different parts of the questionnaire were obtained, and necessary corrections were made in the questionnaire. In the qualitative part, the content validity index and content validity ratio were calculated, which were equal to 0.82 and 0.72, respectively. A four-point Likert scale was used to calculate CVI, and experts were asked to choose one of the options of completely relevant, relevant, approximately relevant, and irrelevant for each question. The number of experts who chose approximately relevant and irrelevant options was divided by the total number of experts [21]. A CVI higher than 0.79 was considered appropriate. CVR was calculated using a three-point Likert scale, including the options “essential,” “useful, but not essential,” and “not necessary.” Experts were asked to choose one of the options for each question. The number of experts who chose the answer “necessary” was included in the calculation formula of CVR [21]. A CVR higher than 0.49 was considered satisfactory.

The test-retest method was used to evaluate the reliability. For this purpose, the questionnaire was completed by 30 nurses working in the emergency department with an interval of one week, and a correlation coefficient of 0.78 was obtained. It should be noted that these nurses were not included in the study.

2.4. Data Collection Method

To collect data, the researcher referred to the nursing offices of hospitals affiliated to KUMS and received a list of nurses working in the emergency department. Then, according to the number of nurses in each hospital, the required sample size was selected. Next, the selected nurses were visited according to their work schedule. At first, the objectives of the study were stated for nurses, and if they were willing, they were included in the study. Then, a questionnaire was given to the participants and collected after completion. If the participant did not agree to participate in the study, the person before or after him/her in the list of names would be replaced.

2.5. Statistical Analysis

Data were analyzed by SPSS V.18 software using descriptive and inferential statistics. In the descriptive part, the frequency, mean, and standard deviation indices were used. In the analytical section, the logistic regression analysis was used to determine the factors related to physical and verbal violence. The desired significance level was less than 0.05. The quantitative content analysis method was used to analyze the samples' answers to the open-ended question. In this method, data analysis is done based on frequency and percentages. In the current study, the frequency of WPV prevention and management strategies was determined.

2.6. Ethical Considerations

The Ethics Committee of Kermanshah University of Medical Sciences approved the study with the code KUMS.REC.1395.494. The goals of the study were stated for all participants, and they were assured that their details and responses would remain confidential. Written informed consent was obtained from all participants.

3. Results

A total of 150 nurses participated in this cross-sectional study, with a response rate of 100%. All participants were nurses, and 77.3% ($n=116$) contractual nurses. Most of them were female ($n=88$, 58.7%) and single ($n=80$, 53.3%), with an age of less than 30 years ($n=106$, 70.7%) and a work experience of 1–5 years ($n=109$, 72.7%) (Table 1).

Table 1

Demographic characteristics of the nurses according to the type of violence.

Variables		Total	Physical violence		Verbal violence	
<i>n</i> (%)		<i>n</i> (%)		Yes	No	Yes
No	Sex	Male	62 (41.3)	37 (39.8)	25 (43.9)	59 (41.5)

3 (37.5)	Female	88 (58.7)	56 (60.2)	32 (56.1)	83 (58.5)	5 (62.5)
-						
Age (year)	≤30	106 (70.7)	63 (67.7)	43 (75.4)	99 (69.7)	7 (87.5)
>30	44 (27.3)	30 (32.3)	14 (24.6)	43 (30.3)	1 (12.5)	.
Marital status	Single	80 (53.3)	53 (57.0)	27 (47.4)	78 (54.9)	2 (25.0)
Married	70 (46.7)	40 (43.0)	30 (52.6)	64 (45.1)	6 (75.0)	.
Employment type	Formal	34 (22.7)	21 (22.6)	13 (22.8)	33 (23.2)	1 (12.5)
Contractual	116 (77.3)	72 (77.4)	44 (77.2)	109 (76.8)	7 (87.5)	.
Job experience (Year)	1–5	109 (72.7)	69 (74.2)	40 (70.2)	106 (74.6)	3 (37.5)
6–10	31 (20.7)	17 (18.3)	14 (24.6)	26 (18.3)	5 (62.5)	≥11
10 (6.7)	7 (7.5)	3 (5.3)	10 (7.0)	0 (0.0)	.	.
Concerns about workplace violence	Low	9 (6.0)	6 (6.5)	3 (5.3)	9 (6.3)	0 (0.0)
Medium	17 (11.3)	9 (9.7)	8 (14.0)	15 (10.6)	2 (25.0)	High
124 (82.7)	78 (83.9)	46 (80.7)	118 (83.1)	6 (75.0)	.	.
Existence of violence reporting guidelines	Yes	26 (17.3)	17 (18.3)	9 (15.8)	24 (16.9)	2 (25.0)

“Age, gender, work experience, marital status, job experience, concerns about workplace violence, and type of employment.”

The frequency rates of physical and verbal violence during the past 12 months were equal to 62% (95% CI: 53.8, 69.5) ($n=93$) and 94.7% (95% CI: 89.6, 97.3) ($n=142$), respectively. In both physical ($n=40$, 43.0%) and verbal violence ($n=101$, 71.1%), the most common perpetrator was the patient's family. The most common perpetrator gender was male in both physical ($n=83$, 89.2%) and verbal violence ($n=125$, 88.0%). From the nurses' point of view, the most common perceived causes of violence were lack of nurses ($n=137$, 96.0%), long waiting times ($n=131$, 92.0%), deterioration of patients' clinical conditions ($n=120$, 84.0%), and weakness in nurses' communication skills ($n=105$, 73.5%). In both types of physical ($n=46$, 49.5%) and verbal ($n=57$, 40.2%) violence, the nursing station was the most common place of violence. Most physical violence ($n=53$, 57.0%) and verbal violence ($n=50$, 35.2%) occurred in night shifts (Table 2).

Table 2

Characteristics of violent incidents in emergency department nurses.

Variables		Physical violence	Verbal violence
<i>n</i> (%)	<i>n</i> (%)	Exposure to violence over the past year	Yes
93 (62.0)	142 (94.7)	No	57 (38.0)
8 (5.3)	-		
Source of violence	Patient	4 (4.3)	17 (12.0)
Patient's family	40 (43.0)	101 (71.1)	Staff member
22 (23.7)	6 (4.2)	Supervisor/head nurse/manager	14 (15.1)
17 (7.2)	Other	13 (13.9)	2 (5.5)
-			
Perpetrator gender	Male	83 (89.2)	125 (88.0)
Female	10 (10.8)	17 (12.0)	.
Place of violence	Patient room	19 (20.4)	48 (33.8)
Waiting room	4 (4.3)	4 (2.8)	Treatment room
4 (4.3)	33 (23.2)	Nursing station	46 (49.5)
57 (40.2)	Other	20 (21.5)	—
-			
Violence in the work shift	Morning	17 (18.3)	45 (31.7)
Evening	23 (24.7)	47 (33.1)	Night

The majority of participants ($n=124$, 82.7%) were highly concerned about violence and aggression in the workplace. Most nurses ($n=124$, 82.7%) stated that there are no specific guidelines for reporting WPV. In response to physical violence, 22.6% ($n=14$) of nurses stated that they reported the event to their superiors, and 16.1% ($n=15$) did not take any action. Regarding verbal violence, 21.1% ($n=30$) of nurses stated that they did not take any action, and only 22.6% ($n=14$) reported it to their superiors. Further, 69% ($n=98$) of the participants believed that reporting violence was useless (Table 1).

Based on logistic regression analysis, no statistically significant relationship was found between physical and verbal violence and participants' demographic variables, including gender, age, marital status, type of employment, and work experience (only in the case of physical violence, which entered the model) (Tables 3 and 4).

Table 3

Relationship between demographic variables and physical violence.

Variables		Physical violence					
Crude OR ^a	95% CI ^b	P value	aOR ^c	95% CI	P value	Sex	Female
Ref	—		Ref			Male	1.95
0.97, 3.88	0.059	1.77	0.86, 3.64	0.123			
Age (years)	≤30	Ref			Ref		
>30	1.46	0.69, 3.08	0.316	2.86	0.62, 13.21	0.178	
Marital status	Married	Ref			Ref	—	
Single	1.17	0.61, 2.27	0.637	1.13	0.54, 2.38	0.748	
Employment type	Official	Ref			Ref		
Contractual	1.01	0.46, 2.22	0.974	2.15	0.43, 10.67	0.347	
Job experience (years)	≥11	Ref			Ref		
6–10	0.68	0.17, 2.8	0.596	1.02	0.13, 8.04	0.986	1–5

Note. ^aOdds ratio; ^bconfidence interval; ^cadjusted odds ratio.

Table 4

Relationship between demographic variables and verbal violence.

Variables		Verbal violence					
Crude OR ^a	95% CI ^b	P value	aOR ^c	95% CI	P value	Sex	Male
Ref			Ref			Female	0.84
0.19, 3.67	0.821	1.03	0.23, 4.67	0.972			

Age (years)	≤30	Ref			Ref		
>30	3.04	0.36, 25.47	0.305	3.33	0.15, 72.69	0.445	
Marital status	Married	Ref			Ref		
Single	3.65	0.71, 18.74	0.120	3.49	0.66, 18.49	0.142	
Employment type	Official	Ref			Ref		

Note. ^aOdds ratio; ^bconfidence interval; ^cadjusted odds ratio.

In response to an open-ended question, ten nurses mentioned two to three ways to prevent and manage WPV. All the answers were explained in four items, including adequate manpower supply ($n=8$, 80%), holding periodic communication skills workshops ($n=6$, 60%), prosecution of cases of violence ($n=5$, 50%), and review of antiviolence policies ($n=3$, 30%).

4. Discussion

WPV against nurses is a global concern [3]. This study was conducted to investigate the prevalence of WPV and its related factors in emergency department nurses. In the current study, 94.7% and 62.0% of nurses reported experiencing verbal and physical violence in the previous year, respectively. Evidence shows that verbal violence among emergency department nurses over a period of one year is between 66.4% and 100%, and the frequency of physical violence varies from 16.7% to 74.9% [4].

A study showed that about 90.0% of emergency department nurses in 13 general hospitals in Beijing, China, had experienced WPV in the previous year [22]. In a study in Shiraz, Iran (2019), 89.6% of nurses had experienced at least one type of violence in the past year, and the verbal harassment rate was about three times greater than physical violence [3]. In another study in Italy (2020), 96.3% of nurses stated that they had suffered from WPV in the past 12 months [18]. Evidence suggests that nurses working in emergency departments are at the risk of violence, which can affect their physical and mental health as well as the quality of nursing care provided.

In line with previous studies [18, 23–27], the perpetrator in both physical and verbal violence was the patient's family. However, in a study conducted among Indonesian nurses, the perpetrators in 43.5% of physical violence and 55.6% of verbal violence were patients and their relatives, respectively [3, 28]. Violence by the patient's family can be related to their concerns about the patient's condition, unfulfilled expectations, and inappropriate psychological conditions.

In the present study, the most common sex of the perpetrator was male in both physical and verbal violence, which is consistent with the results of previous studies [3, 18, 28]. There are several factors involved in this gender difference, including the cultural characteristics of the society and the physical abilities of men.

Contrary to previous studies [2, 29, 30], in the present study, most of the nurses who were subjected to physical and verbal violence were female. But in the study of Saleh et al. (2020) in Mashhad, Iran, most of the abused nurses were male [5]. Nurses, whether male or female, are not immune to violence. Contradictions in the results of studies can be related to differences in sample size and organizational research environments.

In line with previous studies [23, 28, 31, 32], most of the physical and verbal violence occurred during the night shift, which may be related to the increased number of patients referred to the emergency department due to the closure of specialized clinics and the absence of a management team.

In the present study, the nursing station was the most common site of physical and verbal violence. In a study in Iran (2010), the most common sites of verbal and physical violence were the nursing station (49.1%) and the patient's bedside (48.5%), respectively [2]. However, in Italy (2020), the most common site of violence was around the triage area (38.5%) [18], but in Taiwan (2020) and Oman (2020), most cases of violence occurred in the treatment area (61.2% and 63.2%, respectively) [23, 33]. Although there is a possibility of violence in any part of the emergency

department, the probability of violence in this area is higher due to the importance of the nursing station in patient management.

In line with previous studies [2, 25], most nurses reported the violence to their superiors, but most believed that reporting the violence was useless. However, in a study in Indonesia (2018), 92.1% of nurses were reluctant to report violence, found it useless, and feared the negative consequences of reporting [28]. Unfortunately, evidence suggests that hospital managers are not serious about pursuing and investigating cases of violence [3]. Lack of trust in the reporting team and fear of retaliation are other reasons for not reporting violence [2]. Reporting violence has positive effects on nurses as well as hospitals and can be helpful in adopting better policies to prevent future violence.

In the present study, the most common causes of physical and verbal violence were a lack of nurses, long waits, patients' inadequate clinical conditions, and nurses' poor communication skills. In other studies, the causes of violence against nurses have been reported to include inappropriate conditions of the patient and their family, unrealistic expectations of patients, noncompliance with hospital rules by patients and their companions, poor communication skills of nurses and patients, a lack of nurses, a lack of facilities, burnout of nurses, and a lack of security forces [2, 3, 28]. Clearly, eliminating the underlying causes of violence plays an important role in preventing WPV, and it seems that manpower supply has a more effective role.

The results showed no statistically significant relationship between WPV and nurses' age. However, in a study conducted on Iranian nurses (2020), the age group of 20–30 years was more exposed to verbal and physical violence than other age groups [5]. The results of a study (2019) in Italy showed that the rate of violence against nurses decreased as the age increased, so that the age group of 40–60 years experienced the least amount of physical and verbal violence compared to the age group under 40 years [4]. With an increase in age, nurses are expected to have more communication skills and therefore play a more effective role in managing and preventing violent incidents.

Consistent with the results of Pandey et al. in Nepal [34], in the current study, no statistically significant relationship was found between the occurrence of violence and nurses' type of employment. However, in a number of studies, a statistically significant relationship has been reported between the occurrence of violence and the type of employment. In this regard, in the study of Honarvar et al. in Shiraz, Iran, more verbal violence occurred among contract nurses [3]. In a study by Jafree in Pakistan, contractual employment was one of the risk factors for experiencing violence among nurses [35]. However, the authors of the present study believe that violence can affect all nurses, regardless of their type of employment.

The results showed no statistically significant relationship between violence and nurses' marital status, which is in line with the results of the study of Pandey et al. in Nepal [34]. But in the study of Saleh et al. In Iran, the rate of physical and verbal violence was higher among married nurses [5].

Similar to previous studies [5, 23, 36], the results of the present study showed no statistically significant relationship between nurses' work experience and violence. In a study in Egypt (2017), 68% of abused nurses had less than 50 years of work experience [37]. But in the study of Choi and Lee, the frequency of violence was higher in nurses with more than 5 years of work experience than in others [38]. The results of a study in Italy (2019) also showed that nurses with a history of less than 10 years had the highest rate of verbal and physical violence [4]. Regardless of the differences in the results of the studies, nurses with more work experience are expected to have better communication skills, to act as role models for less experienced nurses, and to prevent the occurrence of violence.

4.1. Study Limitations

In this study, data were collected by the self-report method, which might have affected the results. The second limitation is the possibility of recall bias, which might also have affected the accuracy of the results. In this type of bias, the participants may not remember all the violent events and their details. In this study, the occurrence of violence was based solely on the participants' responses to a yes/no question. Also, different types of verbal/physical violence were not investigated.

5. Conclusion

Our results emphasize the high prevalence of violence against emergency department nurses. Most cases of violence were committed by patients during night shifts at the nursing station. Although most nurses reported the violence to their supervisor, they found it useless. Considering the important role of nurses in the health care system, their safety in the workplace must be guaranteed. It is necessary to adopt a global approach to reduce violence in the nurses' workplace. In this regard, health policymakers should take the necessary measures to eliminate violence against nurses and provide a safe work environment with the cooperation of experts and the mass media. Adopting security measures in emergency departments can also play an important role in reducing violence. In this regard, installing closed-circuit cameras in nursing stations and waiting rooms, using fixed security forces, and physically inspecting people for weapons are necessary measures. Also, holding training workshops on the prevention and management of workplace violence can be useful for emergency nurses. Similar studies in other care sectors as well as longitudinal studies are required to investigate the effect of intervention measures on the frequency of workplace violence.

Ethical Approval

The Ethics Committee of Kermanshah University of Medical Sciences approved the study with the code KUMS.REC.1395.494. All methods were performed in accordance with the relevant guidelines and regulations.

Consent

Written informed consent was obtained from all the participants.

Authors' Contributions

MJ, SR, AA, NFN, and AK contributed in designing the study. NFN, AK, and AA collected the data. SR analyzed the data. MJ, SR, and AK wrote the final draft. All the authors read and approved the version for submission.

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The Effects of Education Based on the Nursing Process on Ostomy Self-Care Knowledge and Performance of Elderly Patients with Surgical Stoma

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ABSTRACT (ENGLISH)

Background. Patients with surgical stoma experience problems, which can lead to their impaired adaptation and self-efficacy. The nursing process provides a framework for planning and implementing nursing care. This study aimed to investigate the effect of education based on the nursing process on ostomy self-care knowledge and performance of elderly patients with intestinal stoma. **Materials and Methods.** In this quasi experimental study, 52 elderly patients with intestinal ostomy who were referred to Razi Hospital in Rasht and met the inclusion criteria were invited to participate in research. Sampling was done by a simple random method. The intervention group received an educational programme based on the nursing process, whereas the control group received traditional training. The research instruments included a questionnaire to assess the level of ostomy self-care knowledge and ostomy self-care performance. Data were analyzed by SPSS software version 21 using descriptive and inferential statistics at a significant level of $p < 0.05$. **Results.** The mean scores of ostomy self-care knowledge and performance in both groups (intervention and control) were increased. However, the improvement in self-care knowledge and performance of the intervention group was significantly greater than that in the control group ($p < 0.001$). **Conclusions** . The educational programme based on the nursing process compared to the routine patients training caused more improvement in ostomy self-care knowledge and performance of older adult patients with surgical stoma. Therefore, an educational programme based on the nursing process can be used as an educational model for these patients.

FULL TEXT

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1. Background

The world's elderly population is growing rapidly [1]. It is predicted that in the 21st century, the elderly population will reach its highest level in human life, which is why this century has been called the "Century of old age" [2]. Similarly, the report of the general population and housing census of the Islamic Republic of Iran in 2016 in Iran showed that about 9.3% of the country's population consists of people of 60 years and older [3]. In addition, there are some predictions which show that the elderly population of Iran will reach more than 26 million by 2050 [4]. Old age is not

a disease. It is the physiological changes that occur over time, and as a result of these changes, the rate of acute and chronic diseases increases [5]. Cancer can be considered an age-related disease because the incidence of most cancers increases with age, rising more rapidly beginning in midlife [6]. Cancer is the second leading cause of death in older adults [7] and among cancers, colorectal cancer has a high prevalence in the elderly. So that approximately 60% of colorectal cancer patients are older than 70, with this incidence likely increasing in the near future [8]. Colorectal cancer in people with colon cancers that have not spread to distant sites is most commonly treated by surgery [9]. Colostomy or ileostomy is a well-known surgical intervention aimed at treatment of various diseases, including cancer [10]. Intestinal ostomy is the creation of an artificial opening in the abdominal wall by surgery that drains the contents of the intestine out of the body [11]. As the frequency of major abdominal operations being performed in older patients rises, there is an associated rise in procedures involving fecal ostomies [12]. Ostomies are being placed frequently in surgically treated elderly patients with colorectal cancer [13]. Studies specifically evaluating the outcome of surgery for colorectal disease in older persons have demonstrated that major procedures should not be denied on the basis of age alone and that colorectal surgery can be conducted with an acceptable margin of safety in older persons [12].

Although the creation of a stoma is associated with positive outcomes such as symptom relief and improvement in overall health, it may have a negative impact on the patient [10]. The majority of patients with stoma suffers with a lack of physical activity, dietary changes, and general lifestyle changes [14]. Ostomy surgery has effects on person's physical appearance and functions and also has a bad effect on patients' body image [15]. Factors linked to living with a stoma may increase or decrease the health-related quality of life after stoma creation. For example, perceptions of living with a stoma are influenced by the presence of stoma complications. Leakage of effluent from the ostomy is perceived as especially bothersome, and a great deal of professional effort goes toward teaching patients to manage their pouching systems in a manner that avoids leakage [10]. To support patients in adjusting to their condition, they should receive self-care-related information and skill training during their hospital stay after colostomy, which might include instructions on colostomy care provided either verbally or via handout [9]. Education has an important part in the development of self-care, independence, and adaptation of individuals to the disease [16]. It has been suggested that patient education might reduce the length of hospital stay, the frequency of postoperative complications, and the frequency of hospital readmissions [17]. Education changes health behaviors and leads to better understanding of the disease and reduces or delays the incidence of complications [18]. Clinical nurses play a major roles to provide the health education for patients in the process of getting used to living with stoma. The main content of the health education should focus on technical skills related to wound care and incontinence (skin cleansing, bag/adaptor replacement, changing dressings, and making the proper position). In addition, encouraging people to make decisions about treatment and care, organizing educational programs for daily activities to ensure adaptation to patients' social life, and developing educational materials and educational support systems are recommended [16]. The main goal of nursing care is to provide appropriate quality care to improve the condition of patients [19], and one of the most important policies and principles of nursing care is the use of the nursing process model [20, 21]. This model is a systematic framework for evaluating patients' needs for clinical decision-making. The nursing process moves the care of patients from traditional and old methods to modern, scientific, and patient-centered methods [20]. Patient education is an integral part of the nursing process, and nurses can use this process to assess, plan, implement, and evaluate an effective and individualized patient education programme [22]. However, age-appropriate teaching strategies for the older adult must be planned, purposeful, and adapted to accommodate the special needs of the elderly patient. Specific strategies that adhere to the principles of geragogy should also be an integral part of every nurse's teaching repertoire to promote health literacy in this special population [23].

The effects of education on self-care ability of patients with colorectal cancer have been evaluated in several studies [9, 16, 24]. These studies confirmed the effect of education on patients' self-care ability. It was shown in the study of Wang et al. that multimedia patient education is an adequate educational tool for patients with colorectal cancer who have undergone colostomy surgery [9]. In Shrief and Mokhtar's study, the use of structured educational guidelines

had a positive effect on patient knowledge, performance, and self-efficacy regarding colostomy care [24]. In Culha et al.'s study, the effect of self-care education on self-care awareness and agency of patients with colostomy and ileostomy was investigated. These researchers concluded that education may assist in self-care agency and stoma knowledge of patients with stoma [16]. However, the review of the literature indicated that no study has been conducted to investigate the effect of education based on the nursing process on the knowledge and self-care performance of elderly patients with surgical stoma. However, the ultimate goal of patient education programs is to achieve long-lasting changes in behavior by providing patients with knowledge that allows them to make autonomous decisions to take ownership of their care as much as possible and improve their own outcomes [22]. Therefore, considering the importance of this issue and due to the lack of evidence on an educational model based on the nursing process in Iran, the present study was conducted to determine the effect of education based on the nursing process on knowledge and self-care performance of elderly patients with surgical stoma.

2. Materials and Methods

2.1. Study Design, Setting, and Participants

This quasi-experimental study was conducted by using a pretest-post test two-group design. The population of this study was the elderly patients with an intestinal ostomy (ileostomy or colostomy) who were referred to Razi Hospital in Rasht, in 2020–2021. This hospital is the largest public and educational hospital in Guilan province in terms of size, which provides the most diverse general, specialized, and subspecialized services in the field of internal diseases and surgery to its patients.

Sampling was done by a simple random method. In this way, the samples were allocated from the list of intestinal stoma surgery candidates who met the inclusion criteria and were placed one in between the control and intervention groups. For example, the first patient from the list of surgical candidates was allocated in the intervention group and the second patient from the list was allocated in the control group. To determine whether the first patient will be in the control group or in the intervention group, a random lottery method by flipping a coin was used.

The inclusion criteria included the following: elderly patients who were 60 years or older with intestinal ostomy were willing to participate in the study and had not participated in similar programs before. They should be literate to speak and write Persian fluently, had no visual or auditory problems (they should not have problems communicating), did not have a psychological disorder (scored 8 or higher above the 10-item AMT instrument), were able to perform daily life activities (getting a score of 12 or higher assessed by using daily life tool), getting a score of 17 and lower (average and poor knowledge level) assessed by the Stoma Care Knowledge Level Questionnaire, earning a score of 18 and below (average performance level and poor) assessed by the checklist of checking the level of ostomy care performance and lack of work experience in the health system. The data collection took place from August 2020 to February 2021 and lasted for 7 months.

2.2. Research Instruments

Research instruments included a demographic characteristic questionnaire (including age, sex, and education), an ostomy self-care knowledge questionnaire, and an observational checklist of patients' ostomy self-care performance. The stoma care knowledge questionnaire developed by researchers is based on scientific text [25]. In this way, according to the objectives of the study, appropriate items were designed. Then, the phrasing, sequence, and arrangement of the questions and the proper format to receive the answers were considered. This questionnaire was related to how to take care of the ostomy (ileostomy and colostomy) and evaluates items such as the definition of ostomy, definition of ileostomy and colostomy, types of ostomy bags, duration of use of bags, appropriate time to change the bag, diet, lifestyle with ostomy, and stoma care tips. This questionnaire has 26 questions with "correct," "incorrect," and "I do not know" answers and is in 5 dimensions. For each correct answer, 1 point, and for incorrect and "I do not know" answers, zero points were considered. The sum of the total correct answers was 26. That if they got a score of 18 to 26, had good knowledge; 10 to 17, had average knowledge; and a score of 0 to 9, had poor knowledge. People with average to poor knowledge entered the training program. The questionnaire was answered one day before surgery as a pretest, and the first day, one week and one month after surgery as a posttest. The

validity of the ostomy knowledge level questionnaire was confirmed using content validity (CVI and CVR) and its reliability was determined 0.85 by Kuder–Richardson 21 (KR-21). In this way, the questionnaire was sent to 10 faculty members of the gastroenterology, cancer surgery, and nursing departments of Guilan University of Medical Sciences, and their opinion regarding the importance of questionnaire items was obtained by selecting one of the options of relevance, clarity, simplicity, and necessity. After applying the professors' opinions, the final questionnaire was prepared. In the reporting phase, the questionnaire was sent to all professors and their approval was obtained. The observational checklist of patients' ostomy self-care performance was taken from a book about basic nursing techniques. This procedure checklist book applied all the procedures from Craven and Hirnle's Fundamentals of Nursing [26]. This observational checklist has 13 items with a three-choice Likert rating of "excellent performance," "satisfactory performance," and "need to practice," which evaluates the steps of changing the ostomy bag. For scoring, 2 points for "excellent performance," 1 point for "satisfactory performance," and zero for "need to practice" were considered. The total result was 26 because 13 items were examined. If the participants got a 18–26 score, their performance was excellent; 10 to 17 was used for average performance; and a score of 0 to 9 for poor performance. People with average to poor performance entered the training program.

To evaluate the performance of both groups in terms of how to change the bag and wash the ostomy, a pretest was performed on the day before surgery. An observation checklist of self-care performance was used for evaluation, which was completed by one of the researchers.

To evaluate the performance of both groups in terms of how to change the bag and wash the ostomy, a pretest was performed on the day before surgery. An observation checklist of self-care performance was used for evaluation, which was completed by one of the researchers. Then, changing the bag and washing the ostomy were practically taught in a session and the performance evaluated through posttest 1 on the first day, posttest 2 in one week after the training, and posttest 3 in one month after the training.

The validity of the observational performance checklist was confirmed using content validity, and its reliability was determined by an inter-rater reliability method ($r=0.9$). Charlson Comorbidity Index was used to control concomitant diseases in the present study.

2.3. Intervention

The educational intervention in this study adopted five stages of the nursing process: assessment and recognition of educational needs, nursing diagnoses, planning, implementation of the educational program, and evaluation of the educational outcome [22, 27]. The first stage of the nursing process is assessing and recognizing the educational need, which was done using a questionnaire to assess the level of knowledge of ostomy care. After the necessary information was collected in the nursing assessment stage, nursing diagnoses were designed in the next stage.

These nursing diagnoses were in the fields of patient knowledge related to nutrition, activity, and exercise, how to change the colostomy and ileostomy bag and the right time to change the bag, signs of the need to see a doctor or nurse, and important points of ostomy care. Then, in the third stage of the nursing process (planning), educational goals were formulated and educational content was prepared to achieve the goals.

The fourth stage of the nursing process was the implementation of educational intervention. Patients were trained individually and face-to-face. The training sessions were conducted in two sessions. The first training session was conducted one day before surgery with the aim of assessment of the patient's knowledge about ostomy care. Knowledge of ostomy care includes the definition of ostomy; the types of ostomy bags; proper nutrition; time to change the bag and the amount of activity, exercise, and symptoms required to see a doctor or nurse; and important ostomy care tips. An educational pamphlet was also provided for each patient.

In the evaluation process of the nursing process, the questionnaire was answered by a pretest and post-test by the subjects. For posttest, a questionnaire to assess the level of ostomy care knowledge was distributed and completed by the subjects one day after training, one week and one month after training. The second session of postoperative training was performed on the first bag replacement and ostomy lavage. In this session, the patient was taught how to take care of the ostomy and change the bag in a practical way. The duration of training was 15 minutes.

In the evaluation phase of the nursing process, the performance of the subjects in relation to how to change the bag

and wash the ostomy as a pretest and post-test one day after training on how to care for the ostomy and how to change the bag, one week and one month after training with checklist.

In order to collect data, the researcher obtained informed consent after selecting the research samples and introducing herself and providing sufficient explanations about the purpose of the research. The participants were also reminded that the information obtained from them will remain completely confidential and they can withdraw from the study whenever they wish.

2.4. Data Analysis

Collected data were analyzed using the SPSS software version 21. To analyze the general data, descriptive statistics of mean, median, and standard deviation were used. The Kolmogorov–Smirnov (KS) test was used to investigate the normality distribution of quantitative variables. The Mann–Whitney *U* test was used to analyze the differences in the performance status and knowledge status between the two groups of the study, and Wilcoxon test was used to analyze the differences within the group of the study. The significance level (*p* value) in all tests was considered 0.05.

3. Results

The results showed that the majority of allocated participants was in the age group of 60–74 (86.5%) and were males (65.4%). All allocated participants (100%) were married. There was no statistically significant difference between the demographic characteristics of the two groups ($p < 0.05$).

The results related to the level of self-care knowledge showed that the mean score of knowledge increased one day and one week after the intervention in both intervention and control groups. At the end of the study, after thirty days, the self-care knowledge score of the intervention group had a higher median and mean than the control group ($p < 0.001$) (Table 1).

Table 1

The comparison of the mean score of ostomy self-care knowledge between the intervention and control groups after the completion of the programme.

Variables	Study groups						Sig
Intervention group	Control group					Increase in the score of ostomy self-care knowledge	Mean
SD	Median	Mean	SD	Median	One day after intervention	4.65	3.11

4.00	4.00	1.74	4.00	0.356	7 days after intervention	12.81	3.14
12.00	7.15	3.38	7.00	0.000	30 days after intervention	16.46	2.60

SD: standard deviation; Sig: significance level.

Figure 1 indicates that although both groups of the study improved their level of knowledge throughout the timeline of the study, the rate of promotion in the intervention group was more significant than the control group.

[figure(s) omitted; refer to PDF]

The results showed that the mean score of patients' performance in all time intervals (one day, one week, and one month after training) in the intervention group was higher than the control group (Table 2).

Table 2

Comparison of the increase in the score of ostomy self-care performance in the two groups of the study.

Variables	Study groups						Sig
Intervention group				Control group		Increase in the score of ostomy self-care performance	Mean
SD	Median	Mean	SD	Median	1 day after intervention	6.27	3.32
6.50	3.04	3.42	2.00	0.000	7 days after intervention	10.46	6.02

12.00	7.50	3.48	8.00	0.035	30 days after interv entio n	16.42	7.48

SD: standard deviation; Sig: significance level.

Figure 2 shows the mean score of ostomy self-care performance in both groups. It indicates that although both groups had improved performance levels during the study, the rate of promotion in the intervention group was significantly higher.

[figure(s) omitted; refer to PDF]

4. Discussion

This study was performed to determine the effect of education based on the nursing process on self-care knowledge and performance of elderly patients with intestinal stoma. Findings about self-care knowledge and performance in the intervention group and control group before and after the intervention showed that although both groups had improved the level of knowledge and performance, the percentage of promotion in the intervention group was significantly higher. In relation to the justification of this finding, it can be said that older adults are more at risk of developing chronic conditions. Thus, their search for health care will likely also increase [28]. This makes them look for the necessary information to take care of themselves, which can be a justification for improving the level of knowledge and performance in both the groups in the present study. However, the percentage of higher improvement in the level of knowledge and performance among the intervention group compared to the control group is related to the effect of the intervention. In other words, the results of the present study indicate that education based on the nursing process has been effective in improving self-care knowledge and performance. In justification of this finding, there was not found a study similar to the present study that investigated the intervention of education based on the nursing process on the level of knowledge and performance of patients with ostomy. For this reason, to discuss the findings, studies that have generally dealt with the effect of education on the self-care of these patients have been mentioned as evidence. For example, Shrief and Mokhtar examined the effect of structural education on the knowledge of patients with surgical stoma [24]. Consistent with the present study, the results of this study indicate the effect of education on self-care knowledge of patients with surgical stoma. Similar results were observed in the study of Ran et al. [29], Culha et al. [16], Hegazy et al. [30] and Oshvandi et al. [31]. In line with the results of the present study, the findings of the study by Pouresmail et al. [32], Hegazy et al. [30], and Sanabadi et al [33] showed the positive effect of education on increasing self-care skills and behaviors.

In general, adult education about various health care topics is essential to improve health care behavior and self-management as well as reduce risky behavior [34]. The ultimate goal of patient educational programs is to achieve long-lasting changes in behavior by providing patients with the knowledge to allow them to make autonomous decisions to take ownership of their care as much as possible and improve their own outcomes [22]. A great deal of effort must be invested to support the empowerment of older people to increase their benefits from educational interventions. To achieve empowerment, people must obtain knowledge that is related to individual needs and expectations. By providing empowering care, nurses help increase the residents' independence and their feelings of autonomy [34]. Gaining insight into older patients' needs, priorities, and experiences is also mentioned and of high importance in reviews on principles of learning in older people [35]. In older people, age-related conditions and the related decline in physical and cognitive functions require that they receive appropriate education to continue living as actively and independently as possible [34].

The nurse, as a part of the multiprofessional health team, has the duty of managing the care of elderly people with an intestinal ostomy, from any levels of assistance, from the diagnosis process to home monitoring [36]. Nurses are required to be adequately prepared with a sufficient theoretical knowledge base which guides their clinical practices

[37] and provision of comprehensive nursing care to older adults [38]. The nursing process has become the basis of contemporary practice, as a core component of nursing education, as well as a point of reference in providing nursing care in many parts of the world. Arguably, it is central to all nursing actions, applicable in any setting and within any frame of [39]. The nursing process functions as a systematic guide to client-centered care [40]. Using the five-step nursing process for developing a patient teaching plan will help to deliver comprehensive and effective teaching. Simple teaching plans accompanied by multiple teaching strategies provide patients with valuable information [27]. The nursing process is regulated and implemented according to the needs of patients and due to the fact that implementation of care programs based on patients' needs will produce better results [41], it is expected that more attention will be paid to it in patient care plans.

5. Conclusion

Generally, the results of the study indicate that the use of education based on the nursing process has a positive effect on the self-care knowledge and performance of elderly patients with intestinal stoma and can be used as a model for nursing interventions in caring for patients. Therefore, it is suggested that education based on the nursing process has been considered in clinical and educational environments, and the relevant authorities should provide the necessary resources and facilities for nurses to use them.

The main limitation of the present study is that it was conducted on elderly patients of one medical center of Guilan University of Medical Sciences, which may not be representative of all older adults, and therefore, its results cannot be generalized to all older adults. It is suggested that future studies be conducted on participants from other regions and countries with cultural diversity and their results be compared with the findings of the present study.

Ethical Approval

This research was approved by the ethics committee of Guilan University of Medical Sciences (ethics ID IR.GUMS.REC.1398.301) in Iran. The study was performed in accordance with the ethical standards as laid down in the Declaration of Helsinki and its later amendments or comparable ethical standards.

Consent

Written informed consent was voluntarily obtained from all participants included in the study.

Authors' Contributions

RM is the first researcher who wrote the study proposal, collected the data, and analyzed the data. AD is the corresponding author and supervised the research work and was a major contributor to writing the manuscript. She designed the study, conducted data collection and analysis, and supervised the research work. RMG was involved in the study design and interpretation of the data and review of the report. EK was involved in the study design, analysis and interpretation of the data, and statistical advice. All authors have read and approved the manuscript.

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Factors Influencing Turnover Intention among Nurses and Midwives in Ghana

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ABSTRACT (ENGLISH)

Background. Nurse turnover intention, defined as a measure of nurses' desire to leave their positions, is a global public health issue with a grave impact on the healthcare workforce. However, literature on it is limited in sub-Saharan Africa, an at-risk region. This study aimed to determine the predictors of turnover intention among nursing staff at a tertiary hospital in Kumasi, Ghana. **Methods.** This was an institution-based cross-sectional study conducted among 226 randomly selected nurses and midwives working at a tertiary healthcare center in Kumasi, Ghana. Data were collected by using a structured questionnaire. Significant predictors of turnover intention were analyzed by using multivariate logistic regression analysis. Adjusted odds ratio (AOR) with a 95% confidence interval (CI) and p value <0.05 was used. **Results.** The prevalence of turnover intention among study participants was 87.2% (197/226). About two-thirds (61.5%, 139/226) of the participants were exposed to a high level of workplace hazards. Management support (AOR=3.09, 95% CI=1.09–8.75), salary (AOR=0.07, 95% CI=0.01–0.46), inadequate number of staff on duty per shift (AOR=3.36, 95% CI=1.08–10.47) and participants' rank (AOR=6.81, 95% CI=1.18–39.16) were significantly associated with turnover intention. **Conclusion.** Overall, the turnover intention was high. Hence, there is a need for policymakers, health administrators, and nurse managers to implement strategies such as increasing staff strength, providing adequate support, incentives, and other forms of motivation for nurses and midwives to help reduce the rate of turnover intention.

FULL TEXT

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1. Introduction

Globally, the increasing demand for healthcare workers, particularly amidst the outbreak of the 2019 coronavirus disease (COVID-19), calls for the need to retain the healthcare workforce. Nurses and midwives form a significant proportion of the hospital workforce. The World Health Organization (WHO) estimates that nurses and midwives constitute approximately 50% of healthcare workers [1]. Nurses and midwives have an important role to play in the achievement of the Agenda 2030 of the Sustainable Development Goal Three (SDG3) of “good health and wellbeing for all” [2]. To be able to achieve SDG3 by 2030, the WHO projects that about 9 million additional nurses and midwives are needed [1].

About half of the global shortage of healthcare workers is attributable to nurses and midwives [1]. This has been heightened by the COVID-19 pandemic with its associated high workload, frequency of nurse absenteeism, increased levels of burnout, and turnover intention [3–6]. Mosallam et al. defined turnover intention as “the final cognitive step leading to actual turnover and that it is the main factor impacting turnover” [7]. Studies have shown that nurses’ and midwives’ turnover intention range from 20.0 to 67.8% globally [8–11]. In a multinational study, factors such as inadequate staff and job satisfaction were identified to contribute significantly to turnover intention among nurses and midwives [12]. Similarly, in Italy, Sasso et al. reported that poor patient safety and emotional exhaustion were significantly associated with turnover intention among nurses [13]. In sub-Saharan Africa, a pooled prevalence of 50.7% of turnover intention has been reported in a systematic review and meta-analysis [9]. In Ethiopia, a study found that about 64.9% of nurses had turnover intention [14]. Lack of satisfaction with performance appraisal systems, low monthly income, high workload, and young age have been identified as significant predictors of turnover intention among nurses and midwives in sub-Saharan Africa [11, 15, 16].

In Ghana, up to 69.0% of nurses and midwives have been reported to have turnover intention in the future [17–20]. It has been suggested that such turnover intention could be reduced if organizational and nurse managers would adopt a transformational leadership style to inspire positive change [19]. Burnout and workplace violence have also been reported to have a significant effect on turnover intention among nurses [17, 20]. For instance, Opoku et al. found in their study that nurses that experienced high burnout at the workplace had about five times increased odds of turnover intention [20].

This study sought to determine the prevalence and key predictors of turnover intention among nurses and midwives working at a tertiary hospital in Kumasi, Ghana. This study also assessed the exposure levels of workplace hazards and their effect on turnover intention among this group of healthcare workers. One key thing is that studies conducted in Ghana about the subject failed to address the effect of exposure levels of workplace hazards (physical, chemical, mechanical, and psychological hazards) on turnover intention among nurses and midwives. This study, therefore, addresses this gap in the effect of exposure levels of workplace hazards on turnover intention among nurses and midwives in Ghana. The outcome of this study will provide essential data for policymakers in formulating interventions that will aim at retaining nurses and midwives on the job and also reducing exposure to workplace hazards. The ability to retain nurses and midwives in the job in Ghana will also aid in improving the quality of patient care and strengthening the healthcare system of the country.

2. Methods

2.1. Study Design, Setting, and Population

This cross-sectional study was conducted among nurses and midwives working at a tertiary healthcare facility in Kumasi, Ghana, from September 2021 to December 2021. The study site has over 4000 healthcare professionals with diverse expertise. Among the healthcare professionals working in the facility are 2289 registered nurses and midwives. The study population was all registered and certified nurses and midwives working at the hospital. These were staff that performed nursing care at the hospital. The eligibility criteria for the study were all registered nurses and midwives that had practiced for at least 12 months at the facility. All nurses and midwives that were on study, annual and sick leave at the time of the data collection were excluded from the study.

2.2. Sample Size Estimation and Sampling

The sample size was calculated using a baseline study conducted in Nigeria [15], which showed that 85.5% (*P*) of

healthcare workers in Nigeria had turnover intention. Based on a 95.0% confidence interval (Z) and a 5% allowable margin of error (E), the sample size was calculated from the following equation: [21](1)Sample size= $Z^2P1-PE2$. With a nonresponse rate of 20%, a total of two hundred and twenty-nine (229) participants were recruited for the study.

The study participants were selected by using a simple random sampling technique. They were nurses and midwives working in a tertiary healthcare center in Kumasi, Ghana. First, balloting was carried out to select six out of thirteen clinical departments at the hospital. The number of nurses and midwives selected from each department was determined using probability proportional to size. This was performed by dividing the number of nurses in each department by the number of nurses in all the departments and multiplying by the estimated sample size. The selection of study participants was conducted by using the lottery method. Unique identifiers were assigned to all the names of nurses and midwives in each department. The unique identifiers were put in a bowl and drawn one after the other until the estimated sample size for each department was obtained.

2.3. Data Collection Tools and Procedure

Data collection was conducted by using a structured pretested questionnaire using a pen-to-paper approach. A pretest was carried out on 20 nurses and midwives working in a different facility in Kumasi which was not part of the source population for the study. After the pretest, appropriate revisions were made to the data collection instrument. The questionnaire was made up of four major parts; demographic characteristics (age, sex, educational level, among others), workplace environment (management support, leadership style, years of practice, among others), exposure to occupational hazards (excessive workload, slips, falls, extreme temperature, among others), and turnover intention.

The turnover intention was estimated by asking participants if they intended to quit the job in the future with a “yes” or “no” response. The turnover intention was defined as having the intention to quit the job in the future. The level of exposure to workplace hazards was assessed by asking the study participants about seventeen (17) workplace hazards that healthcare workers are potentially exposed to at the workplace. The exposure to a particular hazard was scored ‘1’. The overall score for the total number of workplace hazards exposed was computed and expressed as a percentage. Study participants that were exposed to at least 70.0% of the hazards were categorized as having a potentially high level of exposure, while those that had less than 70.0% were categorized as having relatively low levels of exposure. The cutoff of the exposure level was determined at the discretion of the authors.

2.4. Data Management and Analysis

The data were exported to Stata version 16 for quality checks and analysis. Descriptive statistics such as frequencies, percentages, and means were presented using tables. Chi-square or Fischer’s exact test was used to determine the relationship between demographic characteristics, workplace environment, occupational hazards, and turnover intention. Significant predictors of turnover intention were analyzed by using multivariate logistic regression analysis. Adjusted odds ratio (AOR) with a 95% confidence interval (CI) and p value <0.05 were used to identify significant predictors of turnover intention.

2.5. Ethical Considerations

This study was granted ethical approval by the Komfo Anokye Teaching Hospital Institutional Review Board (KATH-IRB) with reference number KATHIRB/AP/040/20 on the 16th of September, 2021. All recruited study participants provided informed consent. Their privacy and confidentiality were ensured.

3. Results

3.1. Demographic Characteristics and Workplace Environment of Study Participants

Out of a total of 229 participants that were recruited, 226 of them returned the questionnaire filled (response rate = 98.7%). About 45.1% (102/226) of the participants were between the ages of 30 to 39 years. The mean age of study participants was 32.9 (± 7.2) years, with a range of 22 to 59 years. About two-thirds (65.0%, 147/226) of the participants were married. A little over half (52.7%, 119/226) of the participants had a diploma as their highest level of education (Table 1).

Table 1

Demographic characteristics and workplace environment of study participants.

Variables	Total <i>n</i> (%)	Intention to quit <i>n</i> (%)	No intention to quit <i>n</i> (%)	p values
<i>Age group (years)</i>				0.448 ^a
20–29	86 (38.1)	72 (83.7)	14 (16.3)	
30–39	102 (45.1)	90 (88.2)	12 (11.8)	
40+	38 (16.8)	35 (92.1)	3 (7.9)	
Mean age ($\pm$ SD)	32.9 ($\pm$ 7.2)			
Age range	22–59			
–				
<i>Sex</i>				0.051
Male	66 (29.2)	62 (93.9)	4 (6.1)	
Female	160 (70.8)	135 (84.4)	25 (15.6)	
–				
<i>Relationship status</i>				0.606 ^a
Single	76 (33.6)	64 (84.2)	12 (15.8)	
Married	147 (65.0)	130 (88.4)	17 (11.6)	
Cohabiting	3 (1.3)	3 (100.0)	0 (0.0)	
–				
<i>Level of education</i>				0.109
Diploma	119 (52.7)	107 (89.9)	12 (10.1)	
First degree	89 (39.4)	77 (86.5)	12 (13.5)	
Postgraduate	18 (8.0)	13 (72.2)	5 (27.8)	
–				
<i>Years of practice</i>				0.056 ^a

1–5	120 (53.1)	103 (85.8)	17 (14.2)	
6–10	51 (22.6)	49 (96.1)	2 (3.9)	
11–15	35 (15.5)	27 (77.1)	8 (22.9)	
16+	20 (8.9)	18 (90.0)	2 (10.0)	
–				
<i>Rank</i>				0.003 ^a
Staff nurse/Midwife	84 (37.2)	73 (86.9)	11 (13.1)	
Senior staff nurse/Midwife	69 (30.5)	67 (97.1)	2 (2.9)	
Nursing/Midwifery officer	43 (19.0)	33 (76.7)	10 (23.3)	
Senior nursing/Midwifery officer	9 (4.0)	6 (66.7)	3 (33.3)	
Principal nursing/Midwifery officer	21 (9.3)	18 (85.7)	3 (14.3)	
–				
<i>Salary (Ghc)</i>				0.033
1000–2000	87 (38.5)	77 (88.5)	10 (11.5)	
2000–3000	105 (46.5)	95 (90.5)	10 (9.5)	
3000–4000	34 (15.0)	25 (73.5)	9 (26.5)	
–				
<i>Management support</i>				<0.001
Adequate	72 (31.9)	53 (73.6)	19 (26.4)	
Inadequate	154 (68.1)	144 (93.5)	10 (6.5)	
–				
<i>Leadership style at the ward</i>				<0.001
Like	73 (32.3)	52 (71.2)	21 (28.8)	
Dislike	153 (67.7)	145 (94.8)	8 (5.2)	

–				
<i>Effect of work on the matrimonial home</i>				0.001
Yes	97 (42.9)	93 (95.9)	4 (4.1)	
No	129 (57.1)	104 (80.6)	25 (19.4)	
–				
<i>Number of staff on duty per a shift</i>				<0.001
Adequate	53 (23.5)	37 (69.8)	16 (30.2)	
Inadequate	173 (76.6)	160 (92.5)	13 (7.5)	

NB: postgraduate includes masters, GHC 8.13: USD 1.00 per exchange rate in Ghana during the study period, SD: standard deviation, ^aanalyzed by using Fisher's exact test.

Approximately 53.1% (120/226) of the participants had practiced for 1 to 5 years. About 37.2% (84/226) of the participants were staff nurses/midwives. About 31.9% (73/226) of the participants indicated they received adequate management support, while about 32.3% (73/226) of the participants indicated they liked the leadership style in the ward (Table 1).

3.2. Turnover Intention and Exposure to Workplace Hazards among Study Participants

Out of a total of 226 participants, about 87.2% (197/226) of participants had turnover intention. About two-thirds (61.5%, 139/226) of the participants were exposed to a high level of workplace hazards. The study participants indicated they were exposed to the following hazards at the workplace: slips, trips, and falls (81.9%), infections from patients (90.3%), excessive workload (73.9%), standing for prolonged periods (72.6%), poor work posture (73.5%), and manual lifting of patients (86.3%) (Table 2).

Table 2

Turnover intention and exposure to workplace hazards among study participants.

Variable	Frequency, N=226	Percentage, %
<i>Turnover intention</i>		
Yes	197	87.2
No	29	12.8
–		
<i>Reasons for turnover intention *</i>		
To seek greener pastures abroad	147	74.6
Salary is too small	190	96.4

Planned career change	62	31.5
Too much abuse	55	27.9
Poor condition of service	179	90.9
My physical health	42	21.3
Lack of respect from doctors	76	38.6
Lack of respect from supervisors	79	40.1
-		
<i>Level of exposure to workplace hazard</i>		
Low	87	38.5
High	139	61.5
-		
<i>Exposure to workplace hazards *</i>		
Slips, trips, and falls	185	81.9
Cuts, wounds, needle pricks, and injuries from sharp objectives	211	93.4
Radiation	45	19.9
Extreme temperature (cold/heat)	53	23.5
Electric shock	61	27.0
Infection from patients	204	90.3
Irritation from disinfectants	125	55.3
Direct contact with a contaminated specimen	98	43.4
Heat	64	28.3
Anaesthetic gas/agents	91	40.3
Excessive workload	167	73.9

Poor interpersonal relationship	99	43.8
Standing for prolonged periods	164	72.6
Chemical inhalation	60	26.5
Poor work posture	166	73.5
Manual lifting of patients	195	86.3
Assault (verbal abuse)	69	30.5

*Multiple responses.

3.3. Predictors of Turnover Intention among Study Participants

After adjusting for all the significant variables in the multivariate analysis, participants' rank, salary, management support, and the number of staff on duty per shift were identified as significant predictors of turnover intention among study participants (Table 3).

Table 3

Multivariate logistic regression analysis of the factors associated with turnover intention among study participants.

Variables	Univariate		Multivariate	
	p value	Adjusted OR (95% CI)	p value	Rank
Crude OR (95% CI)				
				Staff nurse/ midwife
1.00		1.00		Senior staff nurse/ midwife
5.05 (1.08–23.61)	0.040	6.81 (1.18–39.16)	0.032	Nursing/ midwifery officer
0.50 (0.19–1.29)	0.149	0.63 (0.17–2.38)	0.494	Senior nursing/ midwifery officer

0.30 (0.07–1.38)	0.123	1.25 (0.17–9.42)	0.829	Principal nursing/midwifery officer
0.90 (0.23–3.58)	0.886	11.79 (1.20–115.98)	0.034	
<i>Salary (Gh¢)</i>				
1000–2000	1.00		1.00	
2000–3000	1.23 (0.49–3.12)	0.657	1.04 (0.29–3.67)	0.955
3000–4000	0.36 (0.13–0.99)	0.047	0.07 (0.01–0.46)	0.005
–				
<i>Management support</i>				
Adequate	1.00		1.00	
Inadequate	5.16 (2.26–11.81)	<0.001	3.09 (1.09–8.75)	0.033
–				
<i>Leadership style at the ward</i>				
Like	1.00		1.00	
Dislike	7.32 (3.06–17.54)	<0.001	3.17 (0.93–10.80)	0.065
–				
<i>Effect of work on the matrimonial home</i>				
Yes	1.00		1.00	
No	0.18 (0.06–0.53)	0.002	0.40 (0.10–1.52)	0.179
–				
<i>Number of staff on duty per shift</i>				
Adequate	1.00		1.00	

Inadequate	5.32 (2.36–12.02)	<0.001	3.36 (1.08–10.47)	0.037
–				
<i>Level of exposure</i>				
Low	1.00		1.00	
High	3.60 (1.59–8.18)	0.002	1.68 (0.62–4.56)	0.304

NB: all significant variables were adjusted for in the multivariate analysis, OR: odds ratio, and CI: confidence interval. The odds of senior staff nurse/midwife having turnover intention was more (AOR=6.81, 95% CI= 1.18–39.16) compared to staff nurse/midwife. Similarly, participants that were taking monthly salary between Gh¢3000–4000 (\$369–\$492) had about 93% (AOR=0.07, 95% CI=0.01–0.46) reduced odds of having turnover intention compared to those that were on monthly salary between Gh¢1000–2000 (\$123–\$246). Study participants that indicated that management support was inadequate were about three (3) times more (AOR= 3.09, 95% CI= 1.09–8.75) likely to have turnover intention compared to those that indicated management support was adequate. Study participants that indicated that the number of staff per shift was inadequate were about 3 times more (AOR=3.36, 95% CI= 1.08–10.47) likely to have turnover intention compared to those that indicated the number of staff per shift was adequate.

4. Discussion

Turnover intention is a major public health challenge, especially in low-resource settings. This study was conducted to determine the key predictors of turnover intention among nurses and midwives working in a tertiary hospital in Kumasi, Ghana. The study also examined the exposure of nurses to workplace hazards. The prevalence of turnover intention was estimated at 87.2%, with low salary levels being the commonest reason for turnover intention. The significant predictors of turnover intention in the present study were management support, salary, inadequate number of staff per shift, and participants' rank. About 61.5% of the study participants were exposed to high levels of workplace hazards.

The prevalence of turnover intention (87.2%) in the present study was about twice higher than the prevalence rate (45.2%) previously reported in Ghana [19]. The prevalence rate in this present study is comparable to studies conducted in Saudi Arabia (94.0%) and Japan (74.1%) [22, 23]. However, our 87.2% prevalence of turnover intention differs from the 20.7% reported in the Philippines [24] and 24.8% in Egypt [16].

The study participants were found to have been exposed to workplace hazards such as slips, trips and falls, cuts, wounds, needle pricks, and injuries from sharp objects, infections from patients, excessive workload, standing for prolonged periods, poor work posture, and manual lifting of patients. The exposure of nurses and midwives to cuts, wounds, needle pricks, and injuries from sharps is not surprising due to their frequent use of sharp objects, such as needles, for injections and other sharp objects at the workplace [25]. This finding is comparable to a study in Saudi Arabia that reported that among healthcare workers, nurses (56.5%) were the most affected by sharp object injuries at the workplace [26]. A higher prevalence of needle stick injuries has also been reported among Iranian nurses in the workplace [27]. This puts them at higher risk of cuts, wounds, needle pricks, and injuries from sharps. Again, these sharps may have been exposed to infected body fluid and blood, which could serve as a medium of transmission of infectious diseases. The majority of the nurses and midwives in this study indicated exposure to infections from patients as one of the common workplace hazards. This could be explained by the study being conducted amidst the COVID-19 pandemic where the infection rate was high. The high exposure to infections from patients in this study underpins an initial report that, as of June 2020, more than 600 nurses had lost their lives due to COVID-19 infections in the world [28]. The 81.9% of the study participants that indicated exposure to slips, trips, and falls is also very disturbing, looking at their effects on sustaining injuries at the workplace [29]. In the univariate

analysis, participants who were exposed to high levels of workplace hazards had about three times increased risk of turnover intention compared to those that were exposed to low levels of workplace hazards. However, this was insignificant after adjusting for other covariates. We recommend that hospital architecture and structures should aim at minimizing injury risk.

The present study identified nurses' salaries and management support as significant predictors of turnover intention. This is in line with other studies that reported lack of management support could influence turnover intention among nurses and midwives [30–32]. In a previous study, nurses and midwives with high salaries were also more likely to remain in the profession compared to colleagues with lower salaries [33, 34]. Participants in the present study that indicated that they received inadequate support from management were more likely to have turnover intention compared to those who received adequate support from management. This highlights the importance of management support at the workplace and how it influences nurses' and midwives' turnover intention. When nurses and midwives receive all the needed support, such as the provision of personal protective equipment and medical care policy for the nurse and family, they may feel motivated. Our findings also have implications for policymakers and employers to ensure that salary levels and other forms of remuneration of nursing staff in sub-Saharan Africa are comparable with the global market.

We observed that an inadequate number of nurses on duty predicted turnover intention among study participants. Participants that had inadequate number of staff per shift were more likely to have turnover intention compared to those that had adequate number of staff per shift. In Australia and California in the United States, mandatory nurse-to-patient ratios per shift are as follows: 1:4 on morning shifts, 1:5 on afternoon shifts, and 1:8 on night shifts. For the type of ward, the nurse-to-patient ratios are 1:5 for the general medical-surgical ward, 1:4 for the emergency ward, and 1:2 for the critical care unit [35, 36]. There are no such recommendations in Ghana and across Africa. Inadequate number of staff per shift means that the burden of workload will be increased. This may also increase the stress levels of the number of staff on duty. High stress among nurses has been reported to influence turnover intention among nursing professionals [37]. There is, therefore, the need to ensure that the number of nurses on duty per shift is adequate to reduce the burden of workload as well as enhance patient and staff safety [38].

We also observed that participants' rank was significantly associated with turnover intention among nurses and midwives. Principal nurses/midwives and senior staff nurses/midwives were more likely to have turnover intention compared to staff nurses/midwives. The findings in the present study are comparable to an earlier study that found a significant effect on nurses' rank on turnover intention [39]. In Ghana, staff nurses/midwives are younger and of lower rank compared to senior staff nurses/midwives and principal nurses/midwives who have attained that status through long service. The leadership positions at the workplace are given to those of higher rank. Taking up a leadership position could increase the workload and stress levels at the workplace, which equally affects turnover intention [38].

The outcome of the present study will help hospital administrators, nurse managers, and policymakers to set up strategies that will reduce the levels of exposure to workplace hazards. Again, the high turnover intention among nurses and midwives in the present study deepened the significance of providing incentives and adequate support to nurses and midwives and ensuring that there is adequate number of staff on duty, considering their influence on turnover intention.

5. Strengths and Limitations of the Study

The present study provides useful data in understanding the dynamics of turnover intention among nurses and midwives in Ghana and expanding on existing interventions to improve their working conditions in the country. This study provides data on the effect of the levels of exposure to workplace hazards on turnover intention, which had not been previously reported among nurses and midwives in Ghana. Another strength of this study is the high response rate which enhances the quality of the study data and the representativeness of the study population.

Despite the significant findings in this study, a few limitations were identified. First, the exclusion of nurses and midwives on study, annual and sick leaves from the study could affect the burden of turnover intention. Second, this was not a multicenter study, hence, limiting the power of generalization of the study findings. Third, it is worth noting

the wide confidence intervals of some of the results. We recommend that caution should be taken in interpreting the results with wide confidence intervals.

6. Conclusion

Turnover intention is rife among this cohort of nurses and midwives. The most significant predictors of turnover intention were management support, salary, inadequate number of staff per shift, and participants' rank. Again, study participants were exposed to a high level of workplace hazards. There is a need to set up strategies such as increasing the staff strength and ensuring equitable distribution of nurses and midwives in all the departments, providing the needed resources such as personal protective equipment and incentives for nurses. Amidst a high shortage of healthcare staff, we recommend a concerted effort and institution of policies to mitigate turnover intention.

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DETAILS

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Factors Associated with Nursing Student Satisfaction with Their Clinical Learning Environment at Wolkite University in Southwest Ethiopia

ABSTRACT (ENGLISH)

Background. The clinical learning environment has been defined as “an interactive network of strengths within the clinical environment that influence the clinical learning outcomes of students. Understanding students’ level of satisfaction with their clinical learning environment is crucial to ensuring the required teaching and learning process. Therefore, this study was designed to assess the level of satisfaction with the CLE among nursing students at the Wolkite University of Ethiopia. **Methods.** A cross-sectional study was conducted at Wolkite University. This study was carried out in March 2022 on 208 student nurses selected by purposive and convenient sampling techniques. This study used the English version of the Clinical Learning Environment and Supervision+Nurse Teacher (CLES+T) evaluation scale. The collected data were cleaned, coded, and entered into Epi data 3.1, and then, statistical analyses were performed using SPSS version 26. Bivariate and multivariable logistic regression models were used to identify factors associated with the satisfaction level of nursing students towards CLE. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated, and p values <0.05 were considered to indicate statistical significance. **Results.** More than half of the study participants were females, and nearly half (50.5%) of the participants were in year three of the nursing program. The study found that 39.9% (95%CI: 32.2%, 46.6%) of students were satisfied with their CLE. Factors that had a significant association with the satisfaction level of nursing students towards CLE were gender (female students) (AOR=16.053 (6.397, 40.286)), year of study (4th year) (AOR=6.296 (2.679, 14.796)), and the type of the hospital in which their last clinical placement was held (at a primary hospital) (AOR=2.961 (1.122, 7.815)). **Conclusion.** Effective nursing education programs need to be developed to increase satisfaction with clinical practice and to promote positive emotional regulation in nursing students. Nurse practitioners and managers should be aware of their important role in the professional development of students and their satisfaction with clinical placements.

FULL TEXT

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An Overview of Missed Nursing Care and Its Predictors in Saudi Arabia: A Cross-Sectional Study

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ABSTRACT (ENGLISH)

Background. Nursing care is holistic, and missing any aspect of care can be critical to patients' health. However, due to the complex and intense nature of the nursing practice, nurses have to unintentionally prioritize some activities, forcing them to omit some aspects of nursing care. **Aim.** To explore the dimensions of missed nursing care and its predictors within the Saudi Arabian healthcare system. **Methods.** Quantitative, cross-sectional study used the MISSCARE survey by utilizing nonprobability convenience sampling to collect the data of 604 staff nurses working in inpatient wards in Jazan, Saudi Arabia. **Results.** The overall mean of missed nursing care is ($m=1.37$, $SD=0.45$). Missed nursing care activities were mostly failure to attend interdisciplinary care conferences ($m=1.66$, $SD=0.96$) and patient ambulation thrice a day ($m=1.63$, $SD=0.97$). Missed nursing care was mainly caused by human resource shortage ($m=3.53$, $SD=0.88$). Missed nursing care is predicted by the turnover intention ($B=2.380$, $t=3.829$, $p<001$) and job satisfaction ($B=-0.864$, $t=-4.788$, $p<001$). **Conclusion.** Although missed nursing care is evident in Saudi Arabia, it is significantly lower than the international rates, and it is mainly caused by labor resource shortage which directly influences nurses' job satisfaction and intention to leave. Optimizing the recruitment process, resource allocation and effective nurses' retention programs are proposed solutions that may be beneficial to mitigate missed nursing care.

FULL TEXT

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Hesitancy toward Childhood Vaccinations: Preliminary Results from an Albanian Nursing Staff's Investigation

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ABSTRACT (ENGLISH)

Healthcare professionals are important models for their patients since their individual knowledge and attitudes toward vaccination can influence the patient's willingness to adhere to vaccination campaigns. After developing a structured questionnaire, it was administered to a sample of nursing staff working in public vaccination centers in Albania (December 2020-January 2021), in order to conduct a preliminary investigation aimed at describing knowledge, attitudes, beliefs, and hesitancy toward childhood vaccinations. Among the sample of nurses involved in the administration of vaccines (n.64, 92% females), most of them were confident about vaccines and favorable to childhood vaccinations (90%). However, when specifically investigating beliefs, nearly a quarter of the sample showed to be hesitant; 22% were unsure or partially agreed that vaccines might cause conditions such as autism and multiple sclerosis. A high risk of hesitancy was identified in the youngest staff especially when their work experience was below 10 years or when they graduated less than 10 years before (OR: 5.3, CI: 1.4–19.5; and OR: 4.2 CI: 1.2–14.6). Similarly, a low acceptance rate (54%) was detected for future childhood SARS-CoV-2 vaccines among the nurses, which is a sign of high levels of vaccine hesitancy. With regard to knowledge about childhood vaccine contraindications, none of the nurses identified all the ten correct answers, while only 13% answered at least six questions correctly. These preliminary results highlight the need of investigating more Albanian nursing staff's knowledge and attitudes toward child vaccinations, therefore investing in tailored training. Due to the ongoing Covid-19 pandemic and the roll-out of mass vaccination, the role of healthcare workers remains crucial and needs more support to manage the changing public opinion as well as quickly evolving vaccine technologies.

FULL TEXT

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1. Background

Vaccination is one of the most effective ways of controlling infectious diseases, particularly in the pandemic era. However, vaccine hesitancy, the delay in acceptance or refusal of vaccines despite the availability of vaccination services, has become a growing concern globally [1]. Risk perceptions and concerns about vaccine safety, attitudes, inadequate or poor communication about vaccines, social and cultural norms, and structural barriers could all be associated with vaccine hesitancy [2]. Therefore, vaccine hesitancy is a complex and context-specific issue, with key reasons behind it defined as complacency, inconvenience, and lack of confidence [3].

The WHO recognized vaccine hesitancy as one of the top ten public health concerns and threats to global health in 2019 since it is one of the reasons for vaccination coverage decreasing all over the world [4]. To determine the rate of vaccine hesitancy across the globe, three years of available data (2014–2016) were reviewed from the WHO/UNICEF joint report form (JRF), showing that the number of countries that reported "no vaccine hesitancy" was globally very low (from 6 to 7%) [5]. In addition, the large study conducted between November 2015 and December 2019 by De Figueiredo et al. reported that confidence in vaccines is still a concern particularly high in Europe where vaccine confidence has been persistently low since 2015 compared with other continents. However, in the same report, some signs of an increase in vaccine confidence, despite slow, were noted in the most recent years in some EU member states [6].

Since healthcare professionals are important role models for their patients, their function is crucial in delivering recommendations based on scientific evidence and increasing public awareness about the benefits of immunization. Their individual perceptions, knowledge, and attitudes can influence the family's decision to vaccinate their children. Therefore, it is essential to ensure that healthcare providers are aware of the characteristics, safety, and efficacy of vaccines [7]. Given the Strategic Objective n.2 of the Global Vaccine Action Plan, vaccine hesitancy surveys among health staff are crucial to promptly identify, understand, and address major determinants of vaccine hesitancy within different communities [8]. However, research in this area is still insufficient, especially in low-income and middle-income countries. This study aims at describing the preliminary findings about knowledge, attitudes, and beliefs of Albanian healthcare workers involved in the administration of childhood vaccines, therefore feeding the scientific literature with more evidence on nursing staff's confidence and hesitancy toward well-known childhood vaccination in Albania.

2. Methods

2.1. Study Design and Sample

Between December 2020 and January 2021, we conducted an observational cross-sectional study consisting of data collected through a structured survey on a convenience sample of nurses working in public vaccination centers covering the majority of regions in Albania. This survey was a pilot study conducted during the Covid-19 pandemic, and the Albanian Ministry of Health indicated the main 14 centers active in childhood vaccination in order to represent north, central, and south regions, as well as urban and rural catchment areas.

All the nurses of every selected health center were asked to answer the self-administrated questionnaire. Before the survey, informed consent was obtained from all the participants.

In this report, we discuss only the preliminary findings of a survey among healthcare workers, which was approved by the Ethical Committee of the Ministry of Health and Social Protection of Albania (n.303/46 of October 16, 2020).

2.2. Questionnaire

After reviewing the literature [9, 10], we developed a semistructured questionnaire consisting of four sections:

- (i) Nurses' general information, including years of practice and years since graduation
- (ii) Nurses' beliefs, attitudes, confidence, and hesitancy toward vaccination topics were assessed with the support of a questionnaire composed of 14 statements (according to a five-point Likert scale)
- (iii) Nurses' perceived impact of different training tools in obtaining knowledge on pediatric vaccination
- (iv) To evaluate their knowledge regarding vaccine contraindications, they were asked to classify 10 clinical conditions as contraindications or not
- (v) To evaluate hesitancy about the SARS-CoV-2 vaccine in children, the question asked was "If a pediatric SARS-CoV-2 vaccine was available would you vaccinate your patients?"

The questionnaire was self-administrated. Participants were informed about the aim of the study and the usage of data. They were assured confidentiality and anonymity by using a codified number to identify each respondent. The respondents could not consult any material or each other when filling in the questionnaire.

2.3. Statistical Analysis

Data collected have been presented as numbers and percentages. The statistical elaboration of the data was performed using IBM SPSS Statistics (version 26). Odds ratios (ORs) were calculated with their 95% confidence interval (95% CI) in order to investigate factors that could be associated with an increased risk of vaccine hesitancy. When referring to knowledge regarding vaccine contraindications, the median incorrect answers were reported as for the total sample, then differences between answers' scores of hesitant vs. not hesitant nurses were analyzed by using the nonparametric Mann–Whitney *U* test. Differences between the number of questions correctly answered based on having 10 years (or having less) of working experience or having graduated 10 years (or less) from the survey were also investigated using the nonparametric Mann–Whitney *U* test.

3. Results

Data from 64 Albanian nurses (92.2% females) were eligible for the analysis. The questionnaires covered 88.9% of the overall nursing staff of the centers. Figure 1 shows details of the sample.

[figure(s) omitted; refer to PDF]

Among the responders, 61% (n.39) were less than 45 years old; 93.8% (n.60) were working in a vaccination center located in urban areas (37.5% in Tirana, 17.2% in Elbasan, 12.5% in Vlora, 10.9% in Durres, 7.8% in Shkodra, and 7.8% in Lezha), while 6.3% (n.4) of them were in the rural area (Kruja).

Among the nurses, 62.5% (n.40) of them graduated more than ten years before the survey took place (including 9.4% of whom graduated more than twenty years before) and 37.5% (n.24) less than 10 years; 40.6% (n.26) were working in vaccination centers since less than 10 years and 59.4% (n.38) since more than 10 years (including 17.3% since more than 20 years).

When asked to rate their level of agreement with negative statements about vaccine safety and effectiveness (Table 1), nurses agreed completely or partially on “Vaccines weaken or overload the immune system” (nearly 18%), “Children receive too many vaccines” (nearly 8%), “Childhood vaccines are given too early” (more than 18%), and “It is better for children to develop natural immunity rather than to get a vaccine” (nearly 16%). Lower confidence was observed concerning the statement “Conditions such as autism and multiple sclerosis may be caused by vaccines” since 17.5% of the sample showed to be hesitant (unsure, partially agree, or fully agree) about it.

Table 1
Nurses’ beliefs and confidence toward vaccination.

Questionnaire statements	Completely disagree		Partially disagree		Unsure		Partially agree		Completely agree	
										Vaccines weaken or overload the immune system ^
<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	

43	71.7	3	5.0	3	5.0	6	10 .0	5	8. 3	It is better for children to develop natural immunity by getting sick rather than to get a vaccine.

40	64.5	7	11. 3	5	8.1	10	16 .1	0	0. 0	H ea lth y ch ild re n do no t ne ed to be va cci na te d

58	90.6	2	3.1	1	1.6	3	4.8	0	0	C o n d i t i o n s s u c h a s a u t i s m a n d m u l t i p l e s c l e r o s i s m a y b e c a u s e d b y v a c c i n e s

49	77.8	3	4.8	10	15.9	1	1.6	0	0.00	All er gi es ar e on th e ris e be ca us e of va cci na tio ns

51	79.7	2	3.1	9	14.1	0	0	2	3.1	I am afraid that at one of my patients may develop a severe adverse reaction following vaccination*

13	20.6	10	15.9	15	23.8	19	30.2	6	9.5	C h i l d r e n r e c e i v e t o o m a n y v a c c i n e s

49	76.6	6	9.4	4	6.2	2	3. 1	3	4. 7	Va cci ne po lic y is inf lu en ce d by th e fin an ci al pr ofi ts of ph ar m ac eu tic al co m pa ni es .

33	53.2	10	16.1	11	17.7	6	9.8	2	3.2	Childhood vaccines are given to o early *
39	61.9	7	11.1	5	7.9	3	4.9	9	14.3	The frequency of adverse reactions to vaccines is underestimated ^

38	63.3	6	10.0	12	20.0	3	5.0	1	1.7	Vaccination is cost-effective°
17	27.4	8	12.9	11	17.7	9	14.6	17	27.4	Vaccine information provided by health authorities and scientific societies is reliable

2	3.1	6	9.4	8	12.5	11	17.2	37	57.8	Vaccines are among the safest and most tested medicinal products*
1	1.6	5	7.9	9	14.3	11	17.5	37	58.7	These condense of MMR is useful

1	1.6	1	1.6	9	14.1	9	14.1	44	68.6	When children get vaccinated, the whole community benefits

°2 not responder, ^4 not responder, and *1 not responder.

Conversely, nearly 75% of the sample agreed with both statements “Vaccines are among the safest and most tested medicinal products” and “Vaccine information provided by health authorities and scientific societies is reliable.”

When considering vaccines’ cost-effectiveness, confident responders lowered to 42%.

Despite a substantial proportion of nurses showed hesitancy about specific vaccination aspects, most of them still reported high general vaccine confidence, with 90% fully or partially agreeing to the statement “Vaccinations are important for my patients’ health” (Figure 2) and 84% fully or partially agreeing to the statement “When children get vaccinated, the whole community benefits.”

[figure(s) omitted; refer to PDF]

When asked about training in the last five years, 34.4% (n.22) of nurses declared to have attended vaccine courses or conferences, while 28.1% (n.18) had never attended any training courses on vaccine topics. Having less than 10 years of work experience increased the risk for hesitancy (OR 5.3 CI: 1.4–19.5) compared to those with 10 or more years of experience. Similarly, hesitancy was significantly higher among nurses who graduated during 10 years before the survey (OR 4.2 CI: 1.2–14.6) compared to nurses who had graduated 10 or more years before.

Figure 3 shows the degree of self-perceived influence for different sources of information. High influence was attributed to the role of peer education: the most frequently reported influential source of knowledge on vaccines was the discussions with colleagues (84%). Nearly 80% of the sample considered formal university training of high importance, at the same level as scientific literature, followed by conference participation (73.4%) and institutional websites (59.4%). On the other hand, nearly half of the responders considered noninstitutional websites also of high importance (48.4%).

[figure(s) omitted; refer to PDF]

Because the questionnaire was submitted during the pandemic of Covid-19 just before the first SARS-CoV-2 vaccine authorization, the authors added a specific question: "If a pediatric SARS-CoV-2 vaccine was available, would you vaccinate your patients?." To that question, 35 nurses (54.7%) answered "yes" without hesitancy, 26 (40.6%) answered "I do not know," and only 3 (4.6%) were completely hesitant, answering that they would have refused to vaccinate children (Figure 4).

[figure(s) omitted; refer to PDF]

Nurses were also asked to classify 10 clinical conditions or situations related to administering hexavalent vaccines as false contraindications, temporary contraindications, or permanent contraindications. Specifically, Table 2 reports correct answers to the question "Your patient is scheduled to receive the second dose of Hexavalent vaccines. Which of the following conditions do you consider contraindicated?."

Table 2

Correct responses on 10 clinical conditions or contraindications to administering the hexavalent vaccine.

Your patient is scheduled to receive the second dose of hexavalent vaccines. Which of the following conditions do you consider contraindicated?	Correct answer	Nurses answering correctly <i>n</i> (%)
Severe allergic reactions to a previous dose including anaphylaxis	Permanent contraindication	39 (60.9)
Fever following a previous dose	False contraindication	25 (39.1)
Acute severe gastroenteritis	Temporary contraindication	22 (34.4)
Otitis media without fever	False contraindication	17 (26.6)
Family history of adverse reactions following a pertussis vaccine dose	False contraindication	28 (43.8)
Acute upper airway infection without fever	False contraindication	14 (21.9)
History of mumps	False contraindication	27 (42.2)
Diagnosis of epilepsy well controlled	False contraindication	22 (34.4)
Fever 38–40° and moderate illness	Temporary contraindication	34 (53.1)
Fever >40° and severe illness	Temporary contraindication	19 (29.7)

None of the nurses identified all the ten correct answers about contraindications to the hexavalent vaccine. Only 13% answered correctly to at least six questions. The median number of questions correctly answered was 4 (interquartile range 3.0), with no differences for years of working experience ($p=0.9$) and years from graduation ($p=0.8$). When dividing the sample into hesitant vs. not hesitant ($n=14$ hesitant: median 1.5, interquartile range 5.5; $n=50$

not hesitant: median 4, interquartile range 2.0), the difference between correct answer score was not statistically significant.

4. Discussion

Healthcare professionals, especially when employed in immunization delivery services in the primary healthcare sector, should acquire specific competencies in order to ensure that vaccines are provided to all those who need them in a safe and effective manner. Nurses in children's vaccination centers could play a key role in organizing and promoting immunization programs. Receiving information on knowledge gaps is of significant value for further management and development of focused educational programs [11].

In a study on vaccine confidence conducted in 2018 across 28 countries of the European Union, it was observed that even countries with well-established vaccination programs and high levels of confidence were not immune to rising vaccine hesitancy [12]. Despite the 2020 report's update showing growing confidence compared to the previous results, data confirmed that many Eastern European countries still rank particularly low in terms of their confidence in the safety, importance, and effectiveness of vaccines. These results show that rebuilding trust requires a long time and continuous efforts [9].

Few studies reporting healthcare workers' knowledge and practices toward vaccinations already exist in Albania [13, 14]. In our study, although most nurses were favorable to childhood vaccinations, we identified some associations between training gaps and overall attitudes towards vaccinations and/or specific knowledge and/or beliefs. In addition, in our analysis, we found a significant association between higher vaccine hesitancy attitudes and the youngest generations. As a matter of fact, a higher risk of being hesitant was identified among nurses with less than 10 years of work experience or those who graduated less than 10 years before the survey. Despite we acknowledge that other factors might have influenced these results, it is relevant to underline that nearly 30% of the survey participants referred that they never received training in vaccinology nor they attended conferences or vaccine courses in the last 5 years. It seems that vaccination training has not been a priority of continuous medical education in the Albanian health system at least in recent years. These results point out that a decline in vaccination knowledge might be related to declines in the education level, with the possibility of further deterioration in the future. The interaction between hesitancy and knowledge of healthcare workers is important since it improves adherence to the routine immunization programme for children [15].

These preliminary findings in Albanian nursing staff underline the need for further and detailed evaluation of knowledge gaps and vaccine hesitancy among health staff, in order to put the basis for continuous training and ongoing education on child vaccinations. This is particularly important in the case of instructing nurses about vaccine contraindications. Since the health personnel dedicated to vaccination services is essential for educating parents, they need to be equipped with appropriate skills and knowledge to address parents' vaccine hesitancy [16] and assure high vaccination coverage rates in the communities.

Furthermore, the low acceptance rate of future childhood SARS-CoV-2 vaccines among nurses demonstrates that vaccine hesitancy in healthcare workers remains a barrier to full population protection also in the context of the Covid-19 pandemic. These findings were in line with the hesitancy reported in nurses (45.5%) in another study conducted in Iraq on the health staff's willingness of receiving the Covid-19 vaccine [17] and with a recent survey among healthcare workers in Israel (55%) [18]. Similarly, another study by Aoun et al. conducted in the Middle East investigating healthcare staff attitudes toward any future COVID-19 vaccine found that the total rate of vaccine hesitancy in nurses was 63.2% [19]. All the three mentioned studies revealed that vaccine acceptance among nurses was significantly higher than among physicians, with fear of side effects followed by lack of confidence/information being the most common perceived barriers reported by Alhanabadi et al. and by Aoun et al.; however, these differences and these reasons were not investigated in the present study.

These results underline the need for stepping up immunization training campaigns for the health staff in Albania in the roll-out of mass vaccination campaigns, in order to fill current gaps and improve vaccination coverage in the future.

4.1. Limitations

We acknowledge that our results should be interpreted in the context of several limitations. First of all, this was a pilot study, and we analyzed data of a convenience small sample including health centers suggested by the Albanian Ministry of Health that were active at the moment of the survey since the ongoing pandemic of Covid-19. The small sample allowed us to perform only a crude analysis; therefore, other factors contributing to the vaccine hesitancy might have not been investigated.

Being a voluntary survey, only nurses from public health centers who willingly participated were included. We are therefore unaware if those who did not wish to participate held more vaccine doubts or not. The self-reported evaluations may be subject to expectancy bias and complacency bias. In addition, few questions were not answered..

Nevertheless, we would like to emphasize that this is one of the first studies that addresses this issue in the country, and it was aimed in the future to interview the entire population of professionals in public vaccination centers.

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Fatigue and Sleep Disturbance among Breast Cancer Patients during Treatment in Saudi Arabia

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ABSTRACT (ENGLISH)

Background. Fatigue and sleep disturbances are highly prevalent side effects encountered during treatment by patients with breast cancer, and they affect women's quality of life. Most studies investigating sleep and exhaustion in cancer patients provide evidence that supports a strong connection between different sleep parameters and fatigue associated with cancer. **Objective.** This study was to assess the level of fatigue and sleep disturbance in

breast cancer patients during treatment in Saudi Arabia. *Method.* A descriptive cross-sectional study design was conducted on breast cancer patients undergoing treatment in Saudi Arabia. The data were collected through convenience sampling of patients. The study involved self-administered questionnaires comprising three categories: demographic data, perceived Pittsburgh Sleep Quality Index (PSQI), and Functional Assessment of Chronic Illness Therapy–Fatigue (FACIT-F). A total of 101 participants took part in this study. The significant statistical test was determined at a 95% confidence interval and at $p < 0.05$. *Results.* Half of the study participants were aged between 30 and 50 years. Significant differences were found in fatigue and sleep disturbance among BC patients during treatment in Saudi Arabia. A high prevalence of fatigue was found at 21.8%, and 5% of participants experienced sleep disturbance. *Conclusions.* Breast cancer patients in Saudi Arabia have a low overall global quality of life. The patients experience poor sleep quality and fatigue, which suggests that during treatment, patients need to be assessed routinely for these symptoms to prevent or reduce fatigue and sleep disturbance. Sleep disturbance might be correlated with fatigue.

FULL TEXT

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1. Introduction

Worldwide, the most prevalent type of cancer is breast cancer (BC), leading to increased mortality among women [1]. It is estimated that more than one million females have diagnosed annually with BC [2]. There were 627,000 female deaths from BC in 2018, which comprised nearly 15% of all female cancer-related deaths [2]. The predominance of BC in Saudi Arabia's female population is 25.9%, and the mortality rate is 18.2% [3]. The second most common malignancy in Saudi females is BC, with a prevalence of 21.8% [4]. A cancer mortality survey among SA females has shown that BC is the 9th most common cause of death [4].

In SA, BC rates are expected to rise following several generations as the community increases and ages [4]. This disease ranks first among SA's female malignancies, accounting for nearly 22% of cases newly diagnosed with cancer [3]. In most nations, the rate of incidence of BC is also rising [3]. The mortality rate for BC was 5 times greater than that for patients with stage I tumor (credible interval) and 3.7 times greater than that for patients with stage II tumor in patients whose cancers were graded as stage IV [4].

In Western countries, the median onset age for BC patients is 65 years. However, in Saudi women, the median age for BC onset is 48 years [3]. BC is therefore a major concern for the SA population [3]. Anders and colleagues found that around 7% of women in the USA are diagnosed with BC before the age of 40, and for these women, survival rates are worse than those diagnosed at older ages [4]. Among young Saudi women, early diagnosis is a significant problem [4]. One study has shown from a logistic regression model that low BC screening use is significantly correlated with a woman's age, educational status, family income, use of hormonal contraceptives, and a positive history of previous BC [5].

During cancer care trajectory, individuals with cancer frequently struggle with different complicated symptoms that can interfere with the QOL and daily activities [1]. BC patients are exposed to several psychological and physical symptoms, which affect the quality and amount of sleep and fatigue [6]. Fatigue and sleep disturbances are highly prevalent and are encountered during treatment by patients with BC [7].

This topic has been studied in many countries, but there has been no focus specifically on BC patients [6]. Due to there being insufficient information and details in relation to BC, the authors of this paper wanted to conduct this research [6]. The majority of research examining sleep and exhaustion in cancer patients provides evidence that supports a clear association between cancer-related fatigue (CRF) and different parameters of sleep [7].

The majority of research has been performed in respect of patients with different cancers undergoing radiotherapy, chemotherapy, hormonal therapy, and surgery, for which associations have also been reported between fatigue and sleep disorders [8]. The prevalence of sleep disruption was 40% [9].

However, the QOL associated with well-being is now recognized as a virtual endpoint for cancer patients [6]. It has been shown that measuring cancer patients' QOL could enhance care and function as a prognostic factor and

medical parameter [6]. The aim of the study was to assess the level of fatigue and sleep disturbance in breast cancer patients during treatment in Saudi Arabia.

The high prevalence of symptoms in the patient with BC during treatment are fatigue and sleep disturbances [7]. Roscoe et al. found that sleep disturbances are a common issue for cancer patients and survivors due to their complicated CRF relationship [8]. Considering what we know about the possible correlation between CRF and sleep disruptions, therapies that target disordered sleep and daytime sleepiness may be promising CRF treatments [8]. Given recent evidence that sleep disruption is normal in cancer patients and that it can be both a cause of and a consequence of exhaustion, it stands to reason that treating one symptom while avoiding the other may have a positive effect on the other [8].

Another study found that changes in CRF over time were significantly associated with parallel changes in nausea intensity ($r=0.41$; $p<0.0001$) and disrupted sleep ($r=0.20$; $p<0.0001$), according to Pearson correlations [10]. A further study reported that sleep disruption was found to be common in 40% of the population. A total of 154 people had sleep disturbances [9] and were tired (49% vs. 23%, $p<0.001$) [9]. Only the exhaustion-adjusted odds ratio (AOR) (1.90, 95% (CI) 1.10–3.30, $p=0.020$) was found to be independently correlated with sleep disruption in a multivariable analysis [9].

Imanian et al. found that Spearman correlation coefficient results indicated that fatigue and sleep quality have a major relationship (0.210) [11]. In addition, Whisenant et al. found that three fatigue grades were specified: mild decreasing (59% cycle 2, 64% cycle 3), low moderate decreasing (30% cycle 2, 25% cycle 3), and high moderate decreasing (11% both cycles) [12]. Two disturbed sleep grades were specified: mild decreasing (89% cycle 2, 81% cycle 3) and increasing (11% cycle 2, 19% cycle 3) [12]. Women in the high moderate decreasing fatigue grade were more likely to have received doxorubicin ($p=0.02$) and spent more hours lying down ($p=0.02$) [12].

Another study indicated that at T1, three groups were found (fatigued with sleep complaints, average, and minimal symptoms) and five groups were identified at T2 (severely fatigued with poor sleep, emotionally fatigued with average sleep, physically fatigued with average sleep, average, and minimal symptoms) [13]. The majority of people in a group with more severe symptoms at T1 were also in a group with more severe symptoms at T2 [13]. Group membership was strongly associated with sociodemographic/medical factors at T1 and T2 [13].

Based on the findings of Fakhri et al., patients recorded poor sleep 36% of the time before chemotherapy and 58% of the time during chemotherapy [14]. Clinical insomnia was recorded by 36% of patients during chemotherapy, up from 11% before treatment [14]. This indicates a substantial symptomatic burden that is poorly documented and treated in routine clinical practice [14]. Additionally, both psychological and therapy-related factors were linked to fatigue trajectories, with psychological factors most highly linked to high fatigue at the start of and during treatment [15].

In general, higher mindfulness was linked to fewer symptoms, such as pain intensity, pain interference, fatigue, depression, anxiety, and sleep disruption [16]. The degree of association, however, varied by mindfulness facet [16]. Observing had the least frequent associations and the smallest effect sizes across symptoms, while nonreactivity, nonjudgment, and explaining had the most frequent associations and largest effect sizes [16].

2. Materials and Methods

2.1. Research Design

The work involved a descriptive cross-sectional quantitative study of BC patients of age 18 years and above who were undergoing treatment in SA.

2.2. Setting

Data were collected using convenience sampling of patients who received cancer treatment. The data were collected from 28 February to 29 April 2020 (for 2 months). Subjects were assessed for research eligibility and asked to complete a questionnaire to assess their fatigue and sleep disturbance symptoms. All patients received care including all treatment modalities (surgical, chemotherapy, radiation, and hormonal). Patients with BC at any stage and under active medical treatment were included.

2.3. Sampling and Sample Size

The data were obtained from BC patients ($n=101$). The inclusion criteria were (1) a BC patient, (2) age of 18 years and above, (3) undergoing treatment (including chemotherapy, radiation, hormonal, or surgical), and (4) able to read Arabic. The exclusion criteria consisted of (1) a mental illness and (2) diagnosis with another type of cancer. The researchers introduced the study's aim, objectives, and significance of the study to the participants and the questionnaire took approximately 10–15 minutes to be completed. The sample size was calculated through *G* power analysis using a confidence interval of 95% and an alpha of .05. The estimated target sample size was 100 students.

2.4. Data Collection Method

In addition to demographic data, the data were collected using two instruments to collect data [17]. The tools are available in two languages (English and Arabic language) because the study participant is speaking the Arabic language, so the authors used the Arabic version of the tool. The first tool measures fatigue and is called the FACIT-F scale of fatigue [17]. This instrument has been checked for reliability and validity [17]. The method measures self-reported fatigue and its effect on the activities of daily life and was first introduced as a supplement to the Functional Evaluation of Cancer Therapy [17]. A subscale to the general questionnaire, the FACIT-G, comprises the FACIT-fatigue [18]. In both the general population and patients with cancer, psoriatic arthritis, rheumatoid arthritis, systemic lupus erythematosus, paroxysmal nocturnal hemoglobinuria, and Parkinson's disease, the FACIT-F scale has been validated [18]. It contains 13 questions and uses a Likert-type scale of five points (0=not at all; 1=a little bit; 2=somewhat; 3=quite a bit; and 4=a lot). All items contribute equal weight to the total ranking [18]. The scale range is between 0 and 52, with the worst possible score being 0 and the best possible score being 52, suggesting no fatigue [18]. Each negatively worded item response is documented for this reason [18]. The FACIT-F is an important tool that can serve as a basis for enhancing our understanding of cancer patients' exhaustion [18]. Validity and reliability: The FACIT-F scale (Cronbach's $\alpha=0.96$) was found to have high internal validity in a 2007 report [18]. It was also found to have high reliability of test retests (ICC=0.95) [19]. The FACIT and Fatigue Intensity Scale association was -0.799 [20].

In addition, the second tool can test the sleep disorder in patients with BC (PSQI). It was developed to determine sleep efficiency [20]. The tool involves 11 self-rated questions that consist of seven component scores: subjective sleep quality (0–3), sleep latency (0–3), sleep length (0–3), normal sleep efficiency (0–3), sleep disturbances (0–3), use of sleep medication (0–3), and daytime dysfunction (0–3) [20]. To obtain a global ranking for quality of sleep (range 0 to 21), component scores are summed up (range 0 to 3); a score greater than five indicates poor quality of sleep [20]. In other words, the higher the score, the worse is the sleep quality.

The PSQI specifies the respondents' normal sleep and waking hours, the total amount of sleep hours, the time taken to fall asleep, and other Likert-type questions [21]. The 7 clinical components denoting difficulty of sleep are then analyzed using these items: subjective sleep quality, sleep delay, sleep length, normal sleep performance, sleep disturbances, sleep medication, and daytime dysfunction [21].

The scale helps researchers assess sleep disorder over a one-month cycle by calculating a basic, global score representing the intensity of sleep disruption, according to the developers of the PSQI [21]. A few validation studies have shown that a 2- or 3-factor model, rather than the original 1-factor form, could better reflect the PSQI [21]. To assess the reliability of the PSQI-I and to create internal consistency, further studies have been carried out [22]. Cronbach's α for the PSQI-I was 0.72, ranging from 0.69 to 0.72 for each object [22]. There were statistically important and beneficial associations between the PSQI-I overall score and the seven component scores for the PSQI-I [22]. The correlation degree was $r=0.36$ – 0.56 , $p<0.05$ for each domain. In terms of validity, the overall PSQI-I score was closely related to the overall Indo BDI-II score ($r=0.22$, $p<0.05$). BDI-somatic II's affective and cognitive components showed a strong association with the overall PSQI-I score ($r=0.17$ – 0.19 , $p<0.05$) [22]. Sleep quality, sleep disruptions, sleep medicine, and daytime dysfunction were significantly associated with the total Indo BDI-II score ($r=0.11$ – 0.25 , $p<0.05$) among the seven components PSQI-I [22].

2.5. Variables

A self-report questionnaire was used to collect information, and participants were approached by the researcher

through electronic online invitation. The questionnaire was distributed for use via the online Google forms tool. The questionnaire contained 24 items comprising PSQI and FACIT-F. Data were obtained anonymously as responses without a request for names to be registered. Before the respondent could begin the survey, a detailed study information sheet was provided in the e-mail. Furthermore, participants were told that the collected data would be used exclusively for study purposes.

2.6. Data Analysis

The data were analyzed using (SPSS software) (IBM, Inc. Chicago, IL, USA) version 26. Descriptive and inferential statistics were used in this study. The descriptive statistics included frequencies and percentages. The inferential statistics used one-way analysis of variance (ANOVA), A p-value of <0.05 was considered statistically significant.

2.7. Ethical Considerations

The Nursing Faculty's Ethics and Research Committee at King Abdul-Aziz University was consulted for ethical approval of this research. Enrolment in the study was voluntary, and the collection of data was anonymous, as the participants were not requested to include their names. The research details were included on the beginning page of the online survey tool. Participants could then read the details before beginning the survey and determine if they wanted to continue. Informed consent was implied by the completion and submission of the survey by the participants.

3. Results

3.1. Demographic Data

There were 101 participants in this study. Half of the study participants were aged between 30 and 50 years. Most people in the study sample were female (96%). Moreover, half of the study participants were married (54.5%). In addition, 36.6% of them were employed and most of the employed participants (50.5%) had an income of less than 5000 Saudi Riyal. Most of the study participants (74.3%) were Saudi (Table 1).

Table 1

Participants' demographic characteristics.

Variables		N	%
AGE	Less than 30 years	36	35.6
	From 30 to 50 years	51	50.5
	More than 50 years	13	12.9
Gender	Female	97	96
	Male	4	.
Marital status	Divorce	11	10.9
	Married	55	54.5
	Single	32	31.7
	Widow	3	-

Employment	Employee	37	36.6
None	34	33.7	Retired
3	3.0%	Student	27
26.7%	-		
Income	10,000–20,000	23	22.8%
5000–10,000	26	25.7%	Less than 5000
51	50.5%	More than 20,000	1

%; percentage. *N*: number of participants. Total study participants: 101.

3.2. Differences in Levels of Fatigue and Sleep Disturbance

In this study, we tested the differences in levels of fatigue and sleep disturbance among BC patients during treatment in Saudi Arabia related to demographic variables, which included age, gender, marital status, income, occupation, and nationality. The following paragraphs present the significant results in Table 2.

Table 2

Statistical difference among study participants' demographic variables in sleep quality level.

Demographic variables	Sleep quality level		<i>N</i>	Mean	Std. Deviation	Std. error	95% confidence interval for mean		Minimum	Maximum	<i>F</i>	Si g.
Lower bound	Upper bound	Age	Daytime dysfunction	<30 years	36	1.42	0.55	0.09	1.23	1.60	0.00	2.00
3.759	0.027	30–50 years	51	1.02	0.79	0.11	0.80	1.24	0.00	3.00	>50 years	13
1.38	0.77	0.21	0.92	1.85	0.00	3.00	-					

Marital status	Sleep latency	Married	55	1.93	0.92	0.12	1.68	2.18	0.00	3.00	5.544	0.001
Single	32	1.66	0.70	0.12	1.40	1.91	1.00	3.00	Divorce	11	1.27	1.35
0.41	0.37	2.18	0.00	3.00	Widow	3	0.00	0.00	0.00	0.00	0.00	0.00
0.00	Sleep duration	Married	53	1.38	1.04	0.14	1.09	1.66	0.00	3.00	5.715	0.001
Single	31	1.48	0.93	0.17	1.14	1.82	0.00	3.00	Divorce	11	0.55	0.69
0.21	-+0.08	1.01	0.00	2.00	Widow	3	3.00	0.00	0.00	3.00	3.00	3.00
3.00	Daytime dysfunction	Married	55	1.02	0.71	0.10	0.83	1.21	0.00	3.00	2.968	0.036
Single	32	1.47	0.67	0.12	1.23	1.71	0.00	3.00	Divorce	11	1.36	0.92
0.28	0.74	1.98	0.00	3.00	Widow	3	1.00	0.00	0.00	1.00	1.00	1.00
1.00	-											
Employment	Subjective sleep quality	None	34	1.44	0.96	0.16	1.11	1.78	0.00	3.00	6.287	0.003
Employee	37	0.76	0.80	0.13	0.49	1.02	0.00	3.00	Student	27	1.44	1.05
0.20	1.03	1.86	0.00	3.00	Use of sleep medication	None	34	0.59	1.10	0.19	0.20	0.97

0.00	3.00	3.230	0.044	Employee	37	0.16	0.55	0.09	-0.02	0.35	0.00	3.00
Student	27	0.67	0.92	0.18	0.30	1.03	0.00	3.00	Daytime dysfunction	None	34	1.18
0.87	0.15	0.87	1.48	0.00	3.00	7.297	0.001	Employee	37	0.92	0.64	0.11
0.71	1.13	0.00	3.00	Student	27	1.59	0.50	0.10	1.39	1.79	1.00	2.00
Global PSQI score	None	34	9.03	3.66	0.63	7.75	10.30	4.00	17.00	5.435	0.006	Employee
37	6.62	3.37	0.55	5.50	7.75	1.00	15.00	Student	27	8.70	2.74	0.53
7.62	9.79	4.00	14.00	-								
Income	Sleep latency	Less than 5000	51	1.84	0.81	0.11	1.62	2.07	1.00	3.00	3.320	0.023
5000–10,000	26	1.85	0.97	0.19	1.46	2.24	0.00	3.00	10,000–20,000	23	1.22	1.13
0.23	0.73	1.70	0.00	3.00	More than 20,000	1	3.00					3.00

Number (*N*)/standard deviation (Std.)/frequency (*F*)/significance probability (Sig.), analysis of variance (ANOVA), α

3.2.1. Age

There was found to be a significant difference in daytime dysfunction among BC patients during treatment in Saudi Arabia related to age variables, for which the p-value of the test was 0.027. The mean and standard deviation for daytime dysfunction in the under-30 age group were 1.42 and 0.55, respectively; from 30 to 50 years, the values were 1.02 and 0.79, respectively; and for the over-50 age group, the values were 1.38 and 0.77, respectively (Table 2).

3.2.2. Gender

Similarly, there was a significant difference in sleep disturbance among BC patients during treatment in Saudi Arabia related to gender variables, for which the p-value was less than 0.001. The mean and standard deviation for sleep disturbance and gender of females were 1.48 and 0.6, and for males, the values were 1.50 and 0.58 (Table 2).

3.2.3. Marital Status

There were significant differences in sleep latency among BC patients during treatment in Saudi Arabia related to marital status variables, for which the p-value of the test was 0.001. The mean and standard deviation for sleep latency and marital status of married participants were 1.93 and 0.92; for single participants, values were 1.66 and 0.70; and for divorced participants, values were 1.27 and 1.35. Significant differences were found in sleep duration among BC patients during treatment in Saudi Arabia related to marital status variables, for which the p-value of the test was 0.001. Therefore, the mean and standard deviation for sleep duration and marital status of married participants were 1.38 and 1.04; for single participants, values were 1.48 and 0.93; for divorced participants, values were 0.55 and 0.69; and for widows, values were 3.00 and 0.00. There was found to be a significant difference in daytime dysfunction among BC patients during treatment in Saudi Arabia related to marital status variables, for which the p-value of the test was 0.036, or less than 5%. The mean and standard deviation for daytime dysfunction and marital status of married participants were 1.02 and 0.71; for single participants, values were 1.47 and 0.67; and for divorced participants, values were 1.36 and 0.92 (Table 2).

3.2.4. Income

There were found to be significant differences in sleep latency among BC patients during treatment in Saudi Arabia related to income variables, for which the p-value of the test was 0.023. The mean and standard deviation for sleep latency and income group of less than 5000 Saudi Riyal were 1.84 and 0.81. Moreover, the mean and standard deviation for the group income range from 5000 to 10,000 were 1.85 and 0.97, while for the group of income range from 10,000 to 20,000 Saudi Riyal, values were 1.22 and 1.13 (Table 2). Additionally, there were significant differences in sleep efficiency among BC patients during treatment in Saudi Arabia related to income variables, for which the p-value of the test was 0.027. The mean and standard deviation for sleep efficiency and income group of less than 5000 were 0.84 and 1.15; for the income group range from 5000 to 10,000, values were 0.83 and 1.13; and for the income group range from 10,000 to 20,000, values were 0.64 and 1.05 (Table 2). Moreover, there was a significant difference in the use of sleep medication among BC patients during treatment in Saudi Arabia related to income variables, for which the p-value of the test was 0.034. The mean and standard deviation for sleep medication usage and income group of less than 5000 were 0.53 and 0.95; for the income group range from 5000 to 10,000, values were 0.69 and 1.05; and for the income group range from 10,000 to 20,000, values were 0.00 and 0.00 (Table 2).

3.2.5. Employment Status

The study showed a significant difference between occupation statuses among BC patients in sleep quality, sleep efficiency, sleep medication usage, daytime dysfunction, and global score of sleep. There was a significant difference in subjective sleep quality among BC patients during treatment in Saudi Arabia related to occupation variables, for which the p-value of the test was 0.003. The mean and standard deviation for subjective sleep quality and the unemployed group were 1.44 and 0.96; for employees, values were 0.76 and 0.80. The mean and standard deviation for students were 1.44 and 1.05. In addition, there was a significant difference in sleep efficiency among BC patients during treatment in Saudi Arabia related to occupation variables, for which the p-value of the test was

0.014. The mean and standard deviation for sleep efficiency and the unemployed group were 1.06 and 1.15, while the employed group's mean and standard deviation were 0.61 and 0.96. In addition, the mean and standard deviation for students were 0.59 and 1.18. Moreover, the study showed a significant difference in sleep medication usage among BC patients during treatment in Saudi Arabia related to occupation variables, for which the p-value of the test was 0.044. The mean and standard deviation for use of sleep medication and the unemployed group were 0.59 and 1.10; for the employed group, values were 0.16 and 0.55; and the mean and standard deviation for students were 0.67 and 0.92. Similarly, the study presented a significant difference in daytime dysfunction among BC patients during treatment in Saudi Arabia related to occupation variables, for which the p-value of the test was 0.001. The mean and standard deviation for daytime dysfunction and the unemployed group were 1.18 and 0.87; for the employed group, values were 0.92 and 0.64; and for the student group, the mean and standard deviation were 1.59 and 0.50. Finally, the study sample showed a significant difference in Global PSQI Score among BC patients during treatment in Saudi Arabia related to occupation variables, for which the p-value of the test was 0.006. The mean and standard deviation for the Global PSQI Score and unemployed group were 9.03 and 3.66; for the employed group, values were 6.62 and 3.37; and for students, values were 8.70 and 2.74 (Table 2).

3.2.6. Nationality

There was a significant difference in sleep duration among BC patients during treatment in Saudi Arabia related to nationality variables, for which the p-value of the test was 0.006. The mean and standard deviation for sleep duration for Saudis were 1.53 and 1.04, and for non-Saudis, values were 0.88 and 0.85 (Table 2).

3.2.7. Region of Living

The study showed there was no significant difference among cancer patients with regard to the region of living.

4. Sleep Disturbance among Breast Cancer Patients during Treatment

4.1. Fatigue

In total, 21.8% of the sample study have Extreme Fatigue, 43.6% of them have quite a lot of Fatigue, 20.8% of them have Some Fatigue, and 13.9% of them have Little Fatigue.

4.2. Subjective Sleep Quality

In total, 26.7% of the sample study is very good at Subjective sleep quality, 44.6% of them are good at Subjective sleep quality, 14.9% of them are bad at Subjective sleep quality, and 13.9% of them are very bad at Subjective sleep quality.

4.3. Sleep Latency

In total, 10.9% of the sample study is very good at Sleep latency, 31.7% of them are good at Sleep latency, 32.7% of them are bad at Sleep latency, and 24.8% of them are very bad at Sleep latency.

4.4. Sleep Duration

In total, 25.7% of the sample study is very good at Sleep duration, 23.8% of them are good at Sleep duration, 33.7% of them are bad at Sleep duration, and 13.9% of them are very bad at Sleep duration.

4.5. Sleep Efficiency

In total, 53.5% of the sample study is very good at Sleep efficiency, 17.8% of them are good at Sleep efficiency, 5.9% of them are bad at Sleep efficiency, and 13.9% of them are very bad at Sleep efficiency.

4.6. Sleep Disturbance

In total, 1% of the sample study is very good at Sleep disturbance, 54.5% of them are good at Sleep disturbance, 39.6% of them are bad at Sleep disturbance, and 5% of them are very bad at Sleep disturbance.

4.7. Use of Sleep Medication

In total, 74.3% of the sample study is very good at the use of sleep medication, 14.9% of them are good at using sleep medication, 3% of them are bad at using sleep medication, and 7.9% of them are very bad at using sleep medication.

4.8. Daytime Dysfunction

In total, 15.8% of the sample study is very good at Daytime dysfunction, 51.5% of them are good at Daytime dysfunction, 29.7% of them are bad at Daytime dysfunction, and 3% of them are very bad at Daytime dysfunction.

5. Discussion

To the best of our knowledge, our study is one of the first to focus on the level of fatigue and sleep disturbance in breast cancer patients during treatment in Saudi Arabia. With an increase in cancer incidence in recent years and its impact on physical, psychological, and social dimensions, it is considered a significant health problem. As these are considered to be common side effects among BC patients. Significant differences were found in fatigue and sleep disturbance among BC patients during SA treatment. Our findings show that a high prevalence of fatigue was 21.8%. The study finding is consistent with the studies conducted previously. A study showed that the majority of patients (57.4%) reported moderate fatigue, while 21.7% and 20.9% reported severe and mild fatigue, respectively [11]. However, the study result is lower than the results reported in Norway, Italy, Germany, and Canada [23, 24] and higher than the study results found in Texas, Poland, Jordan, and India [25, 26]. This disparity may be attributed to differences in socioeconomic status and health-care delivery systems.

In our data, the participants were 101. However, the study reported 21.8% extreme fatigue, 43.6% Quite a lot of fatigue, 20.8% some fatigue, and 13.9% no or little fatigue. The similarities in these first study findings show that 115 of women, had 21.7% a severe level of fatigue [11]. Although, that second study used secondary data analysis of 548 BC females and showed a high prevalence of 75% of clinically relevant CRF in BC patients following their initial chemotherapy [10]. Therefore, due to the difference in sample size, we cannot consider that the result is accurate for generalizability. However, compared to our study the differences. In the first study, the data were collected through three questionnaires [11]. Also, in the second study, they showed the effect level of nausea directed and undirected influenced [10].

In terms of sleep disturbance, 5% of participants reported severe sleep disturbance. The sleep of breast cancer patients in this sample was characterized by reduced total sleep time, with many attributing poor sleep to pain, nocturia, feeling too hot, and coughing or snoring loudly. Thus, little attention has been paid to the role that sleep disturbance may play in contributing to this symptom. This disparity may be attributed to differences in tools that have been used to collect the data as in the present study PSQI scale, but in the other study, the author used the BFI scale. In addition, the period to collect the data was three months, but the present research has limited time. Another study used secondary data analysis of 548 BC females and showed a high prevalence of 75% of clinically relevant CRF in BC patients following their initial chemotherapy [10]. Seventy-five percent of patients had clinically significant post-treatment CRF [10]. Linear regression showed that pretreatment CRF, more significant nausea, disturbed sleep, and younger age were significant risk factors for post-treatment CRF [10]. Path modeling showed that nausea severity influenced post-treatment CRF both directly and indirectly by influencing disturbed sleep. Similarly, both nausea severity and disrupted sleep affected post-treatment CRF directly and indirectly. According to Pearson correlations, changes in CRF were strongly associated with concurrent changes in nausea occurrence and disrupted sleep [10]. This study is similar to our demographic variables; age and marital state were significant predictors of CRF. Younger patients experienced greater CRF than did older patients. This finding is consistent with prior research, which showed that younger age was associated with higher levels of CRF in BC patients. This is most likely due to more aggressive treatments given to younger patients [10]. Moreover, there was a significant difference in gender between males and females because we studied 4 males and 97 females. Therefore, due to the difference in sample size, we cannot consider that the result is accurate for generalizability.

5.1. Limitations

This study had a few limitations. First, insufficient number of studies related to fatigue and sleep disturbance among breast cancer patients in Saudi Arabia. Second, the sample size is considered small which affects the generalizability of the findings. Another important limitation was not being able to collect the data face-to-face due to COVID-19 restrictions. In addition to these limitations, the time required to conduct this study was limited, which was the most significant factor for us in our study.

5.2. Recommendations

We recommend that future studies investigate the relationship between fatigue and sleep disturbances that will enhance the quality of life for women with breast cancer and engage a more significant number of participants by

increasing the sample size of the study. However, we emphasize on collecting the data from hospital settings rather than community samples and using different data collection methods such as self-report questionnaires, medical chart reviews, and interviews such as face-to-face interviews that assure that participants to understand the survey questions well and prevent the different interpretations of our questions. Further, we suggest using different designs like a mixed-method and more advanced statistical analysis to enhance and improve the study result. Also, recommending further research could advance our scientific understanding of potential interrelationships between sleep disturbance and cancer-related fatigue and clinical interventions that help with fatigue and sleep disturbance. In addition, it increases the level of education about how to deal with fatigue and sleep disturbances in the cancer patient.

6. Conclusions

Breast cancer patients in Saudi Arabia had a low overall global quality of life. The patients experienced poor sleep quality and fatigue, which suggests that during treatment patients need to be assessed routinely for these symptoms to prevent or reduce fatigue and sleep disturbance. Sleep disturbance might be correlated with fatigue, and future research should investigate strategies addressing sleep disturbance and fatigue.

Both sleep and fatigue in patients with cancer provide evidence supporting a high correlation between cancer-related fatigue and various sleep parameters, including poor sleep quality, disrupted initiation and maintenance of sleep, nighttime awakening, restless sleep, and excessive daytime sleepiness.

Consent

Written informed consent has been obtained from the subjects involved in this study.

Authors' Contributions

F.A., F.S., W.M., and A.T. conceptualized the study; A.A., and T.A. developed methodology; A.A., T.A., and B.A. did formal analysis; A.A., T.A., A.T., and B.A. wrote the original draft; F.A., F.S., W.M., and A.T. reviewed and edited the manuscript. All authors have read and agreed to the published version of the manuscript.

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DETAILS

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Predictors of Suicide Attempts of Individuals with Autism and Their Siblings

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ABSTRACT (ENGLISH)

The occurrence of mood- and anxiety-related conditions among family members of individuals diagnosed with autism spectrum disorder (ASD) increases the risk of suicide attempts and has also created assessment and treatment issues for clinicians and parents. Recorded rates of mental health disorders comorbid with suicide attempts among individuals on the spectrum range from 29% to 52%. The purpose of this study was to investigate the presence of predictors of suicide attempts among sibling dyads (pairs of siblings in which one sibling is on the autism spectrum). Growing evidence in the literature indicates a link between a diagnosis of autism and mental health. A web-based survey was used to collect data from individuals on the spectrum and their siblings. A sample of 144 individuals was finalized for the analyses. Logistic regression analysis was conducted to assess the predictors of suicide attempts in the sample. Depression, anxiety, sexual orientation, and marital status were all used as predictors in the logistic regression analyses. Both levels of anxiety and sexual orientation were found to be significant predictors for suicide attempts. Recommendations for future research, assessment, and treatment are presented.

FULL TEXT

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1. Introduction

The rate at which autism spectrum disorder (ASD) is diagnosed has increased over the past two decades, and today, 1 in 54 persons is diagnosed with the condition [1]. According to the Diagnostic and Statistical Manual of Mental Disorders (5th edition), ASD is a complex neurodevelopmental disorder characterized by challenges in social communication and interaction [2]. Symptoms related to ASD vary from one person to another; some individuals

may have difficulty maintaining social relationships, while others may be unsuccessful in responding appropriately in social settings. These deficits affect all domains of life, including school, work, and family relationships [3]. According to family systems theory, the family as a unit includes four subsystems: marital, parental, sibling, and extended family [4]. It would be beneficial for healthcare professionals to better understand the manner in which ASD influences all four subsystems within this framework, particularly siblings. Understanding these subsystems can assist practitioners in addressing the issues they may encounter. The documented challenges individuals on the spectrum face in relation to family functioning include communication, daily life, and relationships within the family [5]. The daily lives of individuals on the spectrum also impact their siblings. These siblings have described difficulties arising from a spectrum of behaviors, ranging from obsessive rituals and repetitive behaviors to impulsiveness. Outcome studies have shown mixed results regarding how siblings respond to their family members on the spectrum [3]. Although recent evidence has suggested that siblings of individuals with ASD may be at higher risk for psychological challenges similar to those experienced by the parents of such individuals, studies have reported contradictory findings about the link between having a sibling on the spectrum and the possible risk factors associated with this relationship [6, 7]. Previous research [8] has found that sibling dyads including individuals with autism where one sibling had a second disability had more asymmetric relationships (e.g., one sibling tended to dominate the other in an emotional sense). Furthermore, interactions between such pairs of siblings tended to become more asymmetric over time.

Most studies on siblings of persons with ASD have focused on children; few have evaluated adults [9]. Some of these studies have examined the manner in which siblings adjust to relationships [10], but none have focused on suicide as a risk factor. Furthermore, most past studies concerning the siblings of individuals with ASD have focused on infant siblings [11]. Aside from friendships and marriages/partnerships, sibling relationships are often the longest lasting of an individual's bonds with their relatives; although not all sibling relationships are close, some siblings may actively dislike one another, and in some cases cousins or other familial bonds may be closer than those between siblings in the same family [12]. The presence of an individual on the spectrum within a household can impact the adjustment and mental health of all members of that family, including siblings. Although the data we gathered suggest that the siblings of individuals with ASD are at higher risk for mental health issues [13], there is no indication that this risk is clinically significant [14]. Previous data suggest that siblings of individuals on the spectrum may internalize their challenges, including depression- and anxiety-related conditions [15]. Furthermore, because some siblings may eventually become caregivers and supporters of their siblings with ASD after their parents have passed, it is important to obtain a clearer understanding of such sibling dyad's lifelong journeys and mental health needs. The aims of this study were to estimate the rate of suicide attempts among individuals on the autism spectrum and their siblings and to identify the predictors of suicide attempts among individuals on the autism spectrum and their siblings.

1.1. Autism Spectrum Disorder and Suicide Attempts

Suicide is considered a global health crisis [16], and the current rate of suicide in the United States is 12.93 per 100,000 individuals, making it the 10th leading cause of death in the country. According to the Centers for Disease Control and Prevention (CDC), among people between the ages of 10 and 34 years, suicide is the fourth leading cause of death and occurs more than two and a half times more often than homicide. Gender and racial differences are well documented: women's suicide rates are reported to be highest for individuals between the ages of 45 and 64 years, and rates of suicide are highest among Native American and non-Hispanic males [17]. Individuals with disabilities have been neglected by and omitted from the focus of research. Specifically, individuals with neurodevelopmental disabilities are considered to be at a higher risk for suicide attempts [18]. In recent years, there has been a steady increase in the exploration and reporting of suicide among individuals diagnosed with ASD [19, 20]. Nevertheless, the exploration of suicidal behavior among individuals on the spectrum has encountered challenges, particularly the definition of suicide and methodological concerns at various research stages. Similar to ASD and the spectrum of symptoms associated with it, we can examine suicidal ideation and attempts on a spectrum from mild thoughts to death by suicide or completion, and there are currently more than 19 different

definitions of suicide [21]. Concerns regarding intentionality, ideation, and behaviors all play a role in designing an exhaustive definition.

While the definition and diagnosis of ASD have received significant attention in the last few decades, they have also created challenges in understanding a condition that encompasses a variety of comorbidities [22]. The presence of mood- and anxiety-related conditions concurrent with suicide has created assessment and treatment issues for clinicians and parents. Rates of comorbid disorders among individuals on the spectrum range from 29% to 52% [23]. A recent meta-analysis of data on suicide among individuals on the spectrum indicated a rate of 7%–47% for suicide attempts, while that of suicidal ideation was 72% [24]. To date, only one study has examined the prevalence and risk factors for suicide attempts by siblings of individuals on the spectrum, and one other study from Sweden has examined deaths by suicide among individuals on the spectrum [25]. Because of the wide range of risk factors for suicide in the neurotypical population, the rate of suicide attempts and the risk of suicide among individuals with siblings on the spectrum need to be examined.

1.2. Risk Factors for Suicide Attempts

1.2.1. Sociodemographic, Sexual Orientation, Employment, and Socioeconomic Status

Many studies have documented risk factors for suicide attempts in the general population; however, we still lack a consistent and accurate picture of suicide attempts among individuals on the spectrum and an even less accurate picture of their siblings. Walton [7] identified several sociodemographic factors related to the risk of externalizing behaviors among the siblings of a person diagnosed with ASD. These factors included family income, gender, and the age of the sibling diagnosed with autism. Due to the diversity of siblings of people with autism and the broad spectrum of symptom severity and methodological limitations [3], the data presented in this study should be considered alongside the framework of daily influences on development between siblings [26]. Research has found that some sociodemographic factors influence relationships between siblings, but there are no reports on the presence of psychopathology due to these variables, and lower levels of educational attainment and age have been most commonly associated with such relationships [9]. Identifying as lesbian, gay, bisexual, transgender, and queer (LGBTQ) has been shown to place an individual at higher risk for bullying and peer victimization as well as a range of mental health issues [27]. When assessing sexual orientation, a higher rate of homosexuality and bisexuality among individuals on the spectrum has been noted [28], making it an added risk factor for suicide. Mental health is influenced by a range of variables, including age, gender, race, and socioeconomic status. Individuals living in a home with a sibling on the autism spectrum may experience higher levels of stress [11]. Furthermore, these individuals may have to take over caring for a sibling on the spectrum in the event of their parents' passing or becoming unable to care for their children [29]. Reported data also indicate that the severity of autism and comorbid conditions increases the degree of concern regarding these individuals' mental health and adjustment [14], particularly with regard to depression diagnoses [15] and anxiety-related symptoms [30].

2. Methods

2.1. Study Design and Sample

This was a cross-sectional study examining suicide attempts, depression, and anxiety in individuals diagnosed with ASD and their siblings. Individuals registered with the Interactive Autism Network (IAN), an innovative online project that brings together many individuals who care for people with ASD and those impacted by it, were invited to participate in an online study based on a Qualtrics online survey. A total of 144 individuals diagnosed with ASD and their siblings completed the online survey. The eligibility criteria for the study were as follows: aged 18 or older, being diagnosed with ASD, and/or having a sibling registered with the IAN. Prospective participants were sent a letter describing the study and a link to complete the online survey. Before completing the survey, all individuals were asked to provide informed consent and were notified that the study was approved by a university institutional review board. We have created a survey and an informed consent at 8th grade level of education to ensure understanding of the language in the survey. The sample size of $n=144$ yielded sufficient power (82%) to detect a small to medium effect size (adjusted odds ratio, AOR=1.85) associated with a continuous predictor (depression and anxiety) in the primary analyses using logistic regression to predict history of a suicide attempt, based on a

prevalence of suicide attempts of 17% and a 0.05 level of significance.

2.2. Measures

2.2.1. Mental Health

The participants' mental health was assessed using the Beck Depression Inventory (BDI) and the Beck Anxiety Scale (BAI) [31, 32]. The BDI is a 21-item scale that can be self-administered by adults. The items on the scale, which relate to sadness, pessimism, loss of pleasure, and other such experiences, are scored from 0 to 3. The response categories correspond specifically to each domain. The scores range from 0 to 63, with higher scores indicating more severe depression symptoms. Scores above 20 indicate clinical depression, a score of 0–13 indicates minimal depression, 14–19 indicates mild depression, 20–28 indicates moderate depression, and 29–63 indicates severe depression. The internal consistency of the BDI has been rated as $\alpha=0.91$, and its one-week test–retest reliability is $r=0.93$. In our sample, the BDI demonstrated strong interitem consistency ($\alpha=0.93$) and reliability (McDonald's $\omega=0.93$). The BAI is similarly structured, as it comprises 21 self-reported items and a list of anxiety-related symptoms. The participants were asked to indicate how much each symptom described had bothered them in the preceding week. Each symptom is rated on a four-point scale, ranging from 0=not at all to 3=severely. A score of 0–21 indicates low anxiety, 22–35 indicates moderate anxiety, and scores of 36 and above indicate potentially concerning levels of anxiety. The BAI showed high internal consistency ($\alpha=0.92$) and test–retest reliability over one week ($r(81)=0.75$). It also demonstrated strong interitem consistency ($\alpha=0.94$) and reliability (McDonald's $\omega=0.94$) in the current study. The participants' history of suicide attempts was measured by asking them if they had ever attempted suicide. The response categories for this assessment were “yes” and “no.”

2.2.2. Sociodemographic and Social Support

Sociodemographic data were obtained from the 144 individuals who completed the survey. The questionnaire was used to gather data related to age, ethnicity and race, and levels of education and income. The participants' levels of social support were measured using the Multidimensional Scale of Perceived Social Support (MSPSS) [33]. This 12-item measure comprises three subscales (support from family, friends, and significant others) designed to assess levels of social support. The α for the total scale was 0.88; for the subscales concerning significant others, family, and friends, the α s were 0.91, 0.87, and 0.85, respectively. Higher scores indicate higher levels of support [33]. In our sample, the MSPSS total score demonstrated strong interitem consistency ($\alpha=0.94$) and reliability (McDonald's $\omega=0.93$). The three subscales also had strong measurement characteristics: family ($\alpha=0.93$, McDonald's $\omega=0.93$), friends ($\alpha=0.97$, McDonald's $\omega=0.97$), and significant others ($\alpha=0.95$, McDonald's $\omega=0.95$).

2.3. Data Analysis

A descriptive summary was generated to describe the sample and the distribution of the study variables. Multivariate logistic regression was conducted to analyze the relationship between the independent variables (sociodemographic data, mental health, and social support) and the participants' histories of suicide attempts. Sensitivity analyses were conducted to examine the consistency of the findings between the persons with ASD and their siblings. This included subgroup analysis (persons with ASD) and testing interaction terms for significant predictors (interacted by sibling status). All analyses were conducted using SPSS version 22 (IBM, Armonk, NY, USA).

3. Results

The demographic characteristics of the sample are presented in Table 1. Of the 144 individuals who completed the study, 77.8% indicated that they were diagnosed with ASD, and 21.5% identified themselves as siblings of a person on the spectrum. The mean age of the sample population was 36.03 years ($SD=15.43$). Most respondents were identified as Caucasian (86.1%) and heterosexual (72.2%), while less than half (38.9%) were male. Slightly less than half of the sample had completed an undergraduate degree (48.6%), and more than half were single (56.3%). The descriptive statistics related to mental health indicated that 17.4% had attempted suicide, 22.76% had experienced a high level of suicidal ideation, 13.9% had severe depression, and 14.53% had a potentially concerning level of anxiety. The individuals diagnosed with ASD reported higher rates of suicide attempts than the siblings of individuals with ASD (20.5% vs. 6.5%), but this difference was nonsignificant ($\chi^2(1, 143)=3.33$, $p=0.068$).

Table 1

Demographic characteristics of the sample (*N* = 144).

	Variable	<i>n</i> (%) or <i>M</i> (SD)
	Person Dx with ASD	112 (77.8%)
Sibling of person Dx with ASD	31 (21.5%)	Age
	36.03 (15.43)	Gender
Male	56 (38.9%)	Female
86 (59.7%)	Other	2 (1.4%)
Sexual orientation	Nonheterosexual	39 (27.1%)
Heterosexual	104 (72.2%)	Race
Non-Caucasian	19 (13.2%)	Caucasian
124 (86.1%)	Marital status	Single
81 (56.3%)	Married	37 (25.7%)
Other	26 (18.1%)	Education level
Undergraduate	70 (48.6%)	Master
35 (24.3%)	Other	38 (26.4%)
Employment	No	59 (41%)
Yes	85 (59%)	Personal income
\$20,000 or less	77 (53.5%)	More than \$20,000
63 (43.8%)	History of suicide attempts	No
119 (82.6%)	Yes	25 (17.4%)
Mental health conditions	Depression	13.90 (12.38)
Anxiety	14.53 (12.51)	Social support

Note. Dx: diagnosed.

Logistic regression was conducted to examine the relationship between the independent variables and the suicide

attempts in the sample. The predictors of suicide attempts were selected based on previous findings and support from the current literature. These included clinical variables such as depression and anxiety and sociodemographic characteristics such as gender, marital status, sexual orientation, and social and employment characteristics. The predictors and covariates were entered in blocks. The first block consisted of anxiety and depression, followed by a block of the participants' demographic details (age, gender, race, sexual identity, and marital status) and finally a third block of environmental variables (education, social support, and personal income). The initial model, including only depression and anxiety, was significant, with anxiety significantly associated with a history of suicide attempts. The addition of covariates in the model strengthened the association, and the association between anxiety and suicide attempts was strengthened after controlling for participants' characteristics (Model 2), followed by the factors hypothesized to be protective (i.e., education, social support, and income).

The Hosmer–Lemeshow tests for each model were nonsignificant, indicating that the models had adequate goodness of fit. The X^2 for the full model was significant ($X^2 (16, 114)=53.20$; $p<0.001$). Its Nagelkerke's pseudo- R^2 was 0.62, indicating that, as a whole, it was significant and that the combined predictors were associated with a history of suicide attempts. An examination of the regression coefficients (Table 2) indicated that the selected predictors were partially supported. Anxiety (AOR=1.140, 95% CI 1.039–1.251, $p=0.06$) and sexual orientation (AOR=0.020, 95% CI 0.002–0.170, $p<0.001$) were significant predictors of a history of suicide attempts. These indicated that a 1-point increase on the BAI was associated with a 14% increase in the likelihood of having attempted suicide and that the heterosexual respondents were nearly 80% less likely to have done so compared to those who identified as nonheterosexual. Depression, age, gender, being a sibling of a person with ASD, marital status, education, employment status, social support, and income were not significantly associated with having attempted suicide.

Table 2

Binary regression on variables that impact suicide attempts.

Variable	Model 1		Model 2		Model 3	
<i>B</i> (SE)	OR (CI)	<i>B</i> (SE)	OR (CI)	<i>B</i> (SE)	OR (CI)	Depression
0.008 (0.024)	1.008 (0.962, 1.057)	−0.048 (0.037)	0.954 (0.887, 1.025)	−0.078 (0.045)	0.93 (0.847, 1.010)	Anxiety
0.078 (0.026) [†]	1.081 (1.028, 1.137)	0.102 (0.038) [†]	1.108 (1.028, 1.193)	0.131 (0.047) [†]	1.14 (1.039, 1.251)	Age
		−0.006 (0.027)	0.994 (0.942, 1.049)	−0.028 (0.036)	0.973 (0.907, 1.043)	Sibling of person Dx with ASD (ref: person Dx with ASD)
		−0.970 (1.171)	0.379 (0.038, 3.763)	−1.123 (1.213)	0.325 (0.030, 3.505)	Gender (ref: male and other)

		-1.049 (0.862)	0.35 (0.065, 1.897)	-1.391 (1.021)	0.249 (0.034, 1.839)	Sexual orientation (ref: non- heterosexual)
		-3.672 (0.943)‡	0.025 (0.004, 0.161)	-3.925 (1.010)‡	0.02 (0.002, 0.170)	Race (ref: non- caucasian)
		0.317 (0.945)	1.374 (0.215, 8.756)	0.708 (1.066)	2.029 (0.251, 16.408)	Marital status (ref: other arrangement)
						Single
		-1.966 (0.992)*	0.14 (0.020, 0.979)	-1.900 (1.205)	0.15 (0.014, 1.586)	Married
		1.040 (0.961)	2.829 (0.431, 18.596)	1.802 (1.154)	6.061 (0.632, 58.172)	Education (ref: other)
						Undergradua te
				-0.654 (1.129)	0.52 (0.057, 4.757)	Master
				-0.742 (1.120)	0.476 (0.053, 4.280)	Employed (ref: not employed)
				-0.073 (1.035)	0.929 (0.122, 7.071)	Personal income
				0.622 (1.106)	1.863 (0.213, 16.298)	Social supportp<0.0 01-significant other
				-0.496 (0.328)	0.609 (0.320, 1.159)	Social support- family

				-0.060 (0.311)	0.941 (0.512, 1.731)	Social support- friend

Note. $p < 0.05$; $p \dagger < 0.01$; and $p \ddagger < 0.001$. Reference group: gender: male; marital status: other arrangements (i.e., divorced, widowed, separated, living with partner, or single); race: non-Caucasian; sexual orientation: nonheterosexual. B: coefficient; CI: 95% confidence interval; Dx: diagnosed; OR: odds ratio; and ref: reference group.

As the sample was comprised of both individuals diagnosed with ASD and siblings of individuals with ASD, we conducted two sensitivity analyses to determine whether the associations identified were consistent across groups. First, we conducted an analysis excluding the sibling subgroup and compared the results to the analysis of the full sample. All model statistics and regression coefficients were consistent in magnitude, direction, and statistical significance. A similar analysis could not be done for only the siblings, as the group was too small to support the multivariate model. Second, focusing on the significant predictors of suicide attempts (anxiety and sexual orientation), we tested the interaction terms (sibling*anxiety and sibling*sexual orientation) in separate models. In these analyses, the interaction terms were nonsignificant, and their inclusion had no impact on the magnitude, direction, or significance of the predictors, indicating that the associations of anxiety and sexual orientation with suicide attempts do not differ between individuals with ASD and siblings of those with ASD.

4. Discussion

We examined the predictors of suicide attempts in a sample of sibling dyads, of whom one of each pair was an individual diagnosed with ASD. Specifically, we were interested in how sociodemographic variables such as age and gender, clinical variables such as depression and anxiety, and social variables such as employment status and social support can predict suicide attempts among sibling dyads, including individuals on the spectrum. Of the sample population evaluated in this study, approximately 77.8% indicated that they had been diagnosed with autism, and the average age of the participants was 36.03 years. Less than half of the sample identified as male, and the majority were Caucasian (72.2%). Similar to a previous study [20] in this field, this study indicated that approximately 14% of the sample reported a severe level of depression, 14.53% indicated that they had severe anxiety, and 22.76% indicated that they had attempted suicide at least once. These data are consistent with reports from the general population suggesting that Caucasian males are at higher risk: over 1.4 million individuals attempt suicide yearly, and there are 3.9 male deaths by suicide for each female death by suicide [34]. The presence and reports of mental health issues among sibling dyads that include individuals on the autism spectrum are important for screening and assessing family members (specifically siblings) who may present with mental health symptoms or diagnoses and are thus at high risk of suicide. The specific findings presented above indicate that, aside from certain sociodemographic characteristics that may place individuals at risk for suicide attempts, one of a pair of siblings being diagnosed with ASD can increase the risk of the other sibling developing a mental health condition and/or of attempting suicide [35]. In examining the risk factors for suicide attempts in sibling dyads that included individuals with autism, we identified two major predictors: anxiety and sexual orientation (specifically, identifying as nonheterosexual). We found that the individuals we surveyed were at a 12% higher risk for every added point on the BAI. This is an important outcome and is supported by previous studies on the general population, which have indicated that individuals with anxiety-related conditions are at a higher risk of suicide attempts [36]. The lack of predictability of life while living with a person on the spectrum and the potential of one day having to take over their care as parents age can cause or exacerbate anxiety and increase the risk of attempting suicide. With regard to those respondents who identified as nonheterosexual, our results are not consistent with previous reports related to the LGBTQ population in general. According to Peters et al. [37], individuals who are identified as nonheterosexual may present with more frequent or severe suicidal ideation, but this is not necessarily accompanied by higher rates of suicide attempts. This finding can be explained by the fact that services and support for autism may vary greatly from one person to another over a lifetime, which can add stressors and put individuals at risk of attempting suicide.

Overall, the other variables included in the study were not significantly associated with a history of suicide attempts. This can be explained by several factors. First, our sample population was not evenly divided between individuals on the spectrum and their siblings, and our results may have been different if the two populations had been equally represented. Second, the individuals in our sample may have had protective variables that decreased their risk of attempting suicide. Protective factors for an individual could be social support, family support, or services received for a condition, to name a few. The multiple and vast presence of risk and protective factors for suicide can present a methodological challenge in accurately predicting a history of suicide attempts in sibling dyads that include individuals on the spectrum. Individuals' mental health and previous attempts should be assessed by anyone who provides professional care for families with these attributes to ensure that such risk factors are identified early and treated expeditiously.

4.1. Clinical Implications

A constant challenge for mental health clinicians and practitioners from various backgrounds is the need to determine whether an individual is at risk for suicide attempts early and to implement appropriate interventions. To date, no one particular model can predict with full accuracy the potential for a suicide attempt. Practitioners in a variety of settings can benefit from the data presented in this study, as they can provide points of reference and consideration for the further assessment of sibling dyads of individuals on the autism spectrum. The ability to identify symptoms related and potentially linked to suicide attempts early will benefit all practitioners. Supporting the comprehensive assessment and early identification of at-risk groups may make it easier to address the mental health needs of siblings of individuals on the spectrum. Moreover, the data reported in this study provide a framework to consider subunits within the family system (i.e., siblings), who should also be evaluated when individuals are seeking support services.

4.2. Research Implications

The increase in the number of studies that include family members of individuals on the spectrum provides a hopeful picture for many subgroups in this population, including parents, siblings, and community members. Engaging in further research on the impact autism has on family members can support families and healthcare professionals in providing person-focused services and treatment. A comprehensive examination of the mental health risks faced by siblings and other close family members of individuals with ASD can be used to design more effective support and treatment techniques. Perhaps more importantly, such an assessment could lead to a greater variety of more tailored services appropriate to this population, given their unique situation. Further investigations should consider multiple and varied assessment measures to exhaustively investigate the siblings of individuals on the spectrum and their challenges [38].

5. Limitations and Strengths

This particular survey was subject to recall bias, as the participants were asked about their thoughts over the preceding few weeks. Furthermore, the study did not include a control group of individuals with siblings who were not diagnosed with ASD. The lack of a control group may impact the manner in which we can respond to the needs of the siblings of individuals on the autism spectrum. Some methodological aspects of this study may impact its generalizability, including the use of an online survey and nonprobability sampling, as well as the utilization of the IAN as a tool to recruit individuals with the requisite eligibility criteria. The smaller subsample of siblings may also constitute a limitation, since the group of siblings and the group of individuals with a diagnosis of ASD was not equal. Despite these limitations, however, the study has multiple strengths. The participants were assessed for multiple risk factors for suicide attempts, and this study is one of the few to examine individuals on the autism spectrum and their siblings as a family unit. The use of the IAN also assisted us in reaching out to prospective participants across a larger geographical area.

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Family-Centered Interventions and Quality of Life of Clients with Ostomy

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ABSTRACT (ENGLISH)

Background. Family-centered intervention can be used as a therapeutic intervention to improve the quality of life (QOL) in clients with ostomy. This study aimed to determine the effects of family-centered intervention on the QOL in ostomy clients. **Methods.** A quasi-experimental study was carried out with participation of 70 clients with colostomy and 70 caregivers (family members). The participants were selected through convenient sampling and randomly allocated into the experimental and control groups. The experimental group received family-centered education. The education program included four sessions, 50–60min each, that were implemented in two weeks at hospital wards or clients' houses for the clients' companions. Afterwards, the caregivers implemented the care at home for one month. The subjects in the control group received routine care before being discharged. The QOL of the clients in both groups was measured using the city of hope-QOL-ostomy questionnaire before and one month after the intervention. **Results.** The mean scores of the QOL after family-centered intervention in the experimental and control groups increased from 197.97 to 207.49 and from 195.2 to 199.03, respectively. The paired *t*-test showed a significant change in the experimental and control groups after the intervention at a confidence level of 95% (*p*=

0.0001; $p=0.002$). In addition, after the intervention, however, there was a significant difference between the two groups in all these areas except for social aspects ($p=0.007$). *Conclusion.* Family-centered intervention can be used as a therapeutic intervention to improve the QOL in clients with ostomy. The intervention was effective in the physical, spiritual, psychological, and social health of these clients.

FULL TEXT

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1. Introduction

An ostomy is a prosthetic medical device that creates a way of collecting wastes from the colon or bladder and depending on the organ that is affected; it is called colostomies or urostomies [1]. The surgery might be a measure to ensure the survival of the patient or to improve the QOL of the patient, and in either case, the patient faces immense mental pressure [2].

While the statistics of colorectal clients is easily accessible at the global scale, there is no international statistics report of ostomy [3]. More than one million in the United States [4] and 102000 individuals in the UK use colostomy [5]. These numbers are growing year by year so that 100000 in the United States [6] and 13500 in the UK start using colostomy every year [7]. There is no reliable statistics of ostomy clients in Iran; however, according to the latest report by the Iran Ostomy Society, there are about 30000 clients with ostomy in Iran [8].

Studies have shown that depression, loneliness, suicidal thoughts, low self-esteem, and avoiding social activities are common in these clients [9, 10]. In addition, these clients are usually worried about intestinal gas, diarrhea smell, ostomy leakage, and constant dissatisfaction of appearance and mental image of the body, which are of the common problems of these clients [11]. Anxiety and feeling shameful because of using ostomy create changes in the lifestyle of these individuals that appears in areas such as ability to find a job, reluctance to travel, and negative self-mental image. In addition, the patient's feeling about the physical changes might affect the way they treat their friends and family, which might lead to problems in social and marital lives [12].

All aspects of QOL in the clients who undergo ostomy surgery are affected [13]. In terms of physical aspect, urination and sexual functions are affected; in terms of psychological aspect, depression, loneliness, suicidal thoughts, humiliation, and low self-confidence are very common; and in terms of social aspects, a decrease in participation in social and leisure activities is notable [14]. In addition, these clients deal with skin side effects such as wounds and infection; feces smell, tympanites, and discharge of smelly gasses; nutritional problems; heavy medical costs; and changes in defecation, dressing, exercising, and pregnancy [5]. Tsunoda et al. argued that ostomy attenuates the QOL of individuals so that clients who used to have a good QOL complain about the decline in the quality of their lives after using ostomy [15]. Yau et al. reported that ostomy surgery has a notable negative effect on the QOL of the patient [16].

According to the mentioned cases, it is vital to provide the required care to patients with ostomy [17]. Studies have shown that proper family care [18] and educating patients about self-care can improve the QOL notably [19]. Therefore, educating family members and the patients can have an impact on their QOL [17–19]. Using the results from different studies in this area, nurses can have a deeper knowledge of the challenges and the factors in the QOL of clients with ostomy. Through this, they can introduce better care educational programs for the clients and their families [20]. Family-centered empowerment model is designed in Iran for chronic clients, and it has been used for different diseases [3, 21]. The main objective of the family-centered empowerment model is to empower the family's (including patient and family members) QOL. This model is based on qualitative research based on a grounded theory approach including concept formation, concept development, definition of psychosocial processes, and inferring the central variable (family-centered empowerment). The model has been successfully implemented for the improvement of QOL in clients with different diseases [3, 21–25]. Family-centered care method empowers individuals and families and improves their independence. It supports family's participation in decision-making and providing care so that the family and patient's choices, values, beliefs, and cultural background are respected [26].

Nurses can employ these findings to have a deeper insight into the challenges and factors in the QOL of clients with ostomy. Through this, they can adopt and implement more effective care educational programs for clients and their families [27].

Marion concluded that family members of clients under intensive care felt being more useful when they were allowed to participate in providing care. In addition, the connection between the family and nurses created a participatory approach that made providing daily care to the patient more successful [25]. Therefore, more effective and empowered participation of family members in the care program can be effective in the improvement of health condition and welfare of these clients. This study is an attempt to determine the effects of family-centered intervention on the QOL in clients with ostomy.

2. Materials and Methods

2.1. Setting

A quasi-experimental study was carried out on clients with ostomy in Kermanshah-based public and state hospitals.

2.2. Participants and Selection

In this study, the main participants were the patients, whose QOL was examined. In addition, the patients' companions also received the necessary education to take good care of the patients. Therefore, both the companions and the patients participated in this study. The participants were selected through convenient sampling and then randomly (tossing a coin) allocated to the experimental and control groups. Inclusion criteria were caregiver living with patient, no mental/physical impairment, chronic physical and psychological clients, no narcotic drug dependence, and not participating in similar programs (client and caregiver). The required information was collected from patients' files and interviews with them. Exclusion criteria were leaving the study, missing more than one educational session, an incident that may affect the QOL, and development of psychological diseases throughout the study.

The minimum sample size was determined based on a mean comparison formula for one quantitative trait with two groups (confidence factor $(1-\alpha)=95\%$, power of test $(1-\beta)=90\%$) following Xu et al. [28]. The minimum sample size for each group was obtained equal to 30, and taking into account probable leaves, 35 individuals were selected for each group (35 clients with ostomy and 35 caregivers for each group).

2.3. Method

The participants signed a written letter of consent and then filled out a demographics form. QOL of the clients with ostomy was measured using the city of hope-QOL-ostomy questionnaire. The caregivers in the experimental group received an educational course designed based on nursing references and family-centered approach and family empowerment model for chronic clients [3]. The educational content was provided to experts (three surgeons, four faculty board members, and three operating room nurses) to examine qualitative content validity and face validity (using the opinions of 5 participants) of the tool, and their opinions were used to make the required modifications in the tool. The educational content included information about ostomy, side effects, nutrition, position change, infection prevention, intestine function control, activity, interaction with clients, and personal hygiene. The course was a four session's program (50–60 min each) that was implemented in two weeks either in the wards or in the houses for the caregivers. The educational content for the caregivers of the experimental group was the same, and each caregiver received four training sessions; however, the duration of the sessions varied between 50 and 60 minutes depending on the questions and the expected time needed by the caregivers. Afterwards, the participants were asked to implement the care program based on the plan and the researcher monitored the implementation of care using a checklist (previously confirmed by experts as a valid tool). In this study, all caregivers obtained the required grades and one to two extra training sessions had been made available in case some of the caregivers fail to obtain the minimum score. After making sure that the caregivers are empowered enough (checklist score $>95\%$), they were asked to implement the care program for four weeks at home. An educational booklet was also provided to the participants along with a phone number to answer any question 24h. Throughout this month, the researcher visited the participants at their houses four times to ensure continuity of the cares. In addition, while reviewing the care needed by the patients, questions and concerns of the patients and their companions were answered. We tried

to prevent any contact between the caregivers and patients of the experimental and control groups during the intervention. Only the routine interventions of the clinics were provided for the caregivers and patients of the control group, which were also available for the patients and caregivers of the experimental group. One month after the completion of the family-centered intervention, the two groups (clients with ostomy) were again evaluated using the specific questionnaire of the QOL of Hep City. One month after completion of the family-centered care intervention, the two groups (clients with ostomy) filled out the city of hope-QOL-ostomy questionnaire. All stages of the intervention were done by a researcher (second author), and evaluations before and after the intervention were done by a senior nursing expert who was not part of the research team (Figure 1).

[figure(s) omitted; refer to PDF]

2.4. The City of Hope-Quality of Life-Ostomy Questionnaire

The data gathering tool was an ostomy clients' QOL scale designed by Hope City National Cancer Research Center, California, USA. The questionnaire contains 90 statements in three sections; section 1 (introduction) contains 13 questions on demographics and the disease. Section 2 (lifestyle impact) contains 34 multi-alternative questions on job, medical insurance, sexual activity, psychological concerns, dressing, diet, daily care for ostomy, and food groups. These questions are not scored and only give a description of the respondent. Section 3 (the effects of ostomy on the QOL) contains 43 questions on different aspects of physical health (1–11), psychological health (12–23), social health (25–36), and spiritual health (37–43) [29]. The questions in this part are scored based on Likert's rating scale of 0–10 and are used to calculate the mean score of the QOL. Some questions are scored inversely, so that a higher score indicates a better QOL in some questions and a lower QOL in some other questions. To calculate the score of the QOL, first by applying reverse changes to the questions with inverse scoring (questions 1–12, 15, 18, 19, 22–30, 32–34, and 37), the mean score of the QOL in each of its dimensions and also in general was determined. For the QOL as a whole and each of its dimensions, a minimum score (the worst) and the maximum score (the best) were zero and ten, respectively.

The validity of the tool has been determined based on face and content validity, and the reliability has been determined using test-retest and internal consistency. Cronbach's alpha of the tool is 0.95, and correlation coefficients for physical, psychological, social, and spiritual aspects of QOL have been reported equal to 0.82, 0.88, 0.83, and 0.78, respectively [20]. The tool has been validated for colostomy patient populations in Iran, and Cronbach's alpha for physical, psychological, social, and spiritual health aspects is 0.75, 0.85, 0.75, and 0.74, respectively [29]. In this study, the Cronbach's alpha coefficient for the tool was 0.874 and the subscales of physical, psychological, social, and spiritual health were 0.89, 0.691, 0.724, and 0.748, respectively.

2.5. Statistical Analysis

Data analysis was done using descriptive and analytical statistical methods in SPSS (v25). The Kolmogorov–Smirnov test was used to determine the normality of the data distribution. For data with normal distribution, the paired *t*-test was used to compare the desired quantitative trait before and after the intervention. The independent *t*-test was used to compare the mean of the desired quantitative trait in the experimental and control groups. Nonparametric tests, equivalent to Wilcoxon and Mann–Whitney, were used for the data without a normal distribution (*p* value=0.05).

2.6. Ethical Consideration

After approval by the ethics committee (IR.KUMS.REC.1398.169), the objectives of the study were explained to the participants, they signed a letter of consent, the family members were asked for their permission before the researcher visited them at their home and implement family-centered intervention, the participants were ensured about the confidentiality of their information, and an ethical code was issued by the ethics committee of the university for the study. Given the fact that the intervention was effective and useful for the participants, the participants in the control group also took part in two educational sessions after the study.

3. Results

Totally, 70 clients and 70 caregivers took part in the study as the experimental and control groups (none of the participants left the study). Mean age of the clients was 51.86 ± 14.96 (min = 18; max = 92); mean age of the

caregivers was 36.23 ± 11.2 (min=18; max=75); and mean body mass index (BMI) of the clients was 25.84 ± 3.27 (min=21.26; max=40.57). On average, the clients had used ostomy for 5.76 ± 2.03 days and the daily care time for ostomy was 118.21 ± 50.4 min. On average, the clients had 3.19 ± 2.18 children (min=1; max=9). For more demographic information, see Tables 1 and 2.

Table 1

Relative and absolute frequency of the experimental and control groups based on the demographics.

Variables		Control N (%)	Experimental N (%)	χ^2/F isher	p_{value}
Gender	MaleFemale	17 (48.6)18 (51.4)	20 (57.1)15 (42.9)	0.516*	0.18
-					
Marital status	UnmarriedMarried	6 (17.1)29 (82.9)	13 (37.1)22 (62.9)	3.45**	0.06
-					
Educational status	Elementary levelHigh schoolHigher education	25 (71.4)6 (17.1)4 (11.4)	28 (80)4 (11.4)3 (8.6)	0.713*	0.7
-					
Job	EmployeeHousewifeNon-employedSelf-employed	12 (34.3)15 (42.9)3 (8.6)5 (14.3)	10 (28.6)9 (25.7)7 (20)9 (25.7)	4.42*	0.219
-					
Residence	UrbanSuburbRural	14 (40)12 (33)9 (25.7)	11 (31.4)17 (48.6)7 (20)	1.47*	0.48
-					
Family income (monthly)	400\$400-800\$800-2000\$	12 (34.3)12 (34.3)11 (31.4)	17 (48.6)8 (22.9)10 (28.6)	1.7*	0.45
-					
Ethnicity	PersianAzeriKurdLur	0 (0)2 (5.7)28 (80)5 (14.3)	2 (5.7)2 (5.7)29 (82.9)2 (5.7)		
-					
Type of ostomy	Temporary colostomyPermanent colostomyTemporary ileostomy	17 (48.6)4 (11.5)14 (40)	20 (57.1)7 (20)8 (22.9)	4.48*	0.214
-					

Reason of ostomy	CancerInflammation diseaselleusOther	21 (60)2 (5.7)7 (20)5 (14.3)	19 (54.3)3 (8.6)8 (22.9)5 (14.3)	0.36 7*	0.9 4

*Exact chi-square test. **Exact Fisher test.

Table 2

Relative and absolute frequency of caregivers of the experimental and control groups based on the demographics.

Variables		Control N (%)	Experimental N (%)	X ² /Fisher	P _{value}
Gender	MaleFemale	14 (40)21 (60)	17 (48.6)18 (51.4)	0.52 1*	0.4 7
-					
Marital status	UnmarriedMarried	6 (17.1)29 (82.9)	13 (37.1)22 (62.9)	3.54 **	0.0 6
-					
Relation with clients	ParentschildSibling	0 (0)32 (91.4)3 (8.6)	3 (8.6)27 (77.1)5 (14.3)	3.9*	
-					
Job	NonemployeeHousewifeEmployedSelf-employed	8 (22.9)12 (34.3)9 (25.7)6 (17.1)	6 (17.1)12 (34.3)5 (14.3)12 (34.3)	3.42 *	0.3 3
-					
Educational status	Elementary levelHigh schoolHigher education	12 (3.3)13 (37.1)10 (28.6)	14 (40)13 (37.1)8 (22.9)	0.37 *	0.8 3

*Exact chi-square test. **Exact Fisher test.

Based on the results of Kolmogorov–Smirnov (KS) tests and p value, normal distribution of the data of age of clients and caregivers, time duration of using ostomy, and BMI were supported. However, the time duration of daily care for the two groups and number of children in the experimental group were not normally distributed ($p < 0.05$). Based on the independent *t*-test, there was no significant difference between the experimental and control groups in terms of age of patient and caregiver, time duration of using ostomy, and BMI ($p > 0.05$). Therefore, the two groups were homogenous in terms of these variables. Based on the Mann–Whitney test, the two groups were homogenous in terms of number of children ($p = 0.451$) and there was a significant difference between them in terms of daily time duration of care ($p = 0.043$).

The KS test results showed the score of QOL, and the subscales had a normal distribution in the two groups before and after the intervention ($p > 0.05$). Only psychological scores in the control group and spiritual health in the experimental group were not normally distributed after the intervention ($p < 0.05$).

The mean scores of physical health, psychological health, and QOL of clients in the experimental and control groups were significantly different. However, the difference between the two groups as to social health and spiritual health was not significant. In addition, the two groups were not significantly different before the intervention in terms of physical, psychological, and spiritual health and QOL in general. However, after the intervention, the two groups

were significantly different in terms of QOL and its subscales except for social health. The level of sig. for all the tests was 95% (Table 3).

Table 3

Comparison of mean scores of QOL and its subscales in clients of the experimental and control groups before and after intervention.

QOL Aspect	Group	Mean±SD		Paired <i>t</i> -test or Wilcoxon signed rank test	Sig.
Pre	Post	Physical health	Experimental	9.69±38.11	14.05±47
<i>T</i> =-3.22	0.003	Control	10.43±39	8.14±40.86	<i>T</i> =-2.93
0.006	Independent <i>t</i> -test	<i>T</i> =-0.37Sig=0.71	<i>T</i> =2.24Sig=0.028		
-					
Psychological health	Experimental	5.6±60.29	5.09±64	<i>T</i> =-11.125	0.0001
Control	6.07±58.4	5.78±59.71	<i>Z</i> =-3.27	0.01	Independent <i>t</i> -test/ <i>U</i> Mann-W hitney
<i>T</i> =1.35Sig=0.18	<i>Z</i> =-3.12Sig=0.002				
Social health	Experimental	5.63±65.31	5.29±67.48	<i>T</i> =-3.7	0.001

Control	7.14±64.2	4.86±65.31	T=0.365	0.717	Inde pend ent t- test
T=0.72Sig=0.47	T=1.79Sig=0.078				
Spiritual health	Experimental	6.71±34.26	6.16±37.63	Z=-4.56	0.00 1
Control	5.93±33.6	5.74±33.37	T=-0.173	0.86	Inde pend ent t- test/ U Man n-W hitne y
T=0.434Sig=0.66	Z=-2.597Sig=0.009				
QOL	Experimental	14.49±197.97	11.8±207.49	T=-5.3	0.00 01
Control	15.11±195.2	13.58±199.03	T=-3.32	0.002	Inde pend ent t- test

The results of the mean scores of QOL before and after the intervention in the experimental group were ($M=195.2$, $SD=14.49$) and ($M=207.49$, $SD=11.8$), respectively, which imply significant differences that can be concluded to an improvement in QOL ($t=-3.32$, $p=0.002$). Also, the results of the mean scores of QOL before ($M=197.97$, $SD=15.11$) and after ($M=199.03$, $SD=13.58$) the intervention in the control group indicate significant differences that resulted in an improvement in QOL too ($t=-5.3$, $p=0.0001$). These differences in the mean scores between the two experimental and control groups were nonsignificant before ($t=0.78$, $p=0.44$) and significant after ($t=2.87$, $p=0.007$) the intervention (Table 3).

4. Discussion

As the results showed, the mean score of physical health in the clients of the experimental group had a significant increase compared with the control group. In addition, there was a significant increase in the mean score of physical health in the clients of the control group; however, this increase was less than that in the experimental group before and after the intervention. This increase in the clients of the control group can be explained by natural adaptation of the clients to ostomy. In addition, the control group received routine care and treatment during the study.

Naseh et al. found that clients with permanent ostomy did not have a good condition in terms of physical health and needed empowerment and care [20]. Rajabipour et al. reported that motivational interviews improved physical health of the clients with ostomy significantly [30]. Kalijzadeh Ganjalikhani et al. showed that structured education for

ostomy care significantly improved physical health in clients with permanent ostomy [10]. Similar studies have shown that educating parents of children with ostomy can increase their care knowledge through family-centered empowerment to avoid ostomy side effects [23]. Clearly, there is good consistency between our results and other studies, which is an indicator of the right implementation of standard tools in this study. To explain the findings, we can say that the interventions were based on family-centered care for the clients and that family can play an effective role in improving client's condition [31].

Because of the family-centered intervention, the mean score of psychological health had a significant increase in the clients of the experimental group compared with the control group. The results supported a significant effect of family-centered intervention on psychological health of the clients. The increase in mean score in the clients of the control group can be the results of natural adaptation of the clients through time. Studies have emphasized on the effect of family-centered intervention on attenuating anxiety and stress [26] and improvement of self-confidence and self-efficacy [21] of clients. Here, family empowerment to provide proper therapeutic care and support to the clients, i.e., the key point in family-centered care program, was emphasized, which could be effective in the improvement of psychological health of the clients.

Nam et al. reported that clients with ostomy needed family and physician's support to adapt to the social and psychological challenges [32]. Hinton et al. found that family-centered care improved depression in clients [24]. To explain the findings, it is notable that along with empowering the family members to provide care to clients, family-centered care programs encompass several areas of psychological support. Additionally, studies have shown that family support has a significant relationship with the improvement of self-confidence [33], improvement of psychological condition [10, 32], and self-efficacy in patients [21].

The mean score of social health had a significant increase after family-centered intervention in the clients of the experimental group. This increase, however, was significantly higher than that in the control group, which might be due to the physical hardships and limitations in social interactions of the clients. Xu et al. concluded that self-efficacy interventions in clients with ostomy did not cause a significant change in the QOL in clients in the intervention group compared with the control group [28]. The results showed that the mean score of spiritual health had a significant increase after family-centered intervention. The results supported the effectiveness of family-centered intervention in the increase in spiritual health in care seekers. Several studies using other types of interventions have reported an improvement in different aspects of QOL along with attenuation of stress and anxiety in clients [28, 30, 32]; spirituality is one of these aspects.

As shown by the results, the scores of different aspects of QOL improved significantly after the intervention in the clients of the experimental group compared with the control group. The results supported the significant effect of family-centered intervention on the QOL in the clients. The increase in the mean scores in the control group might be due to the natural adoption process in the clients. Leyk et al. argued that time can be effective in gaining social support and improving health conditions of clients with ostomy and their families [34]. Koplin et al. maintained that psychological interventions can attenuate the decline in QOL in clients with ostomy [35]. To explain the findings, it is notable that educating family members and providing family-centered care can be effective in self-care skills and capabilities of clients with ostomy. As shown in [14], self-care activities can be effective in the improvement of QOL of clients with ostomy.

The mean scores in the clients of the control group increased during the four weeks of intervention. The natural adaptation process in the clients can explain this improvement so that they managed to handle many of their problems and improved their quality of lives. Time and education were effective in the QOL in clients with ostomy [36]. In addition, along with the client's attempt to solve their problem, social and family supports and routine educations and interventions can improve the QOL in clients [9, 35]. Several studies have shown that a variety of interventions are effective in the QOL in clients with ostomy [9, 14, 32, 35]. Our results also supported the effectiveness of family-centered intervention in the QOL of clients.

5. Limitation

A major limitation of the study was the large number of statements in the questionnaires that might have been tiring

for the participants. To solve this, an assistant researcher was available to answer any question that the subjects could have. In addition, the questionnaires were filled out on different occasions with short time gaps. Another limitation was the challenge of finding clients with ostomy, which was done with the help of hospital officials. The study was carried out as an interventional study that needed a proper design and participation of the subjects. The study was part of a MSc. dissertation with a limited time. The sample groups were small, and the follow-up was limited to four weeks. Using a larger sample group and a longer follow-up term might lead to different and more reliable findings.

6. Conclusion

In general, family-centered interventions, as a therapeutic intervention, improved the QOL in clients with ostomy and improved their physical, social, spiritual, and psychological health. Therefore, the therapeutic intervention can be used by different surgery wards, nursing services, and social care services as an efficient intervention to improve QOL in clients.

Consent

Our manuscript does not contain any individual's data in any form (including individual details, images, or videos); thus, there is no need for any publishing consent.

Authors' Contributions

AG contributed to study concept, designed study, collected data, and prepared manuscript. AJ contributed to study concept, designed study, analyzed data, prepared manuscript, and submitted the manuscript. TGh contributed to study concept, designed study, and prepared manuscript. EM and KM contributed to study design, analyzed data, and prepared manuscript.

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Glossary

Abbreviation

BMI:Body mass index

WHO:World Health Organization

QOL:Quality of life

KUMS:Kermanshah University of Medical Sciences.

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Factors Affecting Nonadherence to WHO's Recommended Antenatal Care Visits among Women in Pastoral Community, Northeastern

Ethiopia: A Community-Based Cross-Sectional Study

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ABSTRACT (ENGLISH)

Introduction. More than half of the pregnant women in Ethiopia do not receive the recommended number of antenatal care visits. In the Afar region, where women have limited access to healthcare services due to pastoral livelihood, evidence on noncompliance to the adequate number of antenatal care visits is scarce. Therefore, this study was intended to examine the level of nonadherence to the recommended antenatal care visits and its associated factors in the pastoral community of Northeast Ethiopia. **Methods.** A community-based cross-sectional study was conducted from 04 February to 22 March 2020 among randomly selected 703 women who gave birth within 24 months preceding the survey in the Transform HDR districts of the Afar region. Data were collected using a pretested structured interviewer-administered questionnaire. Data were entered into Epi-data version 4.2 and finally exported to Stata version 16 for further analysis. Bivariable and multivariable binary logistic regression analyses were done to identify factors affecting the nonadherence to the recommended antenatal care visits. Odds ratio with the corresponding 95% confidence interval were computed and the statistical significance of the explanatory variables was declared at a p-value <0.05. **Results.** Nonadherence to the recommended antenatal care visits was 57.0% (95% CI: 53.3%–60.7%). Attending primary (AOR (95% CI): 0.39 (0.22–0.72)) and secondary education and above (AOR (95% CI): 0.25 (0.08–0.77)), being married at the age of 18 years or older (AOR (95% CI): 0.48 (0.36–0.71)), and attending antenatal care at a health center (AOR (95% CI): 0.46 (0.26–0.81)) were associated decreased odds of nonadherence to the recommend visits. Moreover, a higher likelihood of nonadherence was found among women from households not possessing communication media (AOR (95% CI): 1.85 (1.18–2.88)) and those who initiated antenatal care attendance during the second (AOR (95% CI): 5.23 (3.54–7.72)) and third trimesters (AOR (95% CI): 8.81 (1.88–41.20)). **Conclusions.** Nearly six in ten women do not receive the recommended antenatal care visits, consistent with the national prevalence. Women's education, age at marriage, type of health facility, possession of mass media, and timing of antenatal care attendance were associated with nonadherence to the recommended antenatal care visits. Thus, improving women's literacy, dissemination of information regarding antenatal care through mass media, and strengthening interventions targeted to end child marriage are important in scaling up the level of adherence. Moreover, supporting community-based health education through health extension programs is crucial in reaching women with limited access to mass media.

FULL TEXT

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Integrating HIV-Associated Neurocognitive Impairment Screening within Primary Healthcare Facilities: A Pilot Training Intervention

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ABSTRACT (ENGLISH)

HIV-associated neurocognitive impairment (H-NCI) remains a common comorbidity, which may affect several key health outcomes among people with HIV. However, there are shortages of appropriately skilled healthcare workers able to identify and manage H-NCI in low- and middle-income countries. We conducted an exploratory, quasi-experimental, pre- and post-cohort training intervention in KwaZulu-Natal, South Africa. Thirty-four healthcare workers (two general medical doctors, twenty-two nurses, and ten adherence counsellors) from six facilities and a mobile clinic unit attended two, two-hour face-to-face, training sessions. The training included knowledge and skill transfer components. Pre- and post-knowledge questionnaires demonstrated an improvement among 82% ($n=28$) of the attendees from all three cadres. Knowledge was retained by 88% ($n=30$) of the attendees after eight weeks. The H-NCI screening tools were administered with 78% accuracy. After eight weeks, two general medical doctors and eight senior nurses were able to accurately administer the tool. The Primary Healthcare H-NCI training was successful in improving knowledge among primary healthcare workers; however, several healthcare workers experienced challenges with administering such tools.

FULL TEXT

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1. Introduction

HIV is now recognized as a manageable, multisystem, chronic illness, following the widespread availability of virologically suppressive antiretroviral therapy (ART) [1]. More than two-thirds of the global population of people with HIV (PWH) are found in sub-Saharan Africa [2]. South Africa is the country most severely affected by the epidemic, accounting for approximately 8.2 million PWH. South Africa is also home to the largest ART program worldwide, with 72% of PWH in the country currently accessing treatment [3, 4]. The overall HIV prevalence rate is approximately 13.7% among the South African population [3].

Over the past decade, there have been significant declines in several AIDS-defining illnesses, including severe HIV-associated neurocognitive impairment (H-NCI), such as HIV-associated dementia (HIV-D) [1]. However, while the incidence of HIV-D has fallen dramatically, the lifetime prevalence may remain stable or even increase as PWH on effective ART experience longer life expectancies [5].

PWH with symptoms of H-NCI experience difficulties with attention, memory, learning, problem solving, decision making, and activities required for everyday functioning, including ART adherence [6]. Healthcare providers in clinical settings have been noted to have limited knowledge of H-NCI, and screening practices remain uncommon in low- and middle-income countries [7–9]. Reasons for low H-NCI screening may be underdetection due to low incidence and prevalence rates in the context of effective ART, poor knowledge, and screening skills among healthcare workers in this setting, limited skilled personnel, treatment alternatives, and/or medical costs associated with neurocognitive care.

Low- and middle-income countries experience severe shortages in trained healthcare providers, especially mental and neurological healthcare workers [10]. The medical, surgical, and neurosurgical specialties have adopted task-sharing to address human resource shortages in this setting [11]. This approach involves the redistribution of duties through delegation [12]. Several healthcare workers from various tiers form a collaborative team of specialists and less-qualified cadres, relying on iterative communication, as well as ongoing training to preserve high-quality outcomes [12].

It is unclear whether targeted H-NCI screening for neurocognitive and functional symptoms can be effectively integrated into a primary healthcare clinic through task-sharing from specialists to primary healthcare workers [10, 13]. A systematic review conducted by Liu et al. [14] reported several studies exploring task-sharing through the delegation of mental health services from specialists to general medical doctors, nurses, and community healthcare workers. However, few studies included H-NCI in the training interventions [14]. Although one H-NCI training intervention found improved confidence in identifying H-NCI symptoms among clinical officers in Kenya, this training did not include general medical doctors, nurses, and adherence counsellors [10]. Task-sharing, which is commonly evaluated through training, practice, and maintenance, has not been explored among general medical doctors, nurses, and/or adherence counsellors administering H-NCI screening in this setting [12].

Our study aimed to provide preliminary evidence needed to inform the design of an H-NCI training intervention targeting primary healthcare workers in low- and middle-income countries. The aim of this intervention is determine whether task-sharing of H-NCI screening from specialists to primary healthcare workers would be feasible in this setting. Our primary objective was to explore the viability of H-NCI screening by primary healthcare workers. We examined the initial uptake of knowledge and skills among general medical doctors, nurses, and adherence counsellors following the training intervention. Our secondary objective was to examine the appropriateness of an in-field, H-NCI training intervention among primary healthcare workers at this level of care.

2. Methods

2.1. Study Design

An exploratory, quasi-experimental, pre- and post-cohort intervention study was conducted among primary healthcare workers. These healthcare workers provide the majority of HIV services in KwaZulu-Natal, South Africa. We developed a four-hour training programme that was spread over two weekly, two-hour sessions. The programme design comprised didactic lectures for knowledge and H-NCI skill transfer delivered over a short period. This was with a view toward making the training cost-effective and easily replicated by future interventions in low- and middle-

income countries. The on-site design also ensured that the healthcare workers remained in the facility and were available to deal with emergencies, thus ensuring minimal impact on patient services in already burdened facilities. The development process of the pilot H-NCI training is described.

The training sessions took place at primary healthcare facilities based on the principles of academic detailing. Academic detailing involves peer-to-peer outreach processes involving visits to the work setting of a target audience from a trained professional. The approach allows the trainer to demonstrate and discuss topics including new skill sets to improve patient services [15]. The main aim of academic detailing is to increase the uptake of a new intervention, such as the use of a standardized assessment tool in community practice, which is otherwise uncommon [15, 16]. The iterative processes of academic detailing involving peer-to-peer skill transfer, demonstration, and feedback were appropriate for our pilot training.

2.2. Ethical Considerations

The University of Cape Town Faculty of Health Sciences Human Research Ethics Committee, the City of Cape Town Department of Health, and the KZN Department of Health in the Ugu District provided approval for this study. The training was approved by the HIV and Sexually Transmitted Infections (HAST) district manager, district mental health manager, the operational manager, and the chief executive officer at each facility. All participants provided informed consent prior to participation.

2.3. Population and Sample

We applied the general rule which suggests a minimum of 30 subjects or greater for pilot studies [17]. This sample size was sufficient to evaluate procedures and processes which will inform future training interventions. To recruit participants for the Primary Healthcare H-NCI training, we approached medical managers from the HAST units at primary healthcare facilities in the Ugu district under the KwaZulu-Natal Department of Health. General medical doctors, nurses, and adherence counsellors working in these units were invited to participate in the training. The healthcare workers were informed by the medical manager that participation was not mandatory. Between June and July 2021, 34 primary healthcare workers (2 doctors, 22 nurses, and 10 adherence counsellors) from five primary healthcare facilities and a mobile clinic unit attended both sessions of the pilot training.

2.4. Curriculum Development

The Primary Healthcare H-NCI training curriculum was developed by the first author (AM) and senior researchers from the University of Cape Town (JJ, HG, SN, and GS). Table S1(supplementary material) provides an outline of the training curriculum. We used a participatory curriculum design approach to evaluate the training curriculum [18]. This approach relies on the involvement of stakeholders and end users in the design process, as well as facilitating buy-in from key personnel [18, 19]. The Primary Healthcare H-NCI training curriculum was evaluated by the HAST district manager who provides continued education to healthcare workers, the district mental health manager, and trainers from the various districts. These key stakeholders provided feedback and input to ensure that the training would be appropriate.

The first author developed a workbook to facilitate learning during the training, in consultation with the other authors (GS, HG, SN, and JJ). The workbook included the training content. Additional reading material providing more information that could not be covered, such as a detailed background of H-NCI was also provided in this workbook. The content of the workbook was summarised in point form and was presented to the training recipients by the first author using a power point presentation. This was guided by a trainer's manual developed by the first author with input from the co-authors. The trainer's manual included session directions, a speech guide for the trainer to follow and a list of required materials for each session. Visual aids in the form of video demonstrations of the screening tools were used to supplement the information provided in the workbook.

We used the International HIV Dementia Scale (IHDS) and the Cognitive Assessment Tool-rapid version (CAT-rapid) for this training. These tools have been validated for use in South Africa [20, 21]. The IHDS tests three neurocognitive domains, including motor speed (timed finger tapping), psychomotor speed and processing (timed alternating hand sequence test), as well as short-term memory (recollection of four words in two minutes) [22]. The CAT-rapid includes four symptom questions, short-term memory (registration of four words), executive functioning (a

mini-trail-making test), psychomotor speed and processing (timed alternating hand sequence test) and verbal learning and memory (word recall) assessments [20]. A detailed description of the administration of the IHDS and the CAT-rapid is described by Sacktor et al. [22] and Witten [23].

2.5. Data Collection

2.5.1. Delivery of the Training

The first author (AM) delivered the training. The first author has experience in HIV/TB training facilitation among general medical doctors, nurses, and adherence counsellors providing healthcare services at various levels in South Africa. The first author received training on neuropsychological screening tools whilst working on a research study conducted at the University of Cape Town, under the supervision of HG, who is a registered neuropsychologist. The Primary Healthcare H-NCI training sessions comprised didactic lectures, case vignettes, interactive discussions, and roleplaying. The first session focused on the theoretical components of H-NCI. The second session involved practical training on H-NCI screening tool administration.

2.5.2. Participant Evaluation and Measures

The knowledge and skill assessments were designed using Miller's pyramid for assessing clinical competence [24, 25]. This framework has been used to assess clinical competence beyond test-taking or memorising of information [24]. The model emphasises the importance of acquiring knowledge to perform a task in practice [25]. The lowest level in the model is knowledge (knows), followed by competence (knows how), performance (shows how), and action (does) [24, 25]. We examined participants' attitudes and views of the H-NCI training in the post-training evaluation.

2.5.3. Knowledge and Attitudes

Multiple-choice questionnaires were used to evaluate knowledge, as well as participants' attitude and comfort with H-NCI screening tools before and after the training. Pre- and post-testing is the most common technique adopted in academic detailing [15]. The current questions were adapted from a tool developed by Johnston et al. [26]. The tool consisted of 43 items, measuring nonskill attributes including knowledge, attitude, and behaviour among undergraduate medical students. A 20-item pre-test questionnaire was used to assess knowledge, attitudes, and views in the Primary Healthcare H-NCI training (Supplementary table S2). This tool was appropriate for our study as it sought to evaluate the teaching and learning of the medical curriculum.

2.5.4. Skills

Direct observations of procedural skills (DOPS) were used to assess a healthcare worker's ability to administer the H-NCI screening tool. DOPS have been described by Wass et al. [27] as an appropriate assessment of clinical competence. Each trainee was assigned a one-on-one time slot to demonstrate the H-NCI screening tool on a standardized patient as part of a simulation. The simulations were assessed using a checklist detailing the steps required to accurately administer the selected screening tools and interpret the results. The participants' performances were scored by a counselling psychologist with previous experience in neuropsychological testing. Tasks that were accurately demonstrated were given a score of two, tasks that were listed on the checklist but were performed inaccurately were given a score of one and tasks that were incorrect or excluded were given a score of zero. Healthcare workers who did not accurately demonstrate the use of the screening tool were given immediate feedback by the trainer once the simulation was completed.

2.5.5. Evaluation Procedures

Data collected at baseline included participant demographics and pre-test questions. Knowledge of H-NCI and screening skills were assessed immediately after the training and after eight weeks. Training evaluation data were collected at the end of the second session. This is illustrated in the flow diagram (Figure 1). All data were collected anonymously using a unique participant identifier. Documentation containing participant names and their unique identifiers was kept confidential by using a hardcopy linking log that was stored in a separate location to the data. [figure(s) omitted; refer to PDF]

2.6. Analysis

IBM Statistical Package for the Social Sciences (SPSS) 27 was used to analyse the data (IBM-Corp., 2017). We

compared H-NCI knowledge among general medical doctors, nurses, and adherence counsellors before the training, immediately after the training, and eight weeks later. The data were analysed using frequency analysis and Fisher's exact *t*-test and are reported as the mean and standard deviation. We report healthcare workers' ability to administer H-NCI screening tools using chi-square analyses. We compared performance between the three cadres to establish which cadres would be appropriate to administer the H-NCI screening tools. We examined whether these skills were retained eight weeks after the training by comparing the three cadres.

3. Results

After describing participant characteristics, we present the results from the pre- and post-tests, DOPS, and follow-up assessments.

3.1. Participants

Of the 42 healthcare workers who initially enrolled to participate in the training, thirty-four participated in two training sessions (21 from facility one and 13 from facility two). Eight healthcare workers were excluded from the final analysis, including six who were required to address patients during the second session and two who were unavailable as they were scheduled to work the night shift on the day of the training.

Study participants consisted of two general medical doctors (6%), 22 nurses (65%), and ten adherence counsellors (29%) recruited from six primary healthcare facilities and a mobile health clinic. Most healthcare workers were females (71%, $n=24$). The mean age of participants was 39 years ($SD=9.5$, range: 26–62) and the median number of years in service was 12 years ($SD=7.8$, range: 2–40).

3.2. H-NCI Knowledge Pre- and Post-Training

To determine whether the pilot training intervention led to improved H-NCI knowledge among primary healthcare workers, contingency tables were used to compare pre-test questionnaire and post-test questionnaire scores for the total sample of 34 (Figure 2). The results showed that there was a significant increase in H-NCI knowledge overall. Prior to the training, the mean knowledge score was 61% ($SD=1.48$). Healthcare workers demonstrated sufficient knowledge of H-NCI after the training ($M=83\%$, $SD=1.25$). There were significant improvements in knowledge among 82% ($n=28$). This was among all three cadres. Five (15%) healthcare workers (one nurse and four adherence counsellors) showed no change in knowledge, while one adherence counsellor (3%) scored lower as they intermittently dealt with patients during the training.

[figure(s) omitted; refer to PDF]

Figure 2 illustrates the change in knowledge scores between cadres eight weeks after the training intervention. Overall, 62% ($n=21$) of healthcare workers scored the same before and after the training (one general medical doctor, 13 nurses, and six adherence counsellors). Nine (26%) healthcare workers (one general medical doctor, five nurses, and three adherence counsellors) demonstrated improved knowledge. There was a decline in knowledge among four (13%) healthcare workers (one nurse and three adherence counsellors).

One-tail paired-sample *t*-tests were used to compare healthcare workers' views on their knowledge of H-NCI before and after the training. These results are illustrated in Figure 3. Those who had limited or no knowledge of the impact of HIV on the brain prior to training agreed that they had a significantly better understanding of the impact of HIV on the brain after the training. Prior to the training intervention, primary healthcare workers were unsure whether H-NCI was addressed in previous training. By the end of the H-NCI training, this was clarified and healthcare workers agreed that previous training did not address the impact of HIV on the brain or H-NCI.

[figure(s) omitted; refer to PDF]

3.3. Administering an H-NCI Screening Tool

3.3.1. Overall Performance of Screening Tools Immediately after the Training

To understand whether primary healthcare workers would be able to accurately administer and interpret an H-NCI screening tool, we observed the demonstration of an H-NCI screening tool on a simulated patient. The mean performance scores are summarised in Table 1.

Table 1

Accuracy of healthcare workers' HIV-associated neurocognitive impairment screening tool delivery.

Screening tool	Task% (score)	Doctor (n=2)	Nurse (n=22)	Adherence counsellor (n=10)	Total (n=34)	Std. deviation	Minimum	Maximum	Chi-square	Df	- value
IHDS	Motor speed	88 (14)	83 (13)	64 (10)	77 (12)	4,2	3,0	16,0	35,4	22,0	0.07
Psychomotor speed	89 (16)	77 (14)	66 (12)	75 (13)	4,6	4,0	18,0	20,65	20	0.41	Memory recall
92 (11)	77 (9)	62 (7)	73 (9)	3,1	2,0	12,0	39.29	16	0.002	IHDS total	90 (43)
82 (39)	57 (28)	75 (13)	11,4	11,0	48,0	36.47	32	0.31			
CAT-R	Symptoms	100 (6)	94 (5)	100 (6)	96 (6)	0,6	3,0	6,0	3.97	4	0.33
Trail making	88 (7)	76 (6)	56 (5)	71 (6)	2,2	1,0	8,0	10.77	14	0.72	Motor speed
91 (15)	79 (13)	67 (11)	76 (12)	4,6	2,0	16,0	24.93	22	0.34	Psychomotor speed test	81 (15)
70 (13)	61 (11)	68 (12)	5,4	3,0	18,0	12.42	14	0.55	Memory recall	95 (10)	87 (9)

64 (6)	81 (8)	2,4	1,0	10,0	41.79	36	0.28	CA T- rapi d total	90 (58)	84 (54)	66 (42)
79 (51)	13,7	18,0	64,0	34.62	40	0.76	.				
Total combined score		91 (101)	85 (93)	64 (70)	78 (86)	24,0	29,0	110, 0	38.02	42	0.7 3

Overall, primary healthcare workers demonstrated the combined screening tool with 78% ($n=34$) accuracy ($M=78.1$, $SD=24.0$). One general medical doctor and one nurse administered the combined screening tool with 100% accuracy (6%). Four (12%) healthcare workers (one general medical doctor and three nurses) demonstrated the screening tool with few errors, scoring between 96% and 99%. Overall, 41% ($n=14$) of healthcare workers administered the screening tool with reasonable accuracy (range: 71%–95%), 21% ($n=7$) administered the screening tool somewhat accurately (range: 40%–70%), and 6% ($n=2$) administered the tool poorly (range: 0%–39%). The accuracy of the demonstrations varied among the three cadres. General medical doctors (91%, $n=2$) and nurses (85%, $n=22$) demonstrated the screening tools with greater accuracy compared to adherence counsellors (63%, $n=10$).

3.3.2. Healthcare Workers' Performance on the CAT-Rapid

Healthcare workers performed marginally better on the CAT-rapid screening tool ($M=79.0\%$, $SD=13.7$) compared to the IHDS ($M=75.0\%$, $SD=11.4$; see Table 1).

The CAT-rapid was administered with 100% accuracy by 15% ($n=5$, one doctor and four nurses) of healthcare workers. Five (15%) healthcare workers (one general medical doctor and four nurses) demonstrated the CAT-rapid with few errors, scoring between 96% and 99%. Overall, 50% ($n=17$) administered the CAT-rapid with reasonable accuracy (range: 71%–95%), 18% ($n=6$) somewhat accurately (range: 40%–70%) and 12% ($n=4$) administered the CAT-rapid poorly (range: 0%–39%). Overall, general medical doctors performed the CAT-rapid with 90% accuracy ($n=2$), followed by nurses who demonstrated 84% accuracy ($n=22$). The adherence counsellors ($n=10$) demonstrated the CAT-rapid somewhat accurately (66%).

Our results show that primary healthcare workers were least successful with the following components of the CAT-rapid: demonstrating the timed finger tapping test, demonstrating the alternating hand sequence test, scoring the alternating hand sequence test, scoring the mini trail-making test, administering the memory recall clues, ensuring that the nondominant hand was used during the test and the use of the timer for the alternating hand sequence test (see Figure 4).

[figure(s) omitted; refer to PDF]

3.3.3. Healthcare Workers' Performance on the IHDS

The IHDS was administered with 100% accuracy by 21% ($n=7$) of primary healthcare workers (one general medical doctor and six nurses). Four (12%) healthcare workers (one general medical doctor and three nurses) demonstrated the IHDS with few errors, scoring between 96% and 99%. Overall, 38% of healthcare workers ($n=13$) administered the IHDS with reasonable accuracy (range: 71%–95%), 29% ($n=10$) somewhat accurately (range: 40%–70%) and 12% ($n=4$) administered the IHDS poorly (range: 0%–39%). Between the cadres, the IHDS was demonstrated with greater accuracy by general medical doctors (90%) and nurses (82%). Adherence counsellors demonstrated the IHDS somewhat accurately (57%).

Primary healthcare workers were least successful with the following components of the IHDS (Figure 5): the administration of the memory recall clue, scoring the memory recall task, scoring the alternating hand sequence test

and ensuring that the non-dominant hand was used during the test.

[figure(s) omitted; refer to PDF]

3.3.4. Two-Month Posttraining

Primary healthcare workers were asked to demonstrate the screening tools eight weeks after the training. The results of the follow-up DOPS are summarised in Table 2.

Table 2

Accuracy of healthcare workers' HIV-associated neurocognitive impairment screening tool delivery two months posttraining.

Cadre		Doctor (n=2)			Nurse (n=22)			Adherence counsellor (n=10)			Total (n=34)			Chi-square	Df	p-value
Screening tool	Task	No change	Improved	Declined	No change	Improved	Declined	No change	Improved	Declined	No change	Improved	Declined	IH D S	Motor speed	5.9 (2)
0 (0)	0 (0)	55.9 (19)	5.9 (2)	2.9 (1)	17.6 (6)	0 (0)	12 (4)	79.4 (27)	5.9 (2)	14.7 (5)	7.9 (9)	4	0.09	Psychomotor speed	0 (0)	2.9 (1)
2.9 (1)	35.3 (12)	23.5 (8)	5.9 (2)	17.6 (6)	5.9 (2)	5.9 (2)	52.9 (18)	32.4 (11)	5.9 (5)	4.2 (9)	4	0.37	Memory recall	5.9 (2)	0 (0)	0 (0)

35.3 (12)	23.5 (8)	5.9 (2)	14.7 (5)	5.9 (2)	8.8 (3)	55.9 (19)	29.4 (10)	8.8 (5)	4.37	4	0.36	IHD S total	0 (0)	2.9 (1)	2.9 (1)	29.4 (10)
26.5 (9)	8.8 (3)	8.8 (3)	8.8 (3)	11.8 (4)	38.2 (13)	38.2 (13)	23.5 (8)	4.20	4	0.38						
CAT-rapid	Symptoms	5.9 (2)	0 (0)	0 (0)	41.2 (14)	20.6 (7)	2.9 (1)	11.8 (4)	8.8 (3)	8.8 (3)	55.8 (20)	29.4 (10)	11.8 (4)	5.6	4	0.20
Trail making	5.9 (2)	0 (0)	0 (0)	41.2 (14)	17.6 (6)	5.9 (2)	20.6 (7)	2.9 (1)	5.9 (2)	67.6 (23)	20.6 (7)	11.8 (4)	2.75	4	0.60	Motor speed
2.9 (1)	0 (0)	2.9 (1)	26.5 (9)	32.4 (11)	5.9 (2)	17.6 (6)	5.9 (2)	5.9 (2)	47.1 (16)	38.2 (13)	14.7 (5)	5.32	4	0.26	Psychomotor speed test	0 (0)
2.9 (1)	2.9 (1)	41.2 (14)	17.6 (6)	5.9 (2)	17.6 (6)	2.9 (1)	8.8 (3)	58.8 (20)	23.5 (8)	17.6 (6)	4.46	4	0.35	Memory recall	0 (0)	2.9 (1)

2.9 (1)	41.2 (14)	17.6 (6)	5.9 (2)	17.6 (6)	2.9 (1)	5.9 (2)	58.5 (20)	23.5 (8)	17.6 (6)	4.20	4	0.38	CAT - rapid total	0 (0)	2.9 (1)	2.9 (1)
41.2 (14)	17.6 (6)	5.9 (2)	17.6 (6)	2.9 (1)	5.9 (2)	58.5 (20)	23.5 (8)	17.6 (6)	4.20	4	0.38					
Total combined score	Total	0 (0)	2.9 (1)	2.9 (1)	29.4 (10)	29.4 (10)	5.9 (2)	5.9 (2)	8.8 (3)	14.7 (5)	35.3 (12)	41.2 (14)	23.5 (8)	7.97	4	0.09

Ten (29%) healthcare workers (one doctor and nine nurses) demonstrated the combined tool with 100% accuracy after eight weeks of daily practice. Overall, 41% ($n=14$) of health care workers (one general medical doctor, ten nurses, and three adherence counsellors) improved on their demonstration of the screening tools. The results show no significant differences among the cadres who improved when administering the screening tools. Fourteen (41%) primary healthcare workers (one general medical doctor, ten nurses, and three adherence counsellors) demonstrated no change, and H-NCI screening skills declined among eight (24%) primary healthcare workers (one general medical doctor, two nurses, and five adherence counsellors).

Eight (24%) healthcare workers (one general medical doctor, six nurses, and one adherence counsellor) showed improvements on the CAT-rapid, while five (15%) healthcare workers (one general medical doctor, two nurses, and two adherence counsellors) scored lower than they did immediately after the training. Fifty-nine percent ($n=20$) of health care workers (14 nurses and six adherence counsellors) showed no change. The IHDS was demonstrated with no changes by thirteen (38%) healthcare workers (ten nurses and three adherence counsellors). Thirteen (38%) healthcare workers (one general medical doctor, nine nurses, and three adherence counsellors) improved when demonstrating the IHDS. There were eight (24%) healthcare workers who scored lower than they did immediately after the training (one general medical doctor, three nurses, and four adherence counsellors). There were no statistically significant differences among the three cadres.

3.4. Healthcare Workers' Confidence Using a Screening Tool

Healthcare workers who had limited or no knowledge of H-NCI symptoms or screening tools prior to the training were able to describe the symptoms of H-NCI ($M=-1.27$, $SD=1.14$), identify H-NCI symptoms ($M=-1.35$, $SD=1.26$), and felt more confident using an H-NCI screening tool after attending the Primary Healthcare H-NCI training ($M=-1.59$, $SD=1.05$). This was measured after the second session of the training.

4. Discussion

To our knowledge, this study is the first to assess the viability of H-NCI screening by general medical doctors, nurses, and adherence counsellors at a primary healthcare level, in low- and middle-income countries. This study also focuses on the acceptability of in-field H-NCI training in a clinic setting. There were significant improvements in H-NCI knowledge among all three cadres following the training intervention, and this was sustained by most healthcare workers at eight weeks. Although only a few general medical doctors and nurses were able to administer the H-NCI screening tools with 100% accuracy immediately after training, several others made minor errors which improved over time. Junior nurses and adherence counsellors demonstrated greater difficulty with the administration of the screening tool, especially at eight weeks. Primary healthcare workers were in favour of attending future training that was brief and in-field, like the design adopted by the Primary Healthcare H-NCI training. H-NCI knowledge improved among all three cadres of primary healthcare workers following the training intervention [10]. These preliminary findings are important for two reasons. First, there are extreme shortages of trained

professionals in low-income and middle-income countries and second, there is a paucity of literature describing the adoption of task-sharing for H-NCI screening [28, 29]. Our training intervention was helpful as it provided clarity that H-NCI had not been addressed during previous primary healthcare worker HIV training. This study highlights that once equipped with knowledge of H-NCI, general medical doctors, nurses, and adherence counsellors could potentially fill in the skills gap by task-sharing the identification of neurocognitive or functional challenges among PWH. Each of these cadres would also be able to flag patients for further investigation at the facility or for referral to the next level of care among those with severe H-NCI. We hypothesize that the inclusion of H-NCI in future training, particularly HIV training targeting primary healthcare workers, may serve as a potential mechanism for bridging the neurocognitive skills gap in low-income and middle-income countries.

The viability of H-NCI training by nonspecialist healthcare workers at a primary healthcare level is still unclear. Our findings show that the administration of the H-NCI screening tools varied between general medical doctors, nurses, and adherence counsellors, similar to other local research comparing adherence counsellors and nurses [30]. Few general medical doctors and senior or mid-level nurses were able to administer the screening tool correctly. Several others demonstrated the screening tool with minor errors. This was not unexpected given that H-NCI screening tools differ from general clinical procedures or checklist-type examinations. H-NCI screening tools are interactive and require healthcare workers to master and perform demonstrations, as well as time tasks performed by patients. We saw several improvements in the administration of H-NCI screening tools among this group over time, suggesting that with additional time and mentorship, nonspecialist healthcare workers may be able to accurately administer H-NCI screening tools.

Several other junior nurses, including staff nurses or certified nursing assistants, as well as adherence counsellors experienced more challenges with the H-NCI screening tools. This did not improve over time. These cadres were only able to administer subsections of the screening tools, despite multiple practice sessions. Although staff nurses, certified nursing assistants, and adherence counsellors may have more contact with patients, certain diagnostic and treatment activities are conducted by midlevel nurses such as registered nurses or general medical doctors. Thus, these cadres may not be accustomed to tools that follow stringent processes such as those required in H-NCI screening tools.

Among this group, nurses and adherence counsellors struggled with demonstrating motor-function activities, including the finger tapping test and the alternating hand sequence test. These activities require healthcare workers to master the finger tap and hand sequences themselves, before demonstrating this to a patient. Primary healthcare workers also struggled with tasks that required simultaneous or multiple actions, such as the use of the timer or counting correct sequences. Inaccuracy in administering H-NCI screening tools may lead to high false positive and negative rates. This may in turn result in increased anxiety and poor quality of life among PWH. Since H-NCI screening tools require precision to be accurate, junior or lay healthcare workers may not be appropriate. Tools that do not rely heavily on motor-function demonstrations, such as the HIV Cognitive Symptom Questionnaire, which involves a series of questions, may be more suitable for these cadres [31]. Alternatively, these healthcare worker cadres could flag at risk patients using checklists or question-based screening tools for further investigation by general medical doctors or senior nurses who may be more appropriate to administer an H-NCI screening tool. The appropriateness of the H-NCI training targeting primary healthcare workers was mixed. The training received a positive response from primary healthcare workers, and knowledge improved among all cadres. Healthcare workers found the training design appropriate and acceptable for use in busy clinic settings. The training was designed to reduce the impact on healthcare services by preventing healthcare workers from leaving the facility for several hours. The use of the weekly staff meeting time slot also allows for future on-going training sessions to be implemented feasibly. The on-site training design was feasible, especially in overburdened clinics with limited staff, as healthcare workers were close enough to address emergency queries. However, this is also a limitation to the design as the training session was subject to disruptions, as healthcare workers were requested to provide patient care while the training was underway. Due to the complexity of the H-NCI screening tools, the skill component of the training may require more time and mentoring to ensure that screening is mastered. Although screening may be

practical, questions regarding the clinical utility and the timing of such screening remain. Further investigation into training methods for midlevel or lay healthcare workers in the administration of H-NCI screening tools is also required.

5. Limitations

This study has several limitations. The pilot sample was confined to one region, in a single district of KwaZulu-Natal, and may not be generalized to other parts of the country or other countries with limited resources. Due to the small sample size, our findings are not generalizable. Our statistical analyses were limited to descriptive statistics. Despite efforts to create a suitable in-facility learning environment, there were several challenges including postponements of the training due to healthcare workers being required to administer the COVID-19 vaccines, interruptions for urgent patient care, as well as logistical or infrastructural challenges which may have indirectly impacted learning. A final limitation of this pilot study was the single eight-week follow-up period. Repeated follow-up assessments would provide a better indication of the uptake of knowledge and whether skills were sustained over time.

6. Conclusion

H-NCI knowledge improved among primary healthcare workers and was retained after eight weeks. Skills training, however, presented differences and challenges. On-going training could be delivered in person or using hybrid platforms for various cadres of primary healthcare workers. Skill training, where direct observation, correction, and supervision are required, will need further research. Future research could explore whether alternate screening tools may be more suitable for general medical doctors and senior nurses to administer in busy primary healthcare clinics [31–36]

Additional Points

Summary. What is already known about this topic? (i) HIV-associated neurocognitive impairment (H-NCI) remains a common comorbidity; however, there are shortages of appropriately skilled healthcare workers able to identify and manage this disorder in low-income and middle-income countries. (ii) People living with HIV receive the majority of their care at a primary healthcare level. (iii) Screening for H-NCI at a primary healthcare level in South Africa is uncommon, and the reasons for this remain unclear. This is despite most people living with HIV accessing HIV services at this level of care. What this paper adds (research findings and key new information). (i) This paper provides preliminary evidence needed to explore task-sharing of H-NCI screening in low-income and middle-income countries. (ii) This paper demonstrates that with training, general medical doctors and senior nurses can administer H-NCI screening tools. The implications of this paper are (how findings influence or can be used to change policy/practice/research/education). (i) These findings provide preliminary evidence needed to inform H-NCI training interventions targeting primary healthcare workers, including general medical doctors and senior nurses.

Authors' Contributions

All authors contributed to the development, revision, and final review of the manuscript. All listed authors meet the authorship criteria, and all authors agree with the content of the manuscript.

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DETAILS

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Having a Parent with Early-Onset Dementia: A Qualitative Study of Young Adult Children

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ABSTRACT (ENGLISH)

Background. Children of a parent with early-onset dementia (EOD) are confronted with losing a parent to a progressive neurodegenerative illness, usually perceived as an older adult illness, which may have a great impact on their lives at a time that is usually preserved for self-development. **Objective.** The objective of this study is to explore the experiences and perceptions of young adult children of a parent with EOD, with specific focus on personal lives and family and social relationships in a Norwegian context. **Methods.** Semistructured interviews with 10 young adult children between the ages of 19 and 30 years of a parent with EOD were analysed using a thematic analysis. **Results.** The analysis identified six main themes. *“Upon discovering dementia, Keeping the family together, Others do not understand, A sense of relief, A need for support”* and *Apprehension for the future*. The participants expressed an overarching feeling of living parallel lives, summarised by the phrase *“We are not in the same boat.”* Furthermore, the themes demonstrated that the participants experienced difficulties with managing new responsibilities, at the same time, as preserving their own lives. They also shared concerns about the future and often experienced a lack of understanding and support from others. Finally, the need for targeted support throughout the illness was a central theme, whereby many felt more comfortable talking with someone with similar experiences or knowledge of their situation. **Conclusion.** The findings in this study strengthen the notion that the children of persons with EOD experience a challenging life situation, underlining the need for a person- and family-oriented approach.

FULL TEXT

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1. Introduction

Dementia is an acquired, irreversible illness, characterised by progressive and degenerative decline in mental functioning [1], severely impacting both the affected person and their family. Dementia is not just related to old age, as it can also affect younger persons and their subsequent younger caregivers. An onset of dementia under the age of 65 is referred to as early-onset dementia [2]. Like caregivers of older persons with dementia, the main caregivers of a younger person with dementia are reported to take on high levels of caregiving tasks. Research suggests that caregivers of younger persons with dementia encounter unique challenges and issues in their newfound caregiving role [3, 4]. Most researches have focused on the impact of early-onset dementia (EOD) on the main provider of informal support, most often the spouse [5]. However, it is not only the spouse who is affected, as the children are also faced with a new and uncertain situation.

The gradual decline in mental functioning in a parent can adversely influence the interpersonal relationships between family members and, by extension, family dynamics. Children may become occupied with responsibilities to buffer the loss of a parent at a time in their life that is usually reserved for separation from the family unit and self-development [6]. Furthermore, the idiosyncratic nature of EOD may leave children with few others in similar circumstances outside the family to turn to, thereby creating a potential for distress.

Moreover, even though there is growing recognition that EOD is a significant clinical and social problem [7], most

studies do not distinguish between family members or caregivers when exploring how EOD affects the family [8]. This makes it difficult to understand the unique experiences of young adults. This paper explores the experiences and perceptions related to being a young adult child of a parent diagnosed with EOD.

2. Background

A systematic review found that the prevalence of all subtypes of EOD ranged from 38 to 420 per 100,000 of the population [9]. Moreover, a recent prevalence study from Norway found that the overall prevalence of dementia in the age group 45–64 years was 143 per 100,000 [10], which is higher than previous reports. Studies of life expectancy after diagnosis are inconclusive, but some have indicated that EOD is associated with higher mortality rates compared to late-onset dementia (LOD) [11].

In addition to known variation based on affected brain functions, persons with EOD may also present more atypical symptoms compared to persons with LOD [12]. They may have a more rapid rate of cognitive decline, although this has mostly been studied in persons with early-onset Alzheimer's disease (AD) [13]. The prevalence of non-memory presentations in persons with early-onset AD has, for instance, been found to be five times higher than with late-onset AD [14]. Other studies further suggest that cases of early-onset AD have more prominent difficulties with language, visuospatial skills, and executive functions [15, 16].

The task of providing care for a person with EOD is associated with both physical and emotional burdens, as shown in a review by Svanberg et al. [17]. The review further reports that EOD caregivers experience higher levels of depression and more psychosocial problems than LOD caregivers. The review further suggests that this may be related to the age or stage of life, such as employment problems and financial difficulties. Qualitative studies looking at the impact on spouses have reported that they struggle with the change in their relationship and feel burdened by their sole role as the economic provider for the family [4].

Most previous studies do not separate the spouses from the children, but rather consider all of the next of kin involved in everyday care of the person with dementia as caregivers, which makes it difficult to find research exclusively on the impact on children [8]. However, some of the existing studies indicate that having a parent with EOD may be a significant stressor. Findings of emotional impact have been identified in qualitative studies and have been associated with feelings of sadness and grief [3]. Family conflicts have also been reported in several qualitative studies, whereby children struggle to cope with their sick parent's behaviour and try their best to avoid confrontations [18] or experiences that their non-affected parent avoids or withdraw from the situation which can leave the children with more caregiving responsibilities and feelings of distress [3, 19]. Some studies also suggest that caretakers of persons with EOD experience feelings of isolation. The studies by Johannessen et al. [4] and Flynn and Mulcahy [1], interviewing spouses of persons with EOD, reported that their social network had shrunk due to their caregiving situation. Similar findings have also been suggested by Barca et al. [3]; where young adult children reportedly experienced difficulties with their social networks.

The families of persons with EOD need social and emotional support [17], but a literature review by Van Vliet et al. [20] found that the lack of designated services for persons with EOD was distressing for the caregivers, as they felt angry and guilty about being forced to accept a service intended for older persons. Studies also suggest that children feel overlooked and are not included in conversations regarding their parent's diagnosis or where to find available support [3, 18]. Some reports have stated that information is crucial to plan for the future [3], while others suggest that children might not want information, especially at the beginning, as they can be frightened by the information that they find [18].

Given that EOD as a form of parental illness has until recently received little attention leaves a need for further exploration. Furthermore, the existing literature often does not distinguish between the spouse and younger or older children when exploring how EOD affects the family [8, 20], making it difficult to understand the experiences and perceptions of young adult children.

3. Aim

This study aims to explore the experiences and perceptions related to being a young adult child of a parent diagnosed with EOD with specific focus on the impact on personal lives and family and social relationships in a

Norwegian context.

4. Methods

4.1. Design

The study's design is qualitative with persons in-depth interviews using a semistructured interview guide with open-ended questions to create an exploratory atmosphere during the interview [21]. A test interview was conducted. The interview guide also underwent minor changes during the study to adjust the order of the questions. Prompt questions were also included to fill in or request clarification of what was said during the interviews.

4.2. Recruitment and Participants

Two inclusion criteria were established for the study, the participant had to

- (i) Be between 18 and 30 years of age
- (ii) Have a parent diagnosed with dementia before or at the age of 65

Two main recruitment sources were used. the Norwegian Health Association and the first author's social network. The first author sent an invitation and a description of the study to the Norwegian Health Association, which was then distributed to their social media pages (e.g., closed groups on Facebook) and to leaders of support groups of young caretakers of parents with EOD. Persons belonging to the first author's social network were also given the invitation to the study and were identified as potential participants through word-of-mouth. In total, 13 candidates responded, two candidates did not meet the inclusion criteria and one was turned down due to their geographical location. After interviewing 10 participants and producing 99 pages of transcribed material, we believed that enough data was collected to adequately illuminate the topic. Thus, the final sample consisted of 10 female candidates, seven recruited through the Norwegian Health Association and three from the first author's social network, all from the south of Norway.

4.3. The Interviews

All interviews were audio recorded with the participants' consent and conducted between December 2019 and February 2020. The length of the interviews varied between 45 minutes and 90 minutes and was conducted by the first author. Prior to the interview, the participants were briefed on the purpose of the study and the course of the interview. The interviewer further reaffirmed the participants' consent, in addition to asking whether the participants had any questions before the interview, which is in line with Brinkmann and Kvale [22]. The interviewer considered that the interview could cause emotional upset and encouraged the participants to take breaks if needed. The interviews were conducted in the participants' own homes when possible; otherwise, a neutral venue was chosen.

4.4. Analyses

The interviews were transcribed verbatim by the first author. Even though the transcription was a time-consuming process, it also became a valuable experience as it offered the opportunity to capture both tone, volume of voice, and line of flow in the interviews, rather than just spoken words, which is highly beneficial for further analysis according to Malterud [23]. All interviews were transcribed in Norwegian, but quotations used in the final paper were translated into English.

Both authors read the transcribed interviews and the transcriptions were analysed for core concepts and subthemes using a thematic analysis [24]. The analysis also followed an inductive approach, meaning that the themes were strongly linked to the data itself. According to Terry et al. [24], the data were therefore not driven by the researcher's theoretical interest in the area or topic. The interviews were analysed with a focus on each participant's experiences and perceptions within their personal lives and social contexts, as well as their relation to service providers.

At the start of the analysis, all of the transcribed interviews, together with initial notes taken after the interviews by the first author, generated a list of ideas and possible themes based on perceived importance [22]. The next stage of the analysis involved creating initial codes from the raw data. A code identifies a feature of the data that appears interesting [25] and the phrase "smallest meaningful unit" is often used as a designation [26]. During this phase of the analysis, the software tool NVivo [28] was used.

In order not to exclude any data, the data were coded for as many potential themes/patterns as possible whilst still removing data perceived as being irrelevant, as recommended by Terry et al. [24]. During this phase, individual

extracts of data were also coded several times. This is in line with Malterud [26] and Brinkmann and Kvale [22], who argued that the analysis should be flexible and dynamic, constantly trying to optimise the coding process. The next stage of the analysis was to take a step back, gaining an overview and identifying how the different codes could combine to form a potential theme [24]. During this phase, a digital mind map was used to organise the codes (containing extracts of raw data) into theme piles. An example of the coding process is shown in Table 1.

Table 1

Example of three final subthemes of the main theme: “keeping the family together.”

Data-extract	Coded for	Subtheme
You have to look out for yourself, because there is such an enormous pressure at home, that if you are pressured at work as well, you will just collapse-P1	Must consider yourself in order to not become overburdened	Considering one’s own life
–		
I want to be there for him, but it is not easy. He never wants to do any of the things I suggest, like going for a walk. I just find it really hard to know exactly how I am supposed to be there for him-P6	Finding it difficult to provide social support to sick parent	Assuming responsibility for the sick parent
–		
I mostly just talk with her (healthy parent) about her thoughts and feelings. She has been very upset and cries a lot and has this need to talk. You just try the best you can, but it has not been easy knowing what to say to her, or how I should deal with it-P10	Having to provide emotional support to healthy parent while bottling up own feelings	Having to support the healthy parent

5. Results

All ten participants were female, ranging from 19 to 30 years of age; only two of them still lived in the family home when the sick parent was diagnosed. Table 2 shows the detailed information on the participants.

Table 2

Characteristics of the participants.

The participants				
Participant	Siblings	Relationship status	Residence	Age
P1	None	Cohabitant	Lives outside family home*	30
–				
P2	Three	Cohabitant	Lives outside family home**	28

-				
P3	One	Single	Lives in family home*	22
-				
P4	One	Single	Lives in family home**	19
-				
P5	Two	Single	Lives outside family home**	23
-				
P6	Three	In a relationship	Lives outside family home*	26
-				
P7	Three	Single	Lives outside family home*	24
-				
P8	Seven	Cohabitant	Lives outside family home*	29
-				
P9	Four	Cohabitant	Lives outside family home*	22
-				
P10	One	In a relationship	Lives outside family home**	22

*Lived outside family home when parent was diagnosed; **lived in family home when the parent was diagnosed.
The parent with EOD ranged from 53 to 61 years; four of them were mothers and six were fathers of the participants.
Table 3 shows detailed information on the parents.

Table 3

Characteristics of parent with EOD.

The parent with EOD				
Relationship to participant	Relationship status	Residence	Diagnosis	Age and years since diagnosis
Mother (P1)	Married	Family home	Alzheimer's disease	61 and 3
-				
Father (P2)	Married	Family and nursing home	Frontotemporal dementia	58 and 13

-				
Father (P3)	Married	Family home	Frontotemporal dementia	55 and 3
-				
Father (P4)	Separated	Private apartment	Alzheimer's disease	56 and 4
-				
Father (P5)	Married	Family home	Alzheimer's disease	60 and 4
-				
Father (P6)	Married	Family home	Alzheimer's disease	65 and 4
-				
Mother (P7)	Married	Nursing home	Alzheimer's disease	53 and 5
-				
Mother (P8)	Single	Public apartment	Alzheimer's disease	54 and 2
-				
Mother (P9)	Single	Public apartment	Alzheimer's disease	54 and 2
-				
Father (P10)	Married	Family home	Alzheimer's disease	60 and 4

5.1. Themes

The analysis resulted in 6 main themes and 20 subthemes (Table 4) which described how their parent's dementia affects the participants' relationships with family and friends, their personal life, and their support needs.

Table 4

Main themes and subthemes.

Main themes	Subthemes
Upon discovering dementia	The first symptoms The road to diagnosis The reaction to diagnosis
-	
Keeping the family together	Assuming responsibility for sick parent Experiencing a role change Having to support the healthy parent Considering one's own life
-	

Others do not understand	It is difficult to relate Forgetting things is the smallest problem You have to see it to believe it
–	
Sense of relief	Choosing to share Moving away Have something meaningful to do
–	
A need for support	Finding information Meeting others in the same situation One to one support
–	
Apprehension for the future	Before it is too late what happens next My parent in a nursing home Two dependent parents

5.1.1. Upon Discovering Dementia

Some of the first or most frequent signs of dementia noticed by the participants were lapses in memory or mood swings in their parent. The signs were mostly insidious and appeared inconsistently; many participants therefore attributed the signs to other causes like stress or depression. Others experienced more rapid or dramatic changes in their parent, as explained by one participant.

"We were sitting outside eating lunch when all of a sudden, he just took his chair and sat it in between my mother and me and told me "no one comes between us;" he was looking at me like I was some kind of threat (P3)."

First, the road to diagnosis was a period of questioning the changes observed in the parent. Very few participants tried to speak to their sick parent about the symptoms. Some explained that the parent seemed unaware of any change, or that the parent became defensive whenever they were asked about their abnormal behaviour. Some participants said that the family members were divided in their belief that the symptoms were caused by dementia, or as explained by one participant, refused to believe others' observations and used this as a protective mechanism.

"I was very angry with anyone who implied that my mother had Alzheimer's and I remember that I could come up with excuses for her behaviour. Even though my sister and father told me that my mother most likely has Alzheimer's disease one year before the diagnosis, I refused to listen; I did not want my mother to be sick (P7)."

Several participants noted a lack of openness regarding the diagnostic process from both parents and reacted with shock when they were told about the diagnosis. However, accounts of shock and disbelief were also evident among participants who had been more involved in the diagnostic process. Some felt angry, frustrated, or bitter over the fact that someone as young as their parent was suffering from dementia. Others felt a deep sadness; one participant especially spoke of how she right away thought she had to plan for a funeral. For some participants, however, the diagnosis provided a sense of relief.

"It might not be the right thing to say, but it was a relief. Because I now had an explanation for why she behaves the way she does (P9)."

5.1.2. Keeping the Family Together

As the changes in the parent became more evident, the parent became increasingly dependent on assistance. Many of the participants felt that they were needed or obligated to care for their sick parent.

"I feel that this is my responsibility; this is my mother, and I will make sure that she has everything she needs. I feel like I owe it to her in a way, to be there for her, like she has been there for me (P9)."

The level and type of care the participants provided for their parents differed, depending on factors such as family structure and functioning, living situations, and level of support from healthcare services. However, it was often not easy to find the best way to identify their sick parent's needs.

"I want to be there for him, but it is not easy. He never wants to do any of the things I suggest, like going for a walk. I

just find it really hard to know exactly how I am supposed to be there for him (P6)."

All participants expressed that their relationship with their parent with dementia had changed. *"Everything has changed, she is not my mother anymore; it is an awful thing to say, but I cannot talk to her in the same way I used to (P8)."*

The altered relationship not only meant losing a special person, but also a role-change, as the participants felt that they had undergone a transformation from being a recipient of care to becoming a caregiver.

Even though most spoke about the role-change in negative terms, some also stated that the parental illness and subsequent role-change had some positive aspects, such as increased maturity and improved personal qualities. The participants not only provided support for the sick parent, but also most found it equally important to support other family members. Some participants raised concerns regarding the health and wellbeing of the other parent, and there seemed to be a sense of duty to provide support in order for their healthy parent to be able to maintain their dual role.

"When our father told us that he wanted to take some time-off one weekend, we (siblings) right away supported and encouraged him to go and told him "We will take care of her, go and have fun." When he came back, he felt more energised and could be a much better father to us and husband to my mother (P7)."

As expressed above, the feeling of cooperating and openly communicating with each other to support the healthy parent, or each other, was significant; as a result, some participants stated that they had become closer to their healthy parent and/or siblings. In contrast, some participants spoke of how tension between their parents, small family units, family members who withdrew from the situation, or lack of support from healthcare services, left them with more sole responsibilities.

The participants described, in various ways, how their increasing concerns and/or needs of their sick parent and/or other family members impacted on their personal life and mental state. Some felt that they never had time or energy for their social life, or stated they had to postpone their plans for higher education or even marriage. It seemed like the overall feeling was that their own lives often clashed with the needs of their sick parent and/or other family members.

"It is very tiring because you have a constant bad conscience whenever you do something else. I have in some sense gotten used to it by now, but you do have a bad conscience all the time for not doing enough (P6)."

5.1.3. Others Do Not Understand

When others learned about their parent's diagnosis, many participants had met with reactions of shock and disbelief. It seemed to be a common experience that others felt uncomfortable speaking with participants about their parent's illness, which led some to feel unsupported or not understood. *"I think that they do not understand what it means to have a parent with dementia. But they do not talk to me either, it seems that they do not know how; instead, they just completely avoid the subject (P10)."*

In contrast, a few participants noted that they felt lucky to have persons in their social network who either were knowledgeable of dementia or had similar experiences of parental illness and who could provide them with a kind of emotional and instrumental support that others could not.

That their parent would only become a bit forgetful was a frequent misconception that the participants faced from others. *"Others do not understand how it feels to be a child and see your parent have these episodes of total confusion, or how he can get very angry, childish, and show little sympathy; they do not know that this is happening, they only think you become a bit forgetful (P4)."*

Even though this lack of understanding has resulted in loss of contact with friends and/or family members for some participants, they expressed that they in some way understood them.

"I think it has been difficult for people because the illness is a bit invisible before you get really ill, it is not like cancer where you can really see that you are sick (P6)."

5.1.4. Some Sense of Relief

Some of these negative reactions and experiences were reported to cause some participants to feel reluctant talking about their parent's diagnosis. For some, the reluctance to share was also caused by being asked to keep the

diagnosis a secret due to the reported feelings of shame by the sick parent. Nevertheless, those participants who chose to be open, or whose parents chose to share their diagnosis, expressed that this provided them with some relief.

"Since we (mother and participant) agreed that I could tell others about the diagnosis, it has become much easier. If you are having a bad day at work, they will know why; you do not have to explain anything even if you come to work looking like a zombie (P9)."

Most of the participants and some of the parents with dementia had moved out of the family home, resulting in a completely altered living situation. One participant, where the sick parent had recently moved out the family home, described her experience.

"I finally feel free (...) and it feels much easier bringing friends home (P4)."

Many stated that their relationship with the sick parent felt less strained after moving away. *"I think in general that it has been easier for me when I do not live at home. I feel that I have more energy now because I am not in it every day in a sense. When I do come home, I feel less irritated by him (P6)."*

Their sick parent's wellbeing was expressed as a constant cause of concern among most participants. It was important for the participants to feel that their parent had something meaningful to do during the day. However, for a daycare offer to be useful, it was important that it was adapted to the sick parent's needs. When the sick parent had to be in groups of older persons with dementia, they disliked going there, therefore not rendering the same sense of relief.

"It was difficult for me when we were sending him to a place he did not want to go to. I understand that it is difficult to create an offer that fits everyone, but I do not know, it made me feel bad (P6)."

5.1.5. A Need of Support

Following the diagnosis, very few participants were offered an opportunity to talk directly to healthcare professionals or were informed of support offers; many felt forgotten or ignored.

As a result, they had to rely on other family members and most often the healthy parent for information, which was described as problematic in several ways. Firstly, the information the healthy parent received regarding dementia, its prognosis, and available support networks was not always passed on to the participants. *"I had to look up things on my own; my father has not been great at asking questions and getting information about what we need to do (P1)."*

"Most participants expressed a need to know as much as possible about the progression of the illness, support offers for themselves and their parents. Many said they searched for this on their own and stated that the Internet was a helpful tool. However, being exposed to detailed and unfiltered information about the illness was described by some as a frightening experience. In addition to a need for information, the participants also expressed a need to meet others in the same situation. *"To have someone my own age to talk to and learn that their experiences are similar to mine would have been nice, because I have always felt that I am the only one who experience this (P2)."*

Those participants that had attended support groups only for young adult children had positive experiences; it is easier to be open with someone in the same situation. However, some expressed a need for one-to-one counselling. *"I wish to have someone who will follow up on you, because you are in a very vulnerable situation when you have a sick parent. I know that my father has Alzheimer's disease and will not be here in the future, but this is a process that takes many years (P10)."*

The timing of the counselling also seemed relevant; for some, a meeting with healthcare professionals immediately after the diagnosis was too early, while others found it useful. Nevertheless, all participants expressed that support offers should become more proactive.

"You know how to get a psychologist, but it is a hassle to pick up the phone and do it yourself; if you get this "look here is your appointment, all you need is to meet up," it is so much easier (P7)."

5.1.6. Apprehension for the Future

The progression of dementia seemed to occupy the participants' thoughts and a common theme was the uncertainty of how fast the progression of the illness would be. This raised a frequent dilemma of how much time they should spend with their parent while minding their own life.

"I've been worried about not spending last Christmas with my father. At the same time, I do not want to worry whether I should spend Christmas with him every year for the rest of his life. That is how you would think about your 93-year-old grandma; we celebrate this Christmas with her because it might be the last (P2)."

Some further expressed how this uncertainty caused stress in their everyday life, as some felt that whenever they had the opportunity, they should go and see their sick parent. Some also said it influenced how they planned and said they would think twice before studying abroad for instance. Another difficult aspect of the progression of the illness was the unpredictability of how it would unfold.

"No one ever told me that he could behave like that (aggressively); I get that, but there is no plan, no "first comes this stage and then the next stage." I really do not want to think about the future; it just seems like no one can tell me how things will turn out (P4)."

Not knowing how the illness would progress made many participants feel stressed. Another emotional challenge for the participants was that their parent would forget who they are and this appeared to be something that was too difficult to contemplate.

The participants expressed mixed feelings regarding nursing homes. Many felt concerned about whether the nursing home could facilitate their parent's needs. Therefore, many wanted to have their parent living at home for as long as possible.

"My father will live at home until he does not understand where he is anymore. It is out of the question putting him in an institution now; he will only be left to rot among 80-year-olds. He also walks several miles per day, so if he only has one hallway to walk in, you will have to put him in a psychiatric ward, because then he really needs help (P3)."

The thought of their parent in a nursing home was unimaginable for some and evoked feelings of bitterness and frustration, as it felt unfair to visit their parent in an institution many regarded as a place for older persons.

Another concern was related to the burden of caregiving. Some feared that with the progression of the illness, the demands of caregiving would exceed the healthy parent's abilities to cope. As a result, some were fearful that not only their sick parent, but also their healthy parent, would become dependent on them, something that would impact their life for the foreseeable future.

"I am really worried about the future. I fear that she will not cope, which means that I have to find a balance of living my own life and being there for her; I cannot take mum with me everywhere though-I am supposed to have a life with my boyfriend too (P10)."

6. Discussion

The aim of this study was to explore the experiences and perceptions of young adults with a parent with EOD, with the specific focus on personal lives and family and social relationships.

The participants experienced an overall challenging life situation which led to a need for information and support, something that they sought from other family members, peers, and/or public healthcare services. However, many participants experienced difficulties finding a source of information that was both sufficiently informative and adapted to their needs.

This study also found that the participants' lives were negatively affected by their parents' illness; e.g., by way of interrupting the normal family dynamic and giving the participants different responsibilities compared to their peers. In addition, the role-change impacted their life choices, affecting their transition into adulthood. Furthermore, as the participants' lives differed greatly from that of their peers whose parents were healthy, a recurring and overarching theme was a feeling of living a parallel life. As one participant summarised when comparing their experience with that of their peers. *"We are not in the same boat."*

6.1. Changes in Family Dynamic

The insidious progression of cognitive decline associated with EOD has a profound impact, not only on the affected person, but also on the entire family. As a result of changes in social dynamic and roles within the family, children of parents with EOD pass into adulthood with a parent-child relationship that radically deviates from the expected norm [27].

A central theme in the findings was how the relationship with their parent had suffered due to their diagnosis.

According to the participants, the sick parent's personality had changed and they had become more difficult to relate to, which is in accordance with Aslett et al. [29] who suggest that the possibilities of closeness, intimacy, and a meaningful relationship with the parent diagnosed with EOD are strained. Many participants noted that the deterioration of their parent's condition and their gradual removal from their former selves led to a sense of continual loss, with subsequent mixed feelings and emotions. Such a situation, wherein the parent is physically present but psychologically absent, can be described as a psychological ambiguous loss [30] and has been found by previous studies to be a central component in the process of grief experienced by those whose loved ones are affected by dementia [31]. The culmination of this continual and premature sense of loss, as highlighted by many participants, was the feared or actual realisation of no longer being recognized by their own parent. Furthermore, the parent's gradual decline not only led to the aforementioned sense of premature physiological loss, but also led to the loss of a parental figure from which to seek advice or support, on both practical and emotional matters.

This study's findings further suggest that the parent's illness changes the family dynamic, forcing young adults to take more responsibility in keeping the family together, both practically and socially. Some felt a strong sense of filial duty to reciprocate care and support for their sick parent, with mentions of feeling closer to their sick parent, as also found by Aslett et al. [29]. This feeling of being responsible for their parents' emotional wellbeing, also known as emotional parentification, can, in the short term, be an adaptive response to parental illness or a family crisis [32]. However, it is worth noting that emotional parentification in childhood has been found to be a predictor of depression in adulthood [33]. The fact that some participants also muted their own thoughts and feelings, supported by the findings of Gelman and Rhames [27]; shows the importance of research reporting on children's own experiences and not only being represented by their parents. A study of young adult caregivers (18–24 years of age) suggests that it is important to have a perceived choice in caring, especially in a phase where young adults are undergoing extensive changes and taking major decisions on career issues [34]. Moreover, the findings in this study suggest that participants who moved away from their sick parent found that their relationship improved by reducing their daily involvement with the sick parent, as supported by Johannessen et al. [35]. However, moving away from the family home led to feelings of ambivalence, stress, and guilt regarding not being able to contribute as much at home, in accordance with Barca et al. [3].

6.2. Transition to Adulthood

The findings of this study suggest that having a parent with EOD can be particularly difficult for young persons' transitioning to adulthood, affecting both short- and long-term life choices. The participants reported that their own life and needs often clashed with those of their sick parent, with some postponing higher education or moving back home as a result. Findings such as these are worth considering as career recognition provides a major foundation for developing a positive view of oneself in young adulthood [36]. It is worth noting that young people in Norway tend to move out from their family home when they are younger than most of their European counterparts [37, 38]. While the majority of young adults in Norway move out by the age of twenty, young adult in southern Europe move out in their late twenties. Young adults in Norway may therefore experience a greater loss of independence when comparing themselves with fellow Norwegian students and friends.

A longitudinal study by Johannessen et al. [35] suggests that resilience gradually evolves as young adults of a parent with EOD master the situation over time. Crucially, this depends on having at least one social relationship with someone who is understanding and supportive of their situation. This is consistent with the findings of the current study, where the importance of having one person in their social network that they could relate to or confide in was emphasised. This is also supported by George et al. [39], who found that social support and increased awareness regarding the psychological burden faced by family members caring for a sick relative, significantly reduced the psychological distress, both for full- and part-time caregivers.

6.3. In Need of Targeted Support

The participants in our study felt that their own needs were not specifically considered by the healthcare and/or support services. A dominant experience, also found by Barca et al. [3], was a feeling of being overlooked or ignored by professionals, both in terms of receiving information about their parent's illness and gaining access to available

support offers.

In relation to support offers for caregivers of younger persons with dementia, a Norwegian national survey from 2012 revealed few offers within municipality and specialist healthcare services [40]. While the Norwegian Health Association and the Norwegian Centre for Aging and Health, together with other organizations, offer two annual courses in addition to support groups for children of a parent with EOD, there is no formal system ensuring that young adults (over 18 years of age) are contacted by the service system.

To meet someone who could identify and empathise with their own situation was, as previously mentioned, one of the participants' most important needs, something that has also been described in other studies [3, 35]. In line with the findings of Barca et al. [3] and Johannessen et al. [35]; many of the participants valued the social support and guidance from the support groups.

However, in contrast to the findings in Barca et al. [3]; some participants found support groups to be unhelpful. This was particularly in situations where the other participants in the group had parents at a more advanced stage of the illness. Their accounts and experiences did not offer support, but rather contributed to creating more uncertainty in the study participants, rendering them unsure of whether they would be able to cope with their parent's illness in the future. The participants also highlighted the need for support offers throughout the illness and to be included in the diagnostic process; they also stated that support services should be proactive in their approach, which has also been suggested by Millenaar et al. [18].

The need for targeted support can also be extended to the whole family. As described by the participants in this study, meaningful activities for their sick parent provided by the public health services' daycare offer lessened their burden of care. However, specialised daycare offers for persons with EOD are scarce, and typically only available in the most populous municipalities [41]. Most of the offers are designed for older persons with dementia, leaving younger persons with dementia without adequate activities and thus more dependent on their families. The last stage of service from the public healthcare is moving away from the home and into a nursing home. This transition seemed particularly troublesome for many participants. The study by Larsen et al. [42] reports that family caregivers of LOD experienced dilemma regarding the assumed duty of care for the person with dementia and the caregivers' own needs. Feelings such as guilt and a sense of betraying their loved one was prominent, especially when the person with dementia rejected admission to a nursing home. While this was also expressed in this study, the participants seemed particularly troubled with having their parent in a nursing home not suited for younger persons with dementia.

There has been a movement in the government policy towards a whole family approach [43] and such an approach could support parents in retaining their role and promoting positive experiences for the children. This is also important for the healthy parent, as the findings suggested that the non-affected parent often struggles and that the children therefore fear having two dependent parents. Moreover, the participants in this study, similarly to those of the study by Svanberg et al. [44], highlight that healthcare services should strive to cater for the individual needs of young adult children throughout the course of the illness. The fact that some participants experienced a lack of support from their family and friends highlights the need for a public whole family approach to caring. Such an approach has also been supported in the literature to help to maintain cohesiveness in the family [27].

6.4. Ethical Approval

The study was assessed and approved by the Norwegian Center for Research Data (NSD) (reference number 529451), ensuring that the anonymity of the participants in the study was sufficiently safeguarded. The study also followed the ethical guidelines of the revised Declaration of Helsinki [45]. In addition, the Regional Committee for Ethics in Medical Research (REC) assessed the study prior to its commencement, concluding that it fell outside their mandate of approval.

6.5. Limitations and Strengths of the Study

This study highlights important individual differences in the perception of and response to their circumstances. It provides some insight into how young adults experience and navigate relationships and role changes, what kind of challenges they face associated with EOD during their young adulthood and their need for social and professional

support. As the study is qualitative and descriptive in nature, the findings cannot be generalised due to the intrinsic limitations of the study design. However, given the recurring themes across the interviews, it seems plausible that the experiences of the study participants may also be valid for the wider population of young adults with a parent affected by EOD. The study population only consists of female participants; thus, the findings may not necessarily be applicable to males. In addition, some participants had already moved out of their family home prior to their parent's diagnosis, thus perhaps experiencing the expectation of staying at home to provide informal care to a lesser extent, as noted by several study participants.

7. Conclusion

7.1. Final Conclusion

In summary, the main findings of this study suggest that young adult children with a parent affected by EOD face numerous challenges. Within the family, the parent's diagnosis led to a reversal of roles that deviated from the expected norm and severely altered the family dynamic. In a wider social context, the findings suggest that EOD and its manifestations are poorly understood, which caused an additional burden and led to a perceived lack of emotional support. In combination, these factors, in addition to the timing of the disease, had major implications on important life decisions, affecting the participants' lives both in the short- and long-term.

7.2. Clinical Implications

The findings suggest that young adult children should be invited to give their opinions and take part in the planning of public services and support offers. Given the isolation experienced by some participants, both from healthcare services and their peers, it is vital for dementia services to become proactive and consider the needs of young adult children. Offers of support should also be available from the start of the diagnostic process throughout the course of the illness.

7.3. Suggestion for Future Research

Future research should aim to include male participants, as the existing literature, including this study, has mainly involved female participants. The findings in this study also suggest that longitudinal studies should be conducted in order to look at the long-term consequences of children's experiences and their need for healthcare services over time. Additional research is also needed to understand what adequate and age-appropriate support is required to prevent social isolation and promote emotional and physical wellbeing.

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Attrition of Nursing Professionals in Ghana: An Effect of Burnout on Intention to Quit

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ABSTRACT (ENGLISH)

Background. Burnout among nursing professionals at the workplace and how it influences their decision to quit the profession is crucial to the delivery of quality health service. The shortage of nursing professionals has serious consequences on the healthcare system. **Aim.** To examine the effect of burnout on intention to quit the profession among nursing professionals. **Methods.** A cross-sectional study among 375 randomly selected nursing professionals in active service at a tertiary healthcare setting in Kumasi, Ghana. The Maslach Burnout Inventory was used to determine burnout, and their intention to quit the profession was assessed by asking participants whether they ever thought about quitting the profession in the past 12 months. The effect of burnout on intention to quit was analyzed using logistic regression analysis. **Results.** The overall prevalence of burnout among participants was 2.1% (8/375) with 10.1% (38/375), 24.0% (90/375), and 56.3% (211/375) experiencing high emotional exhaustion, depersonalisation, and low personal accomplishment, respectively. Nearly half (49.3%, 185/375) of the participants

had intention to quit the profession. Emotional exhaustion (adjusted odds ratio, AOR=5.46; 95% CI=2.25–13.20), depersonalisation (AOR=1.77 95% CI=1.07–2.95), and personal accomplishment (AOR=2.27; 95% CI=1.30–3.96) were associated with intention to quit the profession. *Conclusion.* Burnout has a negative effect causing intention to quit nursing profession. It is imperative to identify strategies such as occupational health surveillance that will aim at reducing the incidence of burnout at the workplace due to its consequences, one of them being the intention to quit.

FULL TEXT

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Opportunities for Interactive Communication in Mechanically Ventilated Critically Ill Patients: A Video-Based Observational Study

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ABSTRACT (ENGLISH)

Background. Mechanically ventilated critically ill patients need the opportunity to communicate their physical and psychosocial concerns to nurses. However, these patients face the unique problem of lacking even the opportunity to communicate. **Aims.** The study aimed to describe the characteristics of communication opportunities for critically ill mechanically ventilated patients. **Methods.** The study was designed as a video-based descriptive observational study. Participants included seven mechanically ventilated critically ill patients at the intensive care unit, coronary care unit, or high care unit who were conscious and seven registered nurses (seven pairs). Videos were recorded continuously from 8 am to 4 pm, and the footage was then descriptively analyzed. Data collection took place between July 2019 and June 2020. **Results.** The total recording time was 668.0 minutes. Of these 668.0 minutes, nurses stayed in the Conversation Area of the Patient for 279.6 minutes, and of these 279.6 minutes, two-way face-

to-face communication between nurse and patient occurred for 78.0 minutes. Of these 78.0 minutes, communications were started by nurses for 47.2 minutes (174 scenes) and by patients for 24.2 minutes (36 scenes). The patient-started two-way communication scenes included 37 instances of Patient-Intentional-Action that triggered the start of communication. Actions using the upper limbs were observed in 20 instances and represented the most frequently used body part. The head/face, lower limbs, or trunk were also used in some of the actions. Gestures were the most commonly used action type (14 instances). Other types included lip movement, grimace, leg flex/extension, and cough. *Conclusions.* We found that nurses tended to start communication more frequently than patients did and that patients demonstrated Patient-Intentional-Action with a variety of actions using various body parts. Communication opportunities for patients were created when nurses took the initiative to start communication or when they noticed and responded to the Patient-Intentional-Action. Our findings demonstrate that nurses need to recognize and always respond to Patient-Intentional-Action and to take the initiative in communicating rather than waiting for the patient to do so.

FULL TEXT

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1. Introduction

Communication is one of the most pressing challenges when it comes to mechanically ventilated critically ill patients. Communication in clinical settings is essential [1] and improves patient outcomes [2], but patients with mechanical ventilation face unique problems with communication, such as not being understood by the nurse [3–5] or lacking even the opportunity to communicate.

Our focus in this study is on the lack of communication opportunities. Critically ill patients with mechanical ventilation typically have physical problems such as pain, dyspnea, thirst, or sleeplessness that need to be communicated [6–8], and they also experience psychosocial problems such as anxiety or fear triggered by receiving invasive treatment in critical care settings [8, 9]. It is essential that patients have the chance to communicate these physical and psychosocial concerns to nurses, but they may not have access to such opportunities. The lack of opportunities to communicate is therefore a serious issue that needs to be resolved.

Prior research has indicated that patients experience a lack of opportunities to communicate with nurses. Noguchi and Inoue [10] showed that patients had no chance to communicate because nurses were not aware that they wanted to, even though the patients were signaling. Yamaguchi et al. [11] reported that patients experienced being left alone without nurses being aware of their communication cues. Karlsson et al. [12] found that patients experienced feelings of neglect and of the nurses being absent, as nurses did not speak to them or stay close enough to notice their signals. Wallander Karlsen et al. [13] identified attention-seeking actions performed by patients and noted that while nurses responded immediately to such cues, the responses were sometimes too late. These studies clearly indicate that patients want to communicate with nurses but lack the opportunities to do so. Previous studies [10–13] have also identified the lack of communication opportunities as a typical experience when wearing a mechanical ventilator. However, there have been very few studies [10–13] that focus on communication opportunities themselves for patients and describe them in detail. As such, it remains unclear whether the patients have communication opportunities, what kind of opportunities these may be, and how long these opportunities may last. It is also not clear what actions patients use as cues to indicate the desire for communication with nurses and how often these actions are performed. To answer these questions accurately, it is necessary to obtain continuous observational data over a long period of time, rather than partial observational data for just a few hours while the patient is on the ventilator, and to analyze this data and describe it in detail. Such effort would enable us to examine nursing practices more thoroughly to ensure that patients have the opportunity to communicate.

In this study, we aimed to describe the characteristics of communication opportunities for critically ill mechanically ventilated patients with respect to the following research questions: (1) What is the frequency and duration of communication between patient and nurse? (2) What actions do patients take to signal a desire to start communication? Communication opportunity is defined here as a two-way face-to-face interaction in which a person

verbally or nonverbally conveys their thoughts and feelings to another.

2. Methods

2.1. Study Design

The study was designed as a video-based descriptive observational study.

2.2. Setting

We collected the data from three units of two hospitals in cities located in western Japan. One hospital was a 240-bed general hospital, where four of the beds were located in the high care unit (HCU). The other hospital was a 150-bed cardiovascular hospital, where eight of the beds were in the intensive care unit (ICU), and four were in the coronary care unit (CCU).

Patient beds were located on an open floor, on a semiopen floor, or in a single-occupancy room. On the open and semiopen floors, the beds were separated by curtains or walls, respectively. The single-occupancy room was a separate private room. The HCU had an open floor and one single-occupancy room, the ICU had an open floor and a semiopen floor, and the CCU had an open floor.

The patient-to-nurse staffing ratios per 24-hour day were 2:1 in the ICU and CCU and 4:1 in the HCU. The number of patients assigned to each nurse was typically small during the day shift and larger during the evening and night shifts. Nurses were responsible for handling various aspects of the patients' care, such as performing physical examinations, administering medications, assisting in medical care, collecting blood for blood tests, giving sponge baths, performing oral care, helping with family care, transporting the patient, and keeping records.

2.3. Participants

Mechanically ventilated critically ill patients and the registered nurses assigned to them participated in the study. Patients were considered eligible if they were mechanically ventilated with intubation or tracheostomy, were being treated at the ICU, CCU, or HCU, had a Glasgow Coma Scale (GCS) score of E3VTM6 or higher, and (in the case of sedation) had a Richmond Agitation Sedation Scale (RASS) score within the range of -1 to 1. Eligibility for the nurses was restricted to registered nurses on the day shift assigned to the patients who consented to participate in this study.

2.4. Data Collection

Data collection took place between July 2019 and June 2020. We utilized video recording for the data collection because it enabled us to observe all the actions taken by patients and nurses and to access the data repeatedly. Observing using video recording is known to be a useful and powerful data acquisition tool [14, 15]. Video recordings can accurately record the complex nature of nursing phenomena [14] and allow multiple researchers to scrutinize the data during the process of analysis [15].

Fixed-point video cameras were placed at the head and foot of each patient's bed. The video cameras were GoPro HERO6 Black edition (GoPro, Inc.), and the records stored 2.4 K and 30 frames per second. We recorded videos from 8 am to 4 pm for only one day during the mechanical ventilation period. We planned the video recording during the day shift because we wanted to capture as many communication opportunities as possible. Shift schedules at the hospitals were organized as two-shift or three-shift rotations. The day shift began at around 8 am in both rotations. Night shifts in the two-shift rotation and evening shifts in the three-shift rotation began at around 4 pm. In consideration of the shift schedules, we decided on the recording time of 8 am to 4 pm and kept recording continuously over this span except for physical examinations of the chest or abdomen, excretion care, sponge baths, family visits, and nurse break times. If the endotracheal tube was extubated before 4 pm, we ended recording at the time of extubation. The researcher was always at the units where the data were collected so that the recording could be stopped at any time if requested. However, the researcher stayed at a distance from the participants and did not speak to them at any time during the recording.

Prior to starting, we collected information about the patients and nurses, as shown in Tables 1 and 2. The patient information was gleaned from electronic medical records and included age, diagnosis, treatment, days on mechanical ventilation, airway, and any sedatives. We evaluated the GCS status and RASS status by observing patient-nurse interactions at the beginning of data collection. Information on the nurses included age and years of

experience as a nurse and as a critical care nurse obtained through interviews.

Table 1

Characteristics of patients (*n*=7).

Characteristic	Value
Age (years)	
Mean	71.3
Range	43–88
–	
Sex	
Male	4
Female	3
–	
Diagnosis/treatment	
Surgical	6
Medical	1
–	
Airway	
Intubation	6
Tracheostomy	1
–	
Unit	
ICU	5
CCU	1
HCU	1
–	

Days on mechanical ventilation	
Mean	5.9
Range	1–23
–	
GCS*	
E3VTM6	4
E4VTM6	3
–	
Sedation	
No sedation	4
Propofol	2
Dexmedetomidine	1
–	
RASS**	
Score 0	2
Score –1	1

Note. *GCS: Verbal Response, one of the elements of the GCS, could not be tested in all patients because of intubation or tracheostomy. Therefore, Verbal Response was denoted as VT: Verbal Tube. **RASS: the RASS status was evaluated only in three sedated patients.

Table 2

Characteristics of nurses ($n=7$).

Characteristic	Value
Age (years)	
Mean	31.0
Range	24–40
–	

Sex	
Male	3
Female	4
–	
Years of experience	
As a nurse	
Mean	5.5
Range	1.3–11.0
–	
As a critical care nurse	
Mean	3.0
Range	0.9–6.0

Seven mechanically ventilated critically ill patients in the ICU, CCU, or HCU who were conscious and seven registered nurses on the day shift assigned to the patients participated in the study (seven pairs). Each patient and nurse participated in the study for only one day. Figure 1 shows the flow of recruiting participants. Patients who were already equipped with mechanical ventilation or planned to use mechanical ventilation postoperatively were asked in advance to participate in the study, and consent was obtained. However, if the patients had already been weaned off the ventilator on the date of data collection, they were excluded from the study even if consent had been obtained. The Verbal Response, one element of GCS, was not testable in all patients because of intubation or tracheostomy (Table 1). However, they could respond to queries such as those containing their name. Five patients were on the open floor, and two were on the semiopen floor. Of the seven nurses, six were assigned to one patient on the day of data collection, and one was assigned to two patients.

[figure(s) omitted; refer to PDF]

2.5. Ethical Considerations

The ethics committee of the Graduate School of Health Sciences, Kobe University, approved this study (approval number: 682), as did the ethics committees of Higashi Takarazuka Satoh Hospital (approval numbers: 1–6) and Kawasaki Hospital (approval number: 1-4-1).

We contacted patients who planned to use mechanical ventilation and those who were already mechanically ventilated to recruit study participants. All patients who planned to use mechanical ventilation provided written informed consent. All who were already mechanically ventilated gave oral informed consent, and their family provided written informed consent. We explained the study outline to unit nurses in advance. On the day of data collection, we contacted the eligible nurses again to explain the study and obtain written informed consent, which all of the nurses gave. Healthcare professionals included medical doctors, physiotherapists, or nurses who provided care in conjunction with the assigned nurses. They were excluded from the analysis if they did not participate in communication with patients and nurses who consented to participate in this study; hence, only oral informed

consent for video recording was obtained on the day of data collection. However, in cases where healthcare professionals were participating in communication between the patients and the nurses, written informed consent was also obtained.

The recorded data were stored on external media in a password-protected file and kept in a locked locker. Only researchers involved in the analysis were allowed to access the data, and we used a dedicated research computer that was not connected to them through the Internet.

2.6. Data Analysis

We first classified the recorded data (see Section 2.6.1) and then analyzed it to identify the frequency and duration of communication between patients and nurses (see Section 2.6.2). We also investigated what types of actions patients took to signal a desire to start communication and how many times the patients performed those actions (see Section 2.6.3). The analysis results were reported and discussed at regular meetings attended by multiple researchers who were licensed registered nurses with clinical experience. ELAN version 5.9 was used for annotating the video.

2.6.1. Classification of Recorded Data

As shown in Figure 2, we performed three steps (Steps 1, 2, and 3) to classify the recorded data.

[figure(s) omitted; refer to PDF]

Step 1.

Who stayed in the Conversation Area of the Patient?

We classified data into three types based on who was in the Conversation Area of the Patient (CAP). Hashimoto et al. [16] reported that an interpersonal distance of 150cm or less without conversation is uncomfortable, so we defined CAP here as a space approximately 150cm to the left and right from the center of the bed on which a patient was lying and approximately 50cm above the headboard (Figure 3). We set the space above the headboard to 50 cm because there was a shelf at the back of the headboard, leaving only approximately 50cm of space.

First, we extracted data in which the assigned nurses were in the CAP and classified them as Patient-Nurse scenes. Patient-Nurse scenes always included the patients and their assigned nurses. Moreover, the medical doctors, physiotherapists, medical engineers, or nurses who provided care in conjunction with the assigned nurses were included in some Patient-Nurse scenes.

Second, we extracted data in which healthcare professionals were in the CAP and classified them as Patient-Staff scenes. Patient-Staff scenes always included patients and healthcare professionals such as medical doctors or physiotherapists but did not include the assigned nurses. We classified scenes with no one in the CAP except the patient as Patient-Only scenes.

One Patient-Nurse scene was extracted as a single continuous scene from the time when a part of a nurse's body entered the CAP to when the entire nurse's body left the CAP. The Patient-Staff scenes were extracted in the same way.

[figure(s) omitted; refer to PDF]

Step 2.

Did senders receive feedback from receivers?

We classified the Patient-Nurse scenes into three categories based on whether senders received feedback from receivers.

First, we extracted the communication-related actions of patients, nurses, and healthcare professionals.

Communication-related actions in patients were all head, upper limb, lower limb, trunk, and facial movements, without considering the intention of communication. However, we excluded eye movements (opening/closing eyes and gazing). The participants in this study included postoperative patients, some of whom had eyelid edema and were unable to open their eyes, which meant that gazing could not be observed. Therefore, eye movements were excluded because it was not possible to extract eye movements under identical conditions from all participating patients. Communication-related actions in nurses and healthcare professionals were utterances to patients. In this study, we dealt only with utterances to examine the times that nurses or healthcare professionals communicated

with patients using vocal language.

Second, we identified two-way or one-way communication by comparing the communication-related actions of patients, nurses, and healthcare professionals. Two-way communication was a single continuous scene that started when the sender performed the first action and received feedback on it and ended when the receiver understood the sender's thought or feeling. Regarding the understanding of thoughts or feelings, we repeatedly observed communication-related actions of patients, nurses, and healthcare professionals on the video footage that demonstrated the thoughts and feelings of receivers were understood. However, there were also scenes where the receivers did not ultimately understand. For example, in one scene, a nurse eventually said to a patient, "I am sorry, but I can't understand what you're telling me." Examples of two-way communication scenes are presented in Figure 4.

One-way communication was a single continuous scene that started when the sender began the action and ended when the action finished. There was no feedback on that action. In these scenes, we did not consider whether the actions were intentional or not. Examples of one-way communication scenes are provided in Figure 4.

We classified any scenes that did not correspond to either two-way or one-way communication scenes as "no-communication." In no-communication scenes, patients, nurses, and healthcare professionals did not perform any communication-related actions.

[figure(s) omitted; refer to PDF]

Step 3.

Who started communication?

We classified each two-way and one-way communication scene into one of three categories based on who started the communication: when a patient took the first action, when a nurse took the first action, and when a healthcare professional took the first action.

2.6.2. Frequency and Duration of Communication between Patients and Nurses

We calculated the total duration of each of the scenes classified in Section 2.6.1, namely, Patient-Nurse scene, Patient-Staff scene, and Patient-Only scene; two-way communication scene, one-way communication scene, and no-communication scene; and patient-started, nurse-started, and staff-started two-way and one-way communication scene. We also counted the number of two-way communication scenes started by patients or nurses. Note that all scenes were calculated on the order of milliseconds, but we use minutes for the discussions in this paper.

2.6.3. Types and Frequency of Actions and the Body Parts Used for Those Actions

Patient-Intentional-Action, which is an intentional action taken by the patient to signal a desire to start communication in a patient-started two-way communication scene, was identified as follows.

First, from the two-way communication scenes started by patients, we extracted the first actions performed by patients in each scene as the Patient-Intentional-Action.

Second, we classified Patient-Intentional-Action into four categories: (1) head/face, (2) upper limbs, (3) lower limbs, and (4) trunk, depending on which body part was used to perform the action. We then calculated the frequency of actions that were performed using each part of the body.

Finally, we identified Patient-Intentional-Action types inductively by comparing the actions performed using each part of the body and classifying similar actions into the same category. We repeatedly reviewed the video to classify the actions and then counted the number of action types and the number of actions for each type.

3. Findings

3.1. Frequency and Duration of Communication Opportunities between Patients and Nurses

The total recording time was 668.0 minutes (see Table 3). The longest record was 194.8 minutes, and the shortest was 38.0 minutes.

Table 3

Characteristics of video footage ($n=7$).

Characteristic	Value
Total	668.0
Mean	95.4
Range	38.0–194.8

Note. Unit: minutes.

Of the 668.0 minutes of footage, Patient-Nurse scenes accounted for 279.6 minutes and Patient-Only scenes for 345.7 minutes (Figure 5).

[figure(s) omitted; refer to PDF]

Of the 279.6 minutes of Patient-Nurse scenes, two-way communication scenes accounted for 78.0 minutes and one-way communication scenes for 28.7 minutes (Figure 5). There was also a total of 172.9 minutes of no-communication scenes (Figure 5).

Of the 78.0 minutes of two-way communication scenes, those started by patients accounted for 24.2 minutes (36 scenes) and those by nurses for 47.2 minutes (174 scenes) (Figure 5). Of the 28.7 minutes of one-way communication scenes, those started by patients accounted for 24.7 minutes and those by nurses for 2.5 minutes (Figure 5).

3.2. Types and Frequency of Patient-Intentional-Actions and the Body Part Used for Those Actions

We extracted 37 Patient-Intentional-Actions from the 36 two-way communication scenes started by patients (there was one extra action because one patient performed two actions at the same time). Of the 37 actions, patients performed 20 using the upper limbs and ten using the head or face (Figure 6).

[figure(s) omitted; refer to PDF]

We categorized the 37 Patient-Intentional-Actions into 12 action types (lip movement, grimace, gesture, write in the air, flex or extension of lower limbs, cough, etc.). The most common action was gesture, which we observed 14 times. Examples of gestures in our study include the patient pointing to the intubation tube, the patient beckoning to a nurse, and the patient miming the action to drink water. Lip movement to imitate speech was observed five times and was only used by the tracheostomy patient. Ten types of action other than gesture and lip movement were observed one to three times each (Figure 6). Pushing the nurse-call button, searching for the nurse-call button, adjusting the position of the lower limb, and adjusting the position of the trunk were observed once each.

4. Discussion

Our analysis clarified the frequency and duration of communication between patients and nurses and the types and frequency of Patient-Intentional-Actions. To date, few studies have described in detail the frequency and duration of communication between patients and nurses based on data obtained from video recordings. In addition, while previous studies [17–19] have shown which communication methods patients use and how much they use them between the beginning and end of communication, none have examined Patient-Intentional-Actions as a trigger to start communication, which was the focus of our study. To our knowledge, the results of our study represent key findings that provide suggestions for nursing practices to secure better communication opportunities for patients. Our main findings are as follows.

Nurses tended to start two-way communication more frequently than patients did, which suggests that nurses take the initiative and create opportunities for communication with patients. This finding is consistent with reports that communication exchanges are most often started by nurses [17]. Patients have recently been mechanically ventilated without sedation or with light sedation, as recommended by “Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU” [20], which has enabled nurses to communicate with them more interactively than ever before. Laerkner et al. [21] reported that mechanically ventilated patients can initiate, direct, and participate in communication from the first days

of critical illness. On the other hand, Wallander Karlsen et al. [13] found that patients struggle to perform the actions required to initiate communication. These patients are often seriously ill and attached to many devices, which makes it difficult for them to take actions that show their intention to communicate, that is, Patient-Intentional-Action. Therefore, nurses should take the lead and initiate communication rather than waiting for Patient-Intentional-Action from patients who have difficulty performing such actions. These practices would ideally reduce the physical burden on patients and enable their communication needs to be met in advance.

However, one-way communication in which the patients did not respond to the nurses' utterances was also identified. The reasons for which patients did not respond to the nurses' utterances were unclear, but it might be that patients were not free to move their bodies due to pain, fatigue, edema, sedation, or medical equipment, they could not hear the nurses, or they were resting. Alasad and Ahmad [22] reported that nurses sometimes forget to communicate with patients when the patients are unconscious and unresponsive. However, Lawrence [23] indicated that patients listen, understand, and respond emotionally to what nurses have said, even when they appear to be unconscious. The patients may not be able to respond visibly for whatever reason but might hear and understand the nurses' words and respond in their own way. Nurses are responsible for communicating with patients whether they respond or not, so it is important for them to keep up their communication effort.

Patient-Intentional-Actions were performed the most frequently using patients' upper limbs. This suggests that even patients who are critically ill, fit with many devices, or have difficulty moving their bodies can still use their upper limbs to perform actions that indicate their intent to communicate. Therefore, nurses should consider ways of making it easier for patients to use the upper limbs as a means of communication. For example, medical devices should be placed on the nondominant hand if possible so that the dominant hand can be used freely as a means of communication. We also found that some Patient-Intentional-Actions were performed using either the head/face, lower limbs, or trunk in addition to upper limbs. These results are similar to those of Wallander Karlsen et al. [13], who reported that patients mostly used their lips, hands, or legs to initiate the first contact with nurses. Patients naturally take actions using their body parts to demonstrate their communication intent when they cannot use their voice. It is essential that nurses carefully observe the upper limbs, but they must also observe the head, face, lower limbs, or trunk so as not to miss any actions that are cues to start communication and to get the patients to the starting line of communication with nurses.

While it is important to carefully observe actions that indicate a patient's desire to communicate, this study contributed insight into why attention to the patients' actions may be lacking. Specifically, it might be because nurses are not within adequate observation distance of patients' actions. In fact, we found that "Patient-Nurse" scenes were shorter than "patient-only" scenes. This is not to say that nurses spent too little time in the CAP, as they were often performing a variety of tasks for patients (e.g., IV preparation, consulting with other healthcare professionals, and writing nursing record entries) that could not be performed within the CAP. However, paying attention to patients' actions logically requires that nurses be in a position to observe these actions. Another finding in this study is that there were many one-way communications in which the nurses did not respond to the patients' actions. This implies that nurses missed several chances to pick up on actions as communication cues even though they were in the CAP. Although there are times when the operation of infusion pumps, mechanical ventilators, or biological data monitoring devices demands careful attention to those devices, which might prevent the nurses from paying attention to the patients, the nurses should still be required to constantly observe the patient's actions when in the CAP. For example, they should stand in a place where they can see the patients' actions and must be careful not to turn their backs on patients. We believe that if nurses perform more tasks in the CAP and devise ways to observe patients' actions, it may make it easier for them to notice Patient-Intentional-Actions and thus be less likely to miss patient behavior. However, we have not yet been able to verify whether the patient's action during one-way communication actually indicates a willingness to communicate. Further verification is required to determine whether there are any specific actions that nurses should respond to. Such verification will reveal patient actions that nurses often overlook and suggest nursing practices for creating communication opportunities without missing those actions.

In this study, we focused on Patient-Intentional-Actions taken by patients to inform nurses of the intention to start communication. However, from a different perspective, these Patient-Intentional-Actions could be considered as actions in which the nurses recognized that the patients' actions were made with the intention to start communication, and it was the nurses' responses that created the opportunities to communicate. In other words, whether or not an opportunity for communication occurs depends on how the recipient of an action handles that action.

In our study, we found that nurses recognized gesture, lip movement, grimace, adjusting the position of the lower limb, or adjusting the position of the trunk as Patient-Intentional-Actions showing the intention to initiate communication. We clarified that the nurses noticed the intention to start communication in a variety of actions and created communication opportunities for patients accordingly. It has been reported that nurses must interpret the patient's facial expressions and body language to determine what action to take [12], but it is also true that nurses may perceive the patient's physical movements not as an initiative to communicate but as restlessness or agitation, both of which are common in the ICU [13]. It is thus necessary for nurses to interpret whether or not the patients' actions are signals to start communication. However, this might prove difficult when, for example, the patient simply moves their body. In such cases, it is recommended that nurses speak to the patients to confirm. If the nurses call out and the patients have no intention of initiating communication, the patients will say that everything is fine. Sometimes, the patients might tell nurses something they were planning to tell them later. In any case, it is important for nurses to always respond to Patient-Intentional-Actions to determine what they are.

Interestingly, we found that patients used the nurse-call button just once, even though this was the easiest way to signal nurses. Actions with sound are more noticeable to nurses than actions without sound, such as beckon and grimace, which suggests that actions with sounds should be utilized to make the nurses more aware of the patients' intentions and thereby create opportunities for communication. An earlier study pointed out that patients in the ICU needed to have some kind of sound-activating device nearby so that they could get the attention of a healthcare professional quickly [13]. We recommend preparing a nurse-call device that patients can always hold in the hand and press when needed, such as a palm-sized device with a call button at the end of a cord. Nurses should encourage patients to utilize these devices because doing so can create easier communication opportunities for both patients and nurses. It is also necessary to develop new equipment that can give a signal when the patients want to talk to the nurses without much effort.

Finally, in terms of future research that would address the lack of communication opportunities for critically ill patients on mechanical ventilators, intervention and experimental studies should be conducted to build evidence of nursing practice. Prior studies [10–13] have confirmed that patients experience a lack of communication opportunities and have proposed nursing practices to address the problem. The present study similarly suggests several nursing practices that can be implemented and evaluates the nursing practices indicated in these studies in clinical settings. For example, it would be helpful to conduct an intervention study to examine whether having nurses spend more time in CAP increases their awareness of patient communication cues and the time they spend communicating with them.

5. Strengths and Limitations

We think that video recording is one of the best techniques for observational study, as this approach makes it possible to collect data that is difficult to capture or that would otherwise be missed in the field. For example, we were able to capture even the smallest actions, such as movements of a patient's fingertips. In addition, researchers could repeatedly reexamine the same scenes during the analysis process. For example, in situations where it was difficult to determine how to classify a certain patient action, multiple researchers viewed the video footage, held discussions, and finally decided on it. Haidet et al. [24] reported that video recordings can be replayed any number of times and provide a high degree of reproducibility when measuring observations. In this way, utilizing the video recording technique enabled us to ensure reliable data collection and analysis.

One of the unique contributions of this work is our observation and classification of Patient-Intentional-Actions, which will be useful for the construction of a monitoring system that automatically detects these actions. Moreover, as

these Patient-Intentional-Actions pertain to the actions that nurses sensed and responded to, they can also be utilized for a system equipped with a program that mechanically monitors Patient-Intentional-Actions and signals the nurses when those actions occur.

However, our study has some limitations.

First, we collected only seven cases at two hospitals, and more cases at multiple hospitals should be collected in the future. More cases would provide further suggestions and allow for the transfer of knowledge and methods of communication with mechanically ventilated patients to clinical and educational settings.

Second, we only considered utterances as communication-related actions of the nurses, as the time nurses communicated with patients was determined on the basis of their usage of vocal language. However, communication can include many actions other than utterances, for example, watching and touching. In this study, if watching and touching occurred without the nurses making any utterances, they were classified as no-communication scenes, but they could be considered as communication scenes depending on the focus of the study. Examples would include research on how often nurses use touch during communication or what part of the patient the nurse sees and speaks to during communication. Future work should extract and analyze such communication-related actions in accordance with the research focus. However, it is difficult to measure watching and touching by video recording alone, so data collection using devices that can trace the nurses' line of sight or sense of touch should be used in combination with video recording. In addition, the effects of seeing and touching during communication with patients should be analyzed from both quantitative and qualitative points of view.

Finally, our study was limited to a quantitative examination of patients' communication opportunities. Haidet et al. [24] have pointed out that video recording data can show what happens in real time but may lack important contextual data. Future research should utilize qualitative methods (e.g., patient interviews in combination with video recording) to analyze the interactions between patients and nurses and clarify what the opportunities would mean to patients.

6. Conclusion

The results of our video-based descriptive observational study of the communication opportunities for mechanically ventilated critically ill patients showed that nurses created communication opportunities more frequently than patients did, that patients performed various types of Patient-Intentional-Action using either the upper limbs, head/face, lower limbs, or trunk, and that the nurses responded to these actions. Our findings suggest that communication opportunities are created when nurses take the initiative to talk to patients or recognize and always respond to Patient-Intentional-Actions. We recommend that nurses take the initiative to talk to patients rather than waiting for them to initiate, carefully observe Patient-Intentional-Action so as not to miss it, and respond to Patient-Intentional-Action whenever it is observed.

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A Study of the Relationship between Professional Communication and Professional Commitment in Operating Room Nurses

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ABSTRACT (ENGLISH)

Background. Operating rooms are among the most complex clinical environments in hospitals where teamwork and professional communication play a very important part. Professional commitment is an influential factor in the personnel's professional communication and can affect the outcomes of healthcare services. **Objective.** The present study aims to investigate the relationship between professional communication and professional commitment in the operating room nurses in teaching hospitals. **Study Design.** The present study used a descriptive-correlational design. Participants were selected via census sampling from hospitals in Shiraz over a period of three months. The participants were 350 operating room nurses who met the inclusion criteria. Data were collected using professional communication and a professional commitment questionnaire. The collected data were analyzed using the descriptive and inferential statistics in SPSS vv. 22. **Findings.** The operating room nurses' mean scores for professional communication (136.81 ± 13.77) and professional commitment (71.42 ± 11.62) were found to be high. The results of the Pearson correlation coefficient test showed that there was a statistically significant linear relationship between professional communication and professional commitment ($p < 0.001$, $r = 0.235$). The results also showed that there was a significant relationship between professional commitment on the one hand and gender ($p = 0.042$), marital status ($p = 0.047$), and interest in work ($p = 0/000$) on the other hand. There was also a significant relationship between professional communication and interest in work ($p = 0/000$). **Conclusion.** Given the significance

of professional communication and professional commitment in the operating rooms, it is recommended that healthcare administrators and policymakers take steps to improve these areas. It is suggested that measures should be taken to increase the personnel's awareness of the principles of professional communication and the significance of professional commitment through regular workshops.

FULL TEXT

DETAILS

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Nursing Students’ Perception of Clinical Teaching and Learning in Ghana: A Descriptive Qualitative Study

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ABSTRACT (ENGLISH)

Background. Clinical teaching and learning are critical in bridging the theory-practice gap in nursing education. This study aimed at exploring nursing students’ perception of clinical teaching and learning in Ghana. In particular, this study sought to (1) describe the factors that promote clinical teaching, (2) examine students’ perception of clinical teaching, (3) describe the impact of clinical learning on students, and (4) explore ways of improving clinical teaching and learning. **Methods.** A descriptive qualitative study was conducted with 16 final-year nursing students using telephone-based interviews. Individual in-depth interviews were conducted with a semistructured interview guide, and data were analysed by the qualitative thematic analysis. **Results.** The findings indicate that being taught new things, being supervised, and having autonomy were the most significant factors that promoted clinical learning. Participants also reported that clinical experience created learning opportunities that helped develop clinical competence. They described learning experiences in the clinical setting as good, albeit gaps in practice. Poor staff attitude, lack of equipment, poor student attitude, inadequate learning opportunities, and lack of clinical supervisors

were perceived as challenges in the clinical environment. *Conclusions.* Efforts to consciously teach, supervise, and challenge students to have independence in the clinical area will promote clinical teaching and learning. Therefore, nursing educational institutions and all other stakeholders need to collaborate in eliminating the numerous challenges students encounter in the clinical environment.

FULL TEXT

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1. Background

Clinical teaching and learning are integral components of nursing education. Most clinical teaching and learning activities occur in the clinical setting where theory is translated into practice [1, 2] in healthcare providing institutions [3, 4]. Although the clinical environment is a significant place to apply the theories learned in the classroom, there remains a gap in the magnitude of applying the theory to practice. The effective application of theory to practice depends on many factors, including creating learning opportunities for students and support by preceptors [5]. A conducive clinical environment is critical in enhancing the learning experiences of students. For instance, in an environment where simulation learning is limited or not available at all, learning occurs in the actual hospital environment [6]. However, most clinical training facilities in sub-Saharan Africa are constrained by logistics and equipment, which tends to affect students' learning experiences. Multiple factors have been reported to affect student learning in the clinical area. These include individual-level factors, the nature of the hospital environment, socioeconomic, and nurse educator factors [7]. A study conducted by Rajeswaran [8] in Botswana discovered that nursing students could not translate the theory into practice because they lacked adequate supervision in the clinical setting, which resulted in low performance in clinical practice.

Research has identified several factors that negatively impact the clinical performance of students. These included limited opportunities for students to practice in teaching hospitals, inadequate or nonavailability of nurse educators, clinical instructors and mentors, and too many students in the programme [9]. It has also been reported that clinical instructors' attitude, constructive criticism, and supportive clinical settings promote clinical learning. Nonetheless, negative criticism tends to affect students' clinical performance [1]. The clinical teaching and learning process can also be negatively affected by student-related factors such as inadequate knowledge and skills, poor attitude, unprofessional behaviour, and poor communication skills with patients and clinical instructors. Again, the inability of students to ask questions, overconfidence, not being motivated to learn or work, lack of confidence, and dishonesty have been cited in the literature [10].

Despite the scarcity of evidence on students' perception regarding clinical education in Ghana, other studies globally reported nursing students' education and professional socialising experiences, processes, and outcomes are influenced by the quality of clinical learning setting and their perception of it during clinical placements [11, 12]. It has been revealed that nursing students perceived the clinical setting as stressful and challenging attitude [13].

However, others perceived the clinical education experiences as rewarding and satisfying [14].

Generally, from the students' perspective, the clinical setting has been described as nonsupportive because of institutional inadequacies, a lack of relationship between students and clinical educators, and negative attitude and behaviours on the part of some nurse educators [15]. Students have highlighted inhibitors to clinical learning, including preceptors' inadequate engagement and feedback [16]. Moreover, preceptors were not available to engage with students. Students found that theory and practice were not connected and felt that they lacked opportunities to reflect together with their preceptors [17].

It is critical to note that clinical training in nursing occurs in a complex clinical learning setting, which is influenced by many factors [18]. This setting provides an advantage for student nurses to learn experimentally and to translate theoretical knowledge to a diversity of mental, psychological, and psychomotor skills, which are of importance for patient care [19]. Students' exposure and preparation to enter the clinical environment are significant factors influencing the quality of clinical education [20].

According to the Nursing and Midwifery Council (N &MC) of Ghana, the minimum practical hours expected on a Registered General Nursing Programme are 1632 hours in a minimum of 3 years. For the institutions that run 4-year Bachelor of Science in Nursing Programmes, most practical sessions begin in the second year when students are deemed to have acquired some professional knowledge and are adequately prepared at least for basic nursing procedures. Clinical rotation is designed to cover all specialty areas required by the N &MC, including medical/surgical nursing, obstetrics and gynaecological nursing, public health, mental health, paediatrics, and other selected specialties available in the specialist units.

Students are taught mainly by clinical faculty and preceptors in the clinical sites. Faculty from the schools also have specific days they visit the clinical sites to teach their students. The minimum qualification for faculty from the schools is Masters' degree. On the other hand, clinical faculty/preceptors are Masters or Bachelor of Science prepared nurses. The minimum qualification for professional nurses in Ghana is diploma. The assessment of students' clinical competencies is usually conducted at the end of each semester in the clinical sites or the schools' skill laboratories using standardised evaluation tools. These examinations are conducted by faculty from the schools and clinical faculty/preceptors and are most often graded according to the schools' grading systems.

In Ghana, improving clinical nursing education is a significant characteristic of clinical skill acquisition. Critical areas of consideration include improving a positive clinical environment, effective clinical supervision, adequate assessment of students, and clinical-academic collaborations [21]. This research is critical in improving clinical teaching and learning in the Cape Coast Metropolis of Ghana. Currently, there is a paucity of data regarding this topic in the study area. This study explored nursing students' perception of clinical teaching and learning, in particular to (1) describe the factors that promote clinical teaching, (2) examine students' perceptions of clinical teaching, (3) describe the impact of clinical learning on students, and (4) explore ways of improving clinical teaching and learning.

2. Methods

2.1. Design and Participants

The study employed a qualitative explorative, descriptive design. The population comprised final-year student nurses who had enrolled on a four-year Bachelor of Science in Nursing programme in a public university in Ghana. Purposive sampling was used to recruit participants who were 18 years or older and had at least three years of clinical teaching and were therefore information-rich per the study's objectives.

2.2. Study Setting

The setting for this study comprised clinical placement sites across the country. Students enrolled in a Bachelor of Science in Nursing programme are mandated to have practical experience within the semester and during the inter-semester break. These students are allowed to select sites for clinical placement based on their location and the type of health facility that can help them accomplish the objectives of the clinical practicum. These sites represent different levels of health facilities in Ghana, including teaching and district hospitals. Some of the facilities are owned by the government, while others are private facilities. Although the facilities provide health services, the level of sophistication and specialised services differs across facilities. Although most of the facilities provided both general and specialised services, few concentrated on the provision of mental health services. The teaching hospitals focused on providing both general and specialised services and served as referral points for the district hospitals and other facilities in the periphery.

2.3. Data Collection

A semi-structured telephone-based interview technique was used for inquiry. The interviews were conducted between June and July 2020 to obtain in-depth information about participants' perception regarding clinical teaching and learning. It is worth noting that at the initial stages of the pandemic in March 2020, all clinical activities in the placement sites were halted. Students went home and continued classes online. Nonetheless, some of the students continued to support the staff in their various hospitals due to the staff shortages. They returned to campus to complete the semester in September 2020 after some restrictions had been lifted. At the time of the interviews, students were not on campus, which impacted our ability to do face-to-face interviews.

Demographic information comprising sex and age was collected prior to each interview to give perspective on the data. The semi-structured interview covered the following index questions followed with several probes: (1) How do you perceive the clinical teaching and learning environment? (2) How will you describe the clinical teaching you received? (3) What professional skills and attitudes did you model or learn from the professionals you worked with? A total of sixteen interviews were conducted during the study period, at which point data saturation had been confirmed. The interviews were conducted in English and audio-recorded after consent had been sought from the participants. Each interview lasted between 45 and 60 minutes.

2.4. Data Management and Analysis

The inductive thematic analysis was conducted guided by the six steps proposed by Braun and Clarke [22]. Audio recordings were saved on separate password-protected computers, and the data were transcribed verbatim and analysed by two members of the research team. Each independent researcher read and reread the printed transcripts and listened to the audio version concurrently for familiarisation with the data. Afterwards, relevant phrases or sentences were highlighted and short codes were assigned.

The highlighted data were then collated into groups to get a condensed overview of the main points recurring throughout the participants' narratives. Following coding, the themes were generated by identifying patterns among the codes and combining several codes. After that, independent researchers deliberated and agreed on the themes to ensure accurate representation of the participants' narratives. The emergent themes were then defined by explaining exactly what the themes mean in relation to the data set.

2.5. Trustworthiness

Rigor was maintained throughout the research process as recommended by Lincoln and Guba [23]. To establish credibility, member checking was carried out. Also, two members of the research team analysed the data independently to ensure congruence between data and themes. An audit trail was also maintained to achieve confirmability and dependability by detailing the research process, the participants, and research setting. Two members of the research team coded the transcript. The audio-recorded interviews and transcripts were kept safe to allow for transferability.

3. Results

Sixteen final-year nursing students offering Bachelor of Science in Nursing in a public university were interviewed for the study. Table 1 shows the demographic characteristics of the participants. Eleven of the participants were females, and five were males and were aged between 21 and 25 years. Five main themes and several subthemes emerged from the data, as shown in Table 2. The five themes are factors that promote clinical learning, the impact of clinical experience on students, students' perception of clinical teaching, challenges in the clinical setting, and improving clinical teaching and learning.

Table 1

Demographic characteristics of the participants.

No.	Gender	Age	Programme
1.	Male	21	BSc. Nursing
2.	Female	23	BSc. Nursing
3.	Female	23	BSc. Nursing
4.	Male	25	BSc. Nursing
5.	Female	23	BSc. Nursing

6.	Female	24	BSc. Nursing
7.	Female	24	BSc. Nursing
8.	Female	25	BSc. Nursing
9.	Male	25	BSc. Nursing
10.	Female	22	BSc. Nursing
11.	Male	25	BSc. Nursing
12.	Female	22	BSc. Nursing
13.	Male	24	BSc. Nursing
14.	Female	22	BSc. Nursing
15.	Female	24	BSc. Nursing
16.	Female	23	BSc. Nursing

Table 2

Themes and subthemes.

Main themes	Subthemes
(1) Factors that promote clinical learning	(a) Being taught new things(b) Being supervised(c) Having autonomy
–	
(2) The impact of clinical experience on students	(a) Clinical learning opportunity(b) Developing clinical competence
–	
(3) Students' perception of clinical teaching	(a) Clinical practice is good(b) Gaps in clinical practice(c) Inadequate clinical practice
–	
(4) Challenges in the clinical setting	(a) Poor staff attitude(b) Lack of equipment(c) Poor student attitude(d) Lack of learning opportunities(e) Lack of supervisors
–	

(5) Improving clinical teaching and learning	(a) Supervision(b) Training for staff(c) Separate practical and theory sessions(d) Strengthening clinical teaching

3.1. Factors That Promoted Clinical Learning

This theme described the many and varied factors that promoted clinical learning among students. Most of the participants were excited about an opportunity to learn new things in the clinical setting and described their best clinical experience as the one in which they were taught new things. They had the autonomy to practice and were supervised to practice new things learned on the ward. These factors that promote clinical learning are explicated as follows:

3.1.1. Being Taught New Things

Most participants reported that being taught new things promoted clinical learning as indicated in the following quote: *"... They taught us the emergency drugs. So that made me yearn for more. So, I mean, my best experience so far was at the Hospital A where I had nurses teaching me day by day. Teaching me the instruments, anything they had to do"* (Participant 1).

3.1.2. Being Supervised

Participants indicated that being supervised facilitated learning in the clinical area:

"... We were supposed to perform a procedure, I think I did not do it well, and then our clinical instructor, one of the sisters, actually approached me and then corrected me. I think that was the best because of the way she approached me and made me understand that we do not do this at this point and she did not shout at me, maybe that is why I feel it's the best, and she actually corrected me at her office not right in front of the patients" (Participant 6).

3.1.3. Having the Autonomy to Practice

Most of the participants described having the autonomy to practice as a factor that promotes clinical learning:

"... I learned that you can do a lot of things for a patient, and then you get to have the opportunity to do things on your own. You are supervised, but then we have a certain autonomy. You get to know how things are done. [In] certain hospitals, you do not get to practice the skill itself but here you are given the opportunity to actually do...wound dressing... and all that" (Participant 10).

3.2. The Impact of Clinical Experience on Students

Clinical practice plays an important role in helping shape students' clinical skills needed for professional nursing practice. The participants shared how the clinical practices impacted them. The subthemes are clinical learning opportunities and develop clinical competence.

3.2.1. Clinical Learning Opportunity

Most participants described it as a learning opportunity.

"We change hospitals almost every semester, so if you are at a certain hospital where you do not get to experience a lot of conditions, you get to experience it at another place" (Participant 10).

"Even though sometimes we are handicapped with the basic tools and equipment that we are supposed to practice with, at least we are able to learn one or two before you leave the ward" (Participant).

3.2.2. Developing Clinical Competence

Some participants shared how their opportunities in the clinical setting to practice have improved their clinical competence:

"I did oral suctioning. That was the first time I actually did suctioning. I had observed on several occasions, but I never had the opportunity to do it. That was the first time I prepared the patient, used the suctioning machine myself, and inserted it. I was supervised for three times and subsequent ones I did them myself" (Participant 11).

"I have experienced so many clinical experiences, but the one I really appreciate is how to pass an IV line and serve medication. Initially, at the lower levels, I had been having difficulties, and thought I will not be able to, but with exposure, [I can] do it now. Initially, people normally help me and supervise but now I can do it" (Participant 13).

3.3. Students' Perception of Clinical Teaching

Participants have had varied clinical teaching experiences and therefore perceived clinical teaching differently. While some described it as good, others taught there were gaps, and some said it was inadequate.

3.3.1. Clinical Practice Is Good

In sharing their clinical experience, some participants described their clinical practice as good. This was especially the case when participants had the opportunity to learn new things and linked theory to practice examples:

"... I think it's very good and the opportunity to go to hospital B too was very educative. I think it was very good even though some of us thought it was hectic, we were able to learn something" (Participant 10).

"Everything is good, especially the time we went to hospital B that one was very good" (Participant 13).

"... I will say that so far I have learned so many things and then although we are still learning what I have learned I can say that it is good for me" (Participant 4).

3.3.2. Gaps in Clinical Practice

Nearly all participants believed that there is a theory-practice gap. Some participants indicated that they struggled to link theory to practice as what they did in school was different from what they experienced at the clinical area. They identified inadequate time, lack of equipment, and inadequate learning opportunities as major contributing factors to the theory-practice gap:

"... In theory or in class, we are told what we are supposed to do and what you are not supposed to do, but you go to the ward at times they will say time factor, so they do 'short cut', and we miss some of the steps. And at times too, we do not have the required equipment, so we have to improvise. So, we get to the ward, and you see there is a big gap" (Participant 7).

"Sometimes you just do not see whatever is taught in the classroom on the ward and even on the practical aspect we learn [a] task that when we go to the ward, we do not see them at all" (Participant 6).

3.3.3. Inadequate Clinical Practice

Some participants perceived their clinical experience to be inadequate and, therefore, did not acquire the clinical experience they would have expected:

"Comparing it to what we actually learn at the skills lab, I would say it's not adequate in the sense that we do not actually get the opportunity to practice everything that we've learned. What we do will sometimes be dependent on what is happening at the ward" (Participant 8).

"If you get to certain wards and you do not meet [ward] in-charges who are willing and always devoted to help students, ...we only go there and be asked to do this, do that, go and do this and then by the time you realise your session has ended and you have to leave the ward to the school" (Participant 9).

3.4. Challenges in the Clinical Setting

This subtheme describes perceived challenges to effective clinical teaching. Participants reported several students, staff, and clinical environmental factors. These included poor staff attitude, lack of equipment, poor student attitudes, lack of learning opportunities, and lack of supervisors.

3.4.1. Poor Staff Attitude

Some participants bemoaned the negative attitude of staff nurses toward students. This attitude, they said, affected their ability to learn and achieve their fullest potential in the clinical setting:

"There were times that you go to the ward and then you do something, the nurses shout at you. Sometimes they will not even mind you. Sometimes you even try to help, and then they are like, 'go and sit down. I have to finish and document my thing and go'. Some of the attitudes sometimes are bad" (Participant 6).

"What has been our problem throughout this training session has been [the] attitude of most [the] staff and in-charges in the ward. Sometimes most of us go there, and we really want to get involved in what is going on and know better, but the response somebody might give out to you would not even encourage you to get closer to the person and know much from the person. That is the main reason why sometimes we go to the ward, and you see students loitering around the hospital only because we feel the behaviours of some staff and in charges are intimidating" (Participant 9).

3.4.2. Lack of Equipment

Lack of equipment prevented students from practicing what they had been taught in the classroom:

"My challenge is that some of the clinical institutions do not have the equipment, so we have to improvise" (Participant 5).

"... I will use wound dressing, for example, we've been taught how to use the instrument for wound dressing and also how to use the sterile glove, but the issue at hand is for the three years, it's always the sterile glove that we use, there is no instrument for you to use. So, although we know its theory, we do not know it in practice" (Participant 7).

3.4.3. Poor Student Attitude

To some participants, students' own attitude also affected their learning in the clinical setting:

"The other thing is the students' attitude too. Sometimes, the attitude of the students annoys the nurses, that is, why they are not able to teach us, or they are not willing to teach, so when we go to the ward, we should humble ourselves, we should respect them as they are" (Participant 11).

"The nurses and the midwives look at how you students behave before they impart knowledge to you. First of all, when you go to the clinical setting, and then you exhibit that kind of zeal for the work, they also help us to develop our confidence, but if we go there and we do not feel like doing the work, they do not mind us, so that is one aspect of it" (Participant 5).

3.4.4. Lack of Learning Opportunities

Although they are in the clinical setting to learn, the participants complained that they often felt left out and were not allowed to learn or practice the skills they are taught in school.

"We went to different clinical facilities; some are very conducive, and some ...are (sic) not. The ones that are conducive when the patient comes students are allowed to work with them, but in some hospitals, students are supposed to observe. Thus, we observe, we do not participate in anything we just observe" (Participant 13).

"The teaching of students has not really sunk down in some hospitals, so they feel students come and they are just there to volunteer and then learn through the process" (Participant 3).

"Sometimes they do not give students the opportunity to do certain procedures that we have been taught in the class" (Participant 14).

3.4.5. Lack of Supervisors

Participants complained about the lack of supervisors in some of the clinical setting which was illustrated by the following quote:

"We do not have clinical instructors to even guide us to learn whatever we have studied in School. We just go to the clinical setting; we present the objectives to them, and we will be doing something outside what we are supposed to do" (Participant 1).

3.5. Improving Clinical Teaching and Learning

The theme highlighted the factors that can improve clinical teaching and learning. The factors identified were supervision, training of staff, separate practical and theory sessions, and strengthening clinical teaching.

3.5.1. Supervision

Most of the participants indicated that clinical supervision was key in improving clinical practice:

"... There should be clinical supervisors or instructors in the clinical setting who will guide students in whatever they do" (Participant 1).

"... I wish we could have a setting whereby some of our lecturers will be with us on the ward, especially with medical-surgical, bridging those gaps. Sometimes you just do not see whatever is taught in the classroom on the ward and even with the clinical aspect, we learn [certain] task[s]... [but] when we go to the ward, we do not see them at all" (Participant 6).

"...In the medical field, they have supervisors that come around, and they will go around. I'm suggesting that if the nursing department can do that, it will help improve our learning in the field. Supervisors are around, we go through the patient's folders, after that we all sit down and try to learn about it" (Participant 12).

3.5.2. Training for Staff

Participants also highlighted the need for periodic training for clinical staff as illustrated in the quote below:

“...They should be put through some training maybe every three months or every two months to refresh everything they know because you know nursing sometimes certain things change. So that when something new comes into the system, they will be able to get an idea about it so that they would not go through the old way repeatedly” (Participant 5).

3.5.3. Separate Practical and Theory Sessions

The participants highlighted the need for theory and practice sessions to bridge the theory to practice gap, as illustrated by the quote below:

“... If we set a period aside, where we finish class session, allocate some specific time for the clinical session and then come back so that we get to know the strong linkage between the two separate trainings, we are receiving” (Participant 9).

3.5.4. Strengthening Clinical Teaching

The participants described measures for strengthening clinical teaching as illustrated by the following quotes:

“... At times, we would not get the nurses having time because of their duty schedule, but if your tutors’ come around and they have time for you, I think that one will facilitate teaching and learning much effectively” (Participant 4).

“...When students go to the ward, I suggest that after we are done, at least they should sit us down or gather us somewhere and lecture us on the ward. They should teach us new things. They are very good so they can sit us down and we can have some presentations and all that and not just with students for vital signs” (Participant 14).

4. Discussion

This study aimed at exploring nursing students’ perception of clinical teaching and learning in Ghana. The results revealed that students generally perceived clinical learning experience as an important requirement for achieving clinical competence. However, several factors are related to students, staff, and challenges within the clinical setting as barriers to effective clinical education. On the factors that promoted clinical learning, most of the students believed that maximum learning is attained when they are taught new things, properly supervised, and have adequate time and space to practice. In essence, the students valued much when they had mentorship or a chaperone to guide them through acquiring new knowledge and being supported to practice what is taught. It is evident that constructive feedback and resources are critical in promoting effective mentoring practices and bridging the theory-practice gap [Nkosi, 2017]. An earlier study found the nature of the mentoring relationship, quality of the mentor, and ability to facilitate learning, positive feedback, and timely decision-making as concerns raised by students [24].

With regard to the impact of clinical learning on students, the responses gathered indicated that effective clinical teaching and learning accorded them the opportunity to develop competence and confidence in clinical procedures. The clinical environment is the place that allows students to practice the theory learned in the classroom. The current findings agree with a study by Jonsén, Melender, and Hilli [17]. They emphasised the unique role of the clinical environment in the acquisition of skills needed to transition from a nursing student to a registered nurse. The consistent findings could mean that irrespective of where nursing education is pursued, clinical teaching and learning are a common importance.

The general students’ perception of clinical teaching was that clinical practice is beneficial; however, most of them believed that there were gaps in theory and clinical practice experiences. The gap in theory and clinical practice could be attributed to the controversy between the ideal versus reality situations in the clinical environment. Most of the items required for demonstrations may be available in the school or classroom. Students go into the clinical environment expecting the same items and equipment. However, in the wards, the situation is different. Most of this equipment is not available, hence the need for improvisation. The unavailability of resources mostly leaves these students frustrated and less interested. Previous work reported that core nursing skills learned through modelling tend to achieve higher impact compared with pre-learning levels [25].

Additionally, building competence in core nursing skills will enhance adaptability in the clinical area [20]. The students highlighted some challenges in the clinical setting, primarily referring to the environment not being conducive for learning. In particular, these elements include the following: poor staff attitude, students’ complaint that

staff nurses were not receptive, shouted at them at least provocation, and others were unwilling to teach or correct them. Contrary to this finding, Antohe and colleagues (2016) purported that students had their staff nurses being the most important professional role model for them. The difference in findings could be attributed to the workload. In developed countries, the nurse-to-patient ratio is lower compared with developing countries. This makes it possible for the staff nurses in the developed countries to have enough time for the student nurses.

In addition, the results of the study found another challenge to be the lack of equipment. Most of the participants revealed that medical supplies and equipment were inadequate; hence, they could not practice much because their supervisors would always remind them not to waste resources. This finding has been reported by Moyimane, Matlala, and Kekana [26]. In that study, they stated that due to a lack of medical equipment, clinical teachers often improvised during clinical teaching; as such, student nurses were not taught ideal clinical scenarios. This explains that the shortage of medical supplies is a common challenge in developing and developed countries.

Moreover, the students found another challenge to be poor student attitude. In this study, students admitted that some of their colleagues had a poor attitude to nursing. They seem less interested in their own clinical learning. Their general motivation in clinical learning was low, and most of them resorted to fidgeting with their phones while on clinical placement. Conversely, the findings of Riklikienė and Nalivaikienė [27] seem otherwise. In their study, student nurses estimated their individual input into clinical training mostly as high or very high. The correlation analysis revealed a positive relationship between the students' assessment of the learning environment in the unit and their individual input to their clinical placement. The different results could be attributed to the lost passion for the profession. In Ghana, some people venture into nursing as a means of livelihood. It is believed that once one completes nursing, there is a ready job available; hence, some people enter nursing school with no genuine passion but as a means to an end.

Lack of learning opportunity was another challenge that was highlighted. Most of the students indicated that they could not have the chance to try out some tasks. This was mainly due to an overwhelming student number and inadequate time that is needed to acquire the needed skills. The findings in this study are inconsistent with a study by AstaMažionienė, Staniulienė, and Gerikienė [28], where they found out that there were enough training cases and situations during their clinical placement. What could account for the difference could be the number of students admitted into the large nursing school and the availability of hospital facilities for clinical training. Most of the nursing schools in developed countries have strict compliance with the number of students to admit. Whereas the situation in Ghana is the opposite, there is a large student population.

Finally, the study found a lack of supervision as another challenge in clinical learning. A supervisory relationship was the most important factor contributing to clinical learning experiences [29]. However, most students complained of inadequate supervision. Students complained of being used as errand boys and girls because there is no assigned supervisor to monitor their work and progress. Most of these students tend to engage in nonprofitable activities making the clinical learning period of ineffective. The results agree with Antohe et al. [30], which revealed the importance of a good supervisory relationship and how it positively influences students' clinical learning experience. In improving clinical teaching and learning, the participants suggested strengthening supervision. When students know they are being watched, they always do the right thing. Moreover, they suggested that the clinical staff responsible for students should be engaged in rigorous training and workshops. In addition, the students suggest different times for classroom learning and clinical learning, which implies having a specified number of weeks for the theory class and then a different set of weeks for only clinical sessions.

5. Strengths and Limitations of the Study

The study design allowed for the exploration of students' perspectives of clinical teaching and learning as it pertains to a bachelors' programme in nursing, which is critical in improving students' clinical nursing practice experiences. The use of telephone interviews did not allow nonverbal cues or body language of the participants to be explored to augment the information they provided. The researchers also acknowledged that the study may be limited by possible recall bias. The participants were expected to share experiences that may have occurred more than six months due to the suspension of clinical learning and teaching activities at the time of interviewing due to the

COVID-19 pandemic.

6. Conclusions

This study explored nursing students' perception of clinical teaching and learning in Ghana. Although students found the clinical learning environment to be conducive for learning, they encountered challenges that required a holistic approach to address through the efforts of all stakeholders, including students, supervisors, healthcare agencies, and staff. Clinical teaching and learning are critical in facilitating the achievement of clinical competence. The findings suggest the need for innovations in current approaches to clinical teaching to enable students to have autonomy and to be afforded the opportunities to develop essential competencies.

Ethical Approval

Ethical approval for this study was obtained from the University of Cape Coast Institutional Review Board (UCCIRB/EXT/2019/17).

Consent

Participants also signed informed consent forms before data collection began. To ensure anonymity and confidentiality, pseudonyms were used throughout the study.

Authors' Contributions

SAA*, NIEE, and CMB were involved in the conceptualisation of the study. SAA*, AAD, NIEE, RSW, PFD, and YBGA contributed to the methodology. SAA and NIEE wrote the data. AAD, CMB, and CO reviewed the analysis. RSW, YBGA, SAA, and NIEE wrote the draft manuscript. AAD, CO, PFD, CMB, NIEE, and SAA* reviewed the manuscript for important intellectual content. All authors read and approved the final version for submission to this journal.

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Complementary Feeding Practices and Household Food Insecurity Status of Children Aged 6–23 Months in Shashemene City West Arsi Zone, Oromia, Ethiopia

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ABSTRACT (ENGLISH)

Introduction. Appropriate infant feeding practices are critical to a child’s growth, health, and development during the first 1000 days of life. One in every six children worldwide receives a minimum acceptable diet. According to the EDHS 2016, the status of the minimum acceptable diet was 7 percent among children aged 6–23 months in Ethiopia. The study sought to ascertain the relationship between complementary feeding (CF) indicators and household food insecurity in children aged 6–23 months. **Methods.** A systematic sampling method was used to conduct a cross-sectional study of 536 mother-child pairs aged 6–23 months. The 24-hour dietary recall was used to collect data on CF practices using face-to-face interviews with socioeconomic and food security questionnaires. The relationship between complementary feeding indicators and household food insecurity was investigated using logistic regression analysis. The relationship between independent variables and complementary feeding indicators was determined using multivariate logistic regression. **Results.** Overall, a total of 67.9% of children received timely introduction of CF and Minimum Meal Frequency (MMF), Minimum Dietary Diversity (MDD), and Minimum Acceptable Diet were met by 61.7%, 42.5%, and 41.7%, respectively. Result of multivariate logistic regression showed there is significant association between household food security with MMF, MDD, and MAD [AOR: 2.02, 95% CI: (1.25–3.24); AOR: 1.55, 95% CI: (1.02–2.36); and AOR: 1.62, 95% CI: (1.06–2.47)], respectively, while there was no association with introduction of CF [AOR=0.87, 95% CI: (0.55–1.39)]. **Conclusion.** This study revealed that the rates of MMF, MDD, and MAD remained low in this study setting. Household socioeconomic status (wealth index, food security status, household income) and child age were found to be among the factors statistically significantly associated with complementary feeding practices indicators.

FULL TEXT

DETAILS

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The Reasons for Self-Medication from the Perspective of Iranian Nursing Students: A Qualitative Study

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ABSTRACT (ENGLISH)

Background. The prevalence of self-medication has increased dramatically worldwide. This study was conducted to determine the reasons for self-medication from the perspective of Iranian nursing students. **Methods.** This qualitative study was conducted using the content analysis method. Fifteen nursing students were selected by the purposeful sampling method. Data were collected by in-depth semistructured interviews. Qualitative content analysis method was used for data analysis. The MAXQDA software was used for data management. **Results.** Data saturation was achieved with fifteen interviews with nine women and six men, with a mean age of 26.5 ± 4.8 years. The reasons for self-medication were explained in five categories and fifteen subcategories. Some of the reasons for self-medication were having medication information, having previous experience, easy access to medicine, lack of enough time, access to medical staff, cost of a doctor's visit, inadequate respect for patient privacy, pharmaceutical advertising in the media, and information explosion. **Discussion.** Several factors are involved in self-medication. Given the dangers of self-medication, health policymakers must adopt strict policies for pharmacies that sell drugs without a

prescription. Furthermore, it is helpful to run training courses on self-medication risks for students.

FULL TEXT

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1. Introduction

Self-medication refers to the use of one or more medications without a physician's prescription [1]. It is one of the health problems in many countries, including Iran [2]. It has been viewed as one of the main social issues on economic and health systems with variety in prevalence based on contextual determinates such as education level, knowledge, income, and gender [1, 2]. The prevalence of self-medication has increased dramatically worldwide. Evidence suggests that about 80% of all medications in developing countries can be bought without prescriptions [3]. Self-medication, due to its lower cost, is a substitute for people who cannot afford proper medical care [4]. Today, the arbitrary use of drugs is increasing among the young people, especially students, and the probability of self-medication is greater among nursing students because of their easy access to information sources and their relative familiarity with different drugs [5]. Evidence suggests that the prevalence of self-medication is relatively high among medical science students in different countries. In this regard, the prevalence of arbitrary drug use has been reported to be 78.6% in India, 76% in Brazil, 78.5% in Jordan, 97.5% in Kuwait, and 70.1% in Iran [1, 6–9]. Major problems associated with self-medication include adverse drug reactions, drug resistance, waste of resources, and serious health risks such as death [1, 10]. There is also the possibility of incorrect treatment due to misdiagnosis of the disease [4]. There are numerous reasons for self-medication. In this regard, the results of a study in Ethiopia showed that previous experience, access to pharmacies, family pressure, and availability of medications at home were among the reasons for self-medication in medical science students [10]. The mildness of the disease and previous knowledge about medications are among other reasons for self-medication [2, 3, 11]. The results of a study in Bangladesh showed that education and socioeconomic status had a great impact on self-medication [12]. Most studies conducted on the reasons for self-medication from the perspective of students are quantitative. As self-medication is largely related to the subjective factors, qualitative methods such as surveys can identify the individuals' experiences and rationales that otherwise cannot be determined by quantitative methods [13]. Therefore, due to the lack of knowledge on the reasons for self-medication in nursing students, this study was conducted to explain the reasons for self-medication from the perspective of nursing students.

2. Methods

2.1. Design

The conventional qualitative content analysis approach, based on the Graneheim and Lundman's method, was used to undertake this qualitative research [14].

2.2. Participants and Sampling Method

The sample consisted of 15 undergraduate and graduate nursing students who were recruited by purposive sampling. To increase the richness of the data, and in line with the rigor principles, the participants were selected from both sexes, different age groups, and undergraduate and graduate students. The inclusion criteria consisted of having a history of self-medication, consent to participate in the study, and employment in the field of nursing. It should be noted that the samples of this study included those who had a history of self-medication based on the results of a cross-sectional study on the prevalence of self-medication [2] and expressed their consent to participate in future studies by providing e-mail and phone number. Sampling was carried out until the data were saturated.

2.3. Setting

This study was performed at Imam Reza Hospital Complex in Kermanshah, Western Iran.

2.4. Data Collection

The data were collected by semistructured interviews. The interviews were conducted in the researcher's room, located in Imam Reza Hospital Complex. The researcher began the interview with guiding questions like "What are your reasons for self-medication?" and "What factors prevent you from visiting a doctor?" The researcher then used

phrases such as why, how, and please explain more to clarify the issue. All interviews were recorded by using an audio recorder. Each interview lasted 30–50 minutes. Interviews were continued until data saturation was accomplished. Data saturation occurs when adding an interview does not produce any new information [15]. In the fifteenth interview, the data were saturated. Interviews were conducted by the first author, a woman with a master's degree in nursing and 18 years of clinical and educational experiences.

2.5. Data Analysis

Data analysis and collection were performed simultaneously. After each interview, the participants' statements were transcribed and then fed into the MAXQDA-2013 software [16]. This software was used for initial data coding. The texts of the interviews were then read several times. Meaning units were then extracted, condensed, and labeled. At this stage, the subcategories were emerged. In the next step, the categories were determined based on differences and similarities [17]. The classification of primary codes and their relationship with new data and the formation of subcategories and categories were carried out by the research team on a regular basis. To confirm the coding process, the codes, categories, and subcategories were provided to four nursing students, who approved them.

2.6. Trustworthiness

Denzin and Lincoln have proposed four criteria of credibility, transferability, dependability, and confirmability for assessing interpretive research [18], which were used in this study. To increase the credibility of the data, the researcher tried to convey the feeling of comfort and security to the participants, so that they could easily talk about and explain the reasons for self-medication. Moreover, the texts of interviews were shared with the participants for more certainty. To enhance the transferability of the results, the phenomenon of self-medication was thoroughly investigated, and the participants' characteristics such as age and sex were described. The results of this study were also given to four students, including two undergraduate and two graduate students to compare with their experiences in order to confirm the codes, subcategories, and categories. To increase the dependability of the data, all stages of the study were described step by step to be easily verified during external auditing. To increase the confirmability of the data, some of the interviews and transcriptions along with the coding were provided to two research colleagues who were expert in qualitative research and were not part of the research team in order to confirm the accuracy of the coding process.

2.7. Ethical Considerations

The Ethics Committee of Kermanshah University of Medical Sciences approved the study. The objectives of the study were explained to all participants, and informed written consent was obtained from all of them. Participants were reassured about the anonymity and confidentiality of their personal information. To protect anonymity, participants' identical information was coded in written documents as well as when sent to other researchers and external audit. The audio files were also saved by the corresponding author in a file with a username and password. In addition, the personal information of the participants is not mentioned in the paper, and this data will be protected forever by the corresponding author.

3. Results

The mean age of the participants was 26.5 ± 4.8 years. Seven of them were undergraduate students and eight of them were postgraduate students. Furthermore, nine of them were female and six were male. After analyzing the data, five main categories and fifteen subcategories were developed. The main categories included individual factors, economic factors, physician-related factors, culture, and media impact (Table 1).

Table 1

Categories and subcategories related to the nursing students' perspectives about the reasons for self-medication.

Categories	Subcategories
Individual factors	Having medication information

Having previous experience	Easy access to medicine
Not having enough time	Access to medical staff
Not taking the disease seriously	-
Economic factors	Cost of a doctor's visit
Cost of paraclinical services	Travel cost
-	
Physician-related factors	Crowded doctors' offices
Inadequate respect for patient privacy	Doctors' low-quality visit
-	
Cultural factors	Acceptance of self-medication in society
-	
Media impact	Pharmaceutical advertising

4. Individual Factors

In the present study, the individual factors related to self-medication were expressed in six subcategories, including "having medication information, having previous experience, easy access to medicine, not having enough time, access to medical staff, and not taking the disease seriously."

4.1. Having Medication Information

All participants considered their field of study one of the reasons for self-medication and believed that they were familiar with illnesses and medications through their nursing education. They also believed working with physicians and clinicians increased their awareness of the treatment of many illnesses. One of the participants in this regard stated *"My field of study affects my self-medication because I study extensively. Also, as we work with physicians, we use their experiences"* (participant no. 4).

Another participant said *"Nursing students are familiar with a variety of diseases and medications, and this is one of the reasons for self-medication. Passing four credits of pharmacology in the first semester is effective in self-medication"* (participant no. 14).

4.2. Having Previous Experience

Having a positive or negative previous experience of self-medication is an important factor in performing self-medication. This experience can be related to the person or his/her friends and relatives.

"When I go to a doctor for a particular problem and receive certain medications, I use the same medications next time I develop the same problem and have the same symptoms" (participant no. 15).

".... if my friends or relative who have the same symptoms recommend me to use certain medications, I will use them because I know that they have used them before and have become well" (participant no. 2).

4.3. Easy Access to Medicine

The sale of medication by pharmacies without a doctor's prescription is one of the main reasons for self-medication. Unfortunately, some pharmacies provide the requested medication to clients without informing them about the risks of self-medication.

A participant in this regard stated *"One of the reasons for self-medication is easy access to medicine in the pharmacy"* (participant no. 8).

Another interviewee commented *"The availability of medications affects self-medication, and currently the sale of over-the-counter medication is excessive. When medications are available, people may easily buy and take them on others' recommendation"* (participant no. 5).

4.4. Not Having Enough Time

Nursing students have an intensive curriculum from morning to evening and do not have enough time to visit a doctor or go to a medical center, so they may opt for self-medication.

One of the participants said:

"I attend classes from morning to evening, and if I get sick, I do not have a chance to see a doctor" (participant no. 1).

"Many doctors are in the office until 8 pm, and it is closed when I get to the office from school" (participant no. 12).

4.5. Access to Medical Staff

One of the reasons that can play a role in self-medication is the presence of a nurse or doctor among the family members, friends, and relatives. However, these doctors and nurses may be consulted due to their knowledge of various diseases.

"My friend is a specialist. Whenever I have a question about the treatment of a certain disease, I ask him" (participant no. 5).

4.6. Not Taking the Disease Seriously

A person's attitude toward health is effective in his/her treatment process. Unfortunately, someone who does not value his/her health does not take his/her illness seriously and tries to self-medicate.

"Some students do not take their illness seriously and therefore try to self-medicate" (participant no.3).

"Some do not take their illness seriously at all and try to treat it arbitrarily" (participant no. 5).

5. Economic Factors

There is a close relationship between economic status and the desire for self-medication. Inadequate economic situation can be the basis of self-medication, which was mentioned in the statements of all participants. This category included the subcategories cost of a doctor's visit, cost of paraclinical services, and cost of travel.

5.1. Cost of a Doctor's Visit

In Iran, some doctors do not have an insurance contract, and the patient has to pay for the visit out of pocket. However, for those doctors who have a contract with insurance companies, their visit costs a significant amount. For this reason, they preferred to treat themselves rather than to see a doctor.

"The cost of a doctor's visit is very high and my income is limited, this prevents me from visiting a doctor, and I have to do self-medication" (participant no. 4).

"Many doctors do not have insurance contracts, and we have to pay all the cost for the visit out of our own pocket, which is a significant amount" (participant no. 2).

5.2. Cost of Paraclinical Services

Sometimes laboratory tests and radiographic examinations are needed to make a medical diagnosis, which are expensive. Some participants stated that in addition to the cost of visit, they also have to pay for paraclinical services; therefore, they do not go to see a doctor and do self-medication instead. One of the participants stated:

"Many doctors do laboratory and radiology studies such as ultrasonography to diagnose the disease, which costs me a lot as a student" (participant no. 1).

"It's not just the visit cost, laboratory tests, radiography, and ultrasound are also too costly" (participant no. 11).

5.3. Travel Cost

The cost of commuting to doctors' offices or medical centers is high, which can lead to patients' use of self-medication. One participant stated: *"Someone who goes to the doctor is forced to travel across the city and spend lots of money on transport"* (participant no. 13).

Another participant said: *"I have to spend time and pay for travel expenses to visit a doctor, I do self-medication for*

simple illnesses instead" (participant no. 9).

6. Physician-Related Factors

Self-medication was found to be partly associated with doctors. It included subcategories crowded doctors' offices, inadequate respect for patient privacy, and doctors' low-quality visit.

6.1. Crowded Doctors' Offices

The crowded doctors' offices and medical centers were another factor that was mentioned by the participants.

"It takes several months to visit some specialists, and the patient has no choice but to self-medicate" (participant no. 3).

"Many doctors' offices are so crowded that I have to wait for hours, so I have no choice but to self-medicate" (participant no. 7).

6.2. Inadequate Respect for Patient Privacy

Patient privacy should be a physician's priority, but some participants believed that this was not the case in some physicians' offices.

"I used to have too much acne, so I went to a skin clinic. When I arrived, students encircled me and I felt very bad. I felt like a lab mouse. It was very unpleasant for me; such things make you do self-medication" (participant no. 9).

"In some doctors' offices, a secretary sends two or three patients to the doctor's room at the same time! How am I supposed to talk about my sexual organs in front of others? These make the patient self-medicate rather than go to visit a doctor" (participant no. 10).

6.3. Doctor's Low-Quality Visit

Clinical examination is an important part of the diagnosis process. Some participants believed that some physicians do not examine the patient at all and only rely on a variety of expensive tests and high-resolution imaging for diagnosis. This factor leads to patients' reluctance to visit a doctor, so they perform self-medication.

"Some physicians only take into consideration the patient's complaints and do not examine him/her" (participant no. 8).

Another participant stated *"Some physicians prescribe a comprehensive set of tests and imaging in the first visit and do not perform any physical examination, which is an important part of medical practice"* (participant no. 6).

7. Cultural Factors

Another factor that contributed to the participants' self-medication was culture. This category was mentioned by the participants and included a subcategory entitled acceptance of self-medication in society.

7.1. Acceptance of Self-Medication in Society

Self-medication is closely related to the culture of society. In the Iranian society, self-medication is common and accepted, and a significant proportion of Iranians think that medicine is needed for any particular disease. Others think that the other persons' disease is similar to theirs; therefore, they arbitrarily take the same drugs.

"In society, if someone gets sick, he/she first seeks treatment from friends and acquaintances, and people not only do not have a bad attitude toward this type of behavior, but also recommend various treatments to him/her" (participant no. 3).

"Unfortunately, self-medication is a socially accepted behavior, and people who recommend medication to others are considered literate" (participant no. 7).

8. Media Impact

All participants repeatedly mentioned the role of mass media in promoting the phenomenon of self-medication. This category included two subcategories entitled pharmaceutical advertising and information explosion.

8.1. Pharmaceutical Advertising

Mass media have a profound effect on the members of society, but they are like a double-edged sword that can either make the public aware of the dangers of self-medication or take steps to spread the ominous phenomenon of self-medication by distributing the advertisements of various pharmaceutical companies.

"Satellite networks, newspapers, and magazines play an important role in encouraging people to use a variety of chemical and herbal remedies for weight loss, height growth, and so on" (participant no. 2).

8.2. Information Explosion

Today, information explosion is occurring in all fields, including medical knowledge. A simple search on Google can yield a large amount of information about various diseases and their treatments. All participants reported they had easy access to medical information through the media, especially the Internet.

"When I get sick, I go online and search my illness, and according to the symptoms, I take medications" (participant no. 8).

9. Discussion

The purpose of this study was to explain the reasons for self-medication from the perspective of Iranian nursing students. The results showed that one of the reasons for self-medication was related to individual factors, including having medication information, having previous experience, easy access to medicine, not having enough time, access to medical staff, and not taking the disease seriously. Previous studies have reported reasons such as previous self-medication experience [2, 9, 19–21], availability of drugs [2, 10, 22–24], having sufficient medical knowledge [2, 9, 25–27], lack of time [2, 24, 28], access to medical staff [2], and non-seriousness of the disease [2, 24] for self-medication. However, it should be noted that there is a possibility of misdiagnosis by students that can exacerbate the risks of self-medication [4].

Another reason for self-medication from the perspective of participants was economic factors. In this regard, the participants mentioned reasons such as cost of a doctor's visit, cost of laboratory tests, and transportation cost, which are in line with previous studies [2, 20, 29–31]. Students are financially dependent on their family and may not be able to pay for their treatments, which is a great incentive for self-medication.

Another reason for self-medication was related to the physicians. In this regard, the participants noted reasons such as crowded offices, lack of patient privacy, and poor quality of visits. Previous studies have also reported reasons such as distrust in the physician's diagnosis [25, 32, 33], crowded physicians' offices [4, 9, 33], and lack of attention to patient privacy [2, 34, 35].

Cultural reasons for self-medication were also reported by the participants, which included the subcategory of acceptance of self-medication in society. The belief in the indiscriminate use of various medicines as well as the safety of self-medication is rooted in the culture of the society. In this regard, evidence indicates that the cultural context is one of the reasons for self-medication [12, 36]. The results of a systematic review showed that the main reasons for self-medication with antibiotics in the Middle East were sociocultural factors and economic reasons [21].

9.1. Study Limitation

Due to the impact of various factors, including cultural, social, and economic, on self-medication, the generalizability of the results is limited.

10. Conclusion

The results showed that social media such as the Internet and satellite play a role in self-medication, and following drug advertisements and online information can be dangerous. Mass media play an important role in promoting public health by institutionalizing the culture of visiting a physician instead of performing self-medication. Given the dangers of self-medication, the health policymakers must adopt strict policies for pharmacies that sell over-the-counter drugs. Developing training programs to change nursing students' attitudes toward self-medication can also be helpful. Similar studies are recommended to be conducted on students of different disciplines. However, self-medication is a common issue among nursing students and should be tailored to suit any context. In this regard, researchers can examine the effects of intervention measures on the students' self-medication rate by considering the reasons for self-medication.

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DETAILS

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Perceived Caregiver Strain, 3- and 18-Month Poststroke, in a Cohort of Caregivers from the Life after Stroke Trial (LAST)

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ABSTRACT (ENGLISH)

Aim. To gain more knowledge of caregiver strain in the Life After Stroke Trial (LAST) population. **Methods.** This is a substudy of the LAST study, including all caregivers' reports of perceived Caregiver Strain Index (CSI) at inclusion and 18-month follow-up irrespective of group allocation. The checklist “STROBE Statement—Checklist of items that should be included in reports of cohort studies” was used. Caregivers to adults (age ≥18 years), here defined as the person living with, a patient with a first-ever or recurrent stroke, community dwelling, with modified Rankin Scale (mRS) <5 and no serious comorbidities, was invited to fill out the Caregiver Strain Index at three months (10–16 weeks) poststroke. Domains indicating differences of change in perceived strain in the total sample were analyzed in a linear regression analysis. **Results.** Caregiver strain ($n=147$) varying from 5% to 27% was reported by the caregivers at baseline and between 2% to 18% at 18-month follow-up. The items indicating the highest level of strain at baseline and 18 months were as follows: “Care giving is confining,” “There have been changes in personal plans,” “There have been emotional adjustments,” and “I feel completely overwhelmed.” The samples were divided into age groups 0–79 years and 80–100 years, indicating a higher strain on the caregiver for persons 80–100 years at 18 months. **Conclusion.** Caregiver strain was relatively low both at baseline and at 18-month follow-up. Main caregiver strains were reported in terms of a sense of confinement, a tendency of emotional strain, and the altering of plans at both time points. Depression was one of the main explanatory factors for the perceived caregiver strain. The perception of caregiver strain was higher in age groups 80–100 years than age groups 0–79 years.

FULL TEXT

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1. Introduction

Most of the long-term care for chronically disabled elders is provided by informal caregivers. Caregiving has been recognized as an activity that both confers perceived benefits and produces caregiver strains. The caregiver strain is a complex construct, usually defined by its impact and consequences for the caregiver [1]. It can be an important way of coping with stress, contributing to “meaning-based coping” by the caregiver [2]. But informal caregivers, family members, friends, or neighbors, are unpaid individuals who may provide as much as 90% of the in-home long-term care without compensation [3]. For many caregivers, caregiving is a job that is stress filled, overwhelming, and isolating. Emotional, psychological, physical, and economic impacts of caregiving have been used to define and assess caregiver strain [1]. Caregivers may be prone to depression, grief, fatigue, and changes in social relationships and/or, experience physical health problems of their own [4].

Caregiver strain has been broadly classified into two categories: objective and subjective caregiver strains [5]. Objective caregiver strain refers to its physical effect on the other household members for day-to-day tasks they undertake for the “patient,” such as the time invested by the caregiver on helping, supervising, and feeding him or her [6]. It also includes their experiences of family disturbance and relationship problems, and loss of employment and/or leisure because of the caregiving tasks [7].

The perceived subjective caregiver strain relates to the psychological, social, and emotional impacts that caregivers may experience [8]. Experiences of changes of roles, feelings of guilt, shame, embarrassment, and self-blame in families of people with chronic illness have been revealed in several studies [9–11].

The perceived caregiver strain is universal, independent of the type of chronic disease. However, stroke caregivers have to cope with variable levels of cognitive deficits and/or physical disability that imply considerable objective and subjective caregiver strain [12]. In addition, stroke caregivers are possibly older persons and may be experiencing challenges in their own health [13], which cause levels of anxiety and depression above normal [14].

Despite this knowledge, little attention is paid to caregivers of persons with stroke [15] and the phenomenon of being an informal caregiver to a home-dwelling family member suffering from stroke is little explored.

The aim of this substudy was to gain more knowledge of caregiver strain including the caregiver’s perception of domains of strain poststroke.

2. Materials and Methods

This is a substudy of the Life After Stroke Trial (LAST) study of caregiver strain [16]. The LAST study was a multicentre, pragmatic, single-blinded, randomized controlled trial performed at two centres in Norway (Trondheim University Hospital and Bærum Hospital), in close collaboration with the primary healthcare service in the municipalities of Trondheim, Asker, and Bærum to evaluate a longitudinal follow-up of coaching and physical activity, and details of this randomized controlled trial are provided in reference [16].

The results of this trial were neutral, so this substudy entails all caregivers irrespective of group allocation. The material was analyzed as one sample of caregivers. Caregiver strain was evaluated with a questionnaire screening at two time points at 3- and 18-month poststroke in the total cohort of caregivers. The STROBE Statement—Checklist was used (“STROBE statement Strengthening the reporting of observational studies in epidemiology”).

Ethical approval for the trial was granted by the Central Regional Committee for Medical and Health Ethics (REC no. 2011/1428).

2.1. Subjects

Caregivers to adults (age ≥ 18 years), here defined as the person living with, a patient with a first-ever or recurrent stroke, community dwelling, with modified Rankin Scale (mRS) < 5 and no serious comorbidities, was invited to fill out the Caregiver Strain Index at three months (10–16 weeks) poststroke. Data were collected indirectly, and questionnaires have been delivered to caregivers, husbands, or wives, if they met with their partner at test, both at

inclusion and at 18 months follow-up. Alternatively, it was sent with the participant for delivery at home with cohabitant caregivers. Answers were sent back in prepaid envelopes. Sex and marital status but no other descriptive data of the caregivers were recorded. Only data from respondents and the person with stroke are included in the analyses.

2.2. Baseline Characteristics

Baseline variables of the patient population were age, sex, and marital status. In addition, Barthel Index (BI), Modified Rankin Scale (mRS), Gait speed, six-minute walk test (6MWT), Hospital Anxiety and Depression Scale (HADS), and Mini-Mental State Examination (MMSE) were used to describe their functional, physical, cognitive, and emotional levels at baseline [16]. In addition, the caregivers were invited to fill out Caregiver Strain Index (CSI) at baseline and at 18-month follow-up, which is the outcome reported in this substudy.

2.3. Caregiver Strain Index

The Caregiver Strain Index (CSI) was developed in 1983 [17] and is an easy-to-use tool that can quickly screen for caregiver strain in long-term caregivers. The tool has 10 questions that measure different domains of strain related to care provision [17]. The replies are categorized as yes/1 and no/0 answers, for example: "I am going to read a list of things that other people have found to be difficult. Would you tell me whether any of these apply to you? Sleep is disturbed (e.g., because ...is in and out of bed or wanders around at night)" [18]. It may be used to assess individuals of any age who have assumed the caregiving role of an older adult. The internal reliability coefficient is reported for the CSI in 1983 (0.86), as well as a cutoff score of 7 or more positive items, indicating higher levels of stress underpinning the need for further assessment [17]. Minimal detectable change is reported as ± 2.8 [19]. The Caregiver Strain Index has been reported to be reproducible, but only moderately responsive, when measuring caregiver strain perceived by caregivers of stroke patients [17, 19].

2.4. Analysis

Descriptive data of the persons with stroke whose caregivers answered the Caregiver Strain Index are presented as mean (SD), frequencies, and percentages. Caregivers' perceived caregiver strain is presented in frequencies and percentages.

Domains indicating differences of change in perceived strain in the total sample were further analyzed in a linear regression analysis. The items were entered as dependent factors, with age, sex, BI, 6MWT, HADS-D, and mRS as independent factors. The independent variables were tested individually for their associations and included in the multiple linear regression analysis if they reached the predefined statistical levels of $p < 0.2$. Residuals of the regression models were tested for normality using the Shapiro–Wilks test. The alpha level was set to $p < 0.05$.

3. Results

Table 1 lists the characteristics of the patient population divided into groups of perceived strain at both 3 and 18 months, as well as dropouts. Total CSI forms received at baseline were 269 and 174 at 18-month follow-up, with a total of 147 completing CSI at both baseline and 18 months. The majority answering the questionnaire were caregivers of male stroke participants at baseline ($n = 161$, 60%) and 18 months ($n = 106$, 61%). The respondents were cohabiting/married to the person with stroke and of approximately the same age (Table 1).

Table 1

Baseline demographic and clinical characteristics in mean (m) and standard deviation (SD). In persons with stroke divided into groups of reported change in Caregiver Strain Index (CSI), in frequencies (n) and percentages (%), between 3 and 18 months.

	Improved ($n = 7$)	Minor/no difference baseline/18 mo ($n = 130$)	Deteriorated ($n = 10$)	No data CSI ($n = 233$)
Age (m; SD)	67.3 (9.6)	70.9 (10.5)	73.2 (10.1)	72.7 (11.7)

Gender females/males (<i>n</i> , %)	2 (29%)/5 (71%)	51 (39%)/79 (61%)	5 (50%)/5 (50%)	91 (39%)/142 (61%)
Civil status single/cohabitant (<i>n</i> , %)	3 (43%)/4 (57%)	36 (28%)/94 (72%)	2 (20%)/8 (80%)	65 (28%)/168 (72%)
Barthel Index (m; SD)	94.29 (6.1)	96.87 (7.64)	95.5 (6.4)	95.2 (8.9)
Barthel Index 18 mo (m; SD)	96.43 (4.8)	96.56 (9.86)	87.48 (19.0)	84.66 (30.9)
6MWT ¹ baseline (m; SD)	457.5 (55.1)	445.93 (147.2)	352.5 (178.4)	389.23 (153.4)
6MWT 18 mo (m; SD)	453.20 (115.2)	455.16 (124.8)	379.0 (187.8)	361.29 (198.8)
Gait speed baseline m/s (m; SD)	1.22 (0.6)	1.48 (0.6)	1.46 (0.6)	1.25 (0.5)
Gait speed 18 mo m/s (m; SD)	1.57 (0.7)	1.48 (0.6)	1.23 (0.6)	0.81 (0.7)
MMSE ² baseline (m; SD)	26.86 (2.9)	28.12 (2.3)	28.1 (2.1)	27.9 (2.3)
MMSE 18 mo (m; SD)	28.7 (1.9)	27.97 (2.5)	26.6 (5.5)	27.4 (3.6)
HADS ³ baseline (m; SD)	3.0 (2.3)	2.55 (2.6)	4.22 (5.3)	3.69 (3.1)
HADS 18 mo (m; SD)	2.86 (3.6)	3.0 (2.82)	5.8 (5.9)	3.81 (3.0)
TMT-A ⁴ baseline s (m; SD)	61.5 (33.5)	57.58 (28.6)	92.5 (60.0)	64.53 (36.9)
TMT-B ⁵ baseline s (m; SD)	2.86 (3.6)	143.92 (70.4)	196.83 (95.8)	138.51 (77.4)
TMT-A 18 mo s (m; SD)	51.29 (23.1)	63.31 (42.4)	72.56 (54.5)	62.2 (36.8)
TMT-B 18 mo s (m; SD)	154.57 (92.3)	140.06 (76.9)	122.80 (54.1)	125.09 (68.5)
mRS baseline (m; SD)	1.3 (1.3)	1.34 (1.1)	1.57 (1.4)	1.51 (1.1)
NIHSS ⁶ total baseline	1.2 (1.6)	1.5 (2.5)	1.5 (1.6)	1.5 (2.2)

¹6MWT=6 minute walk test, ²MMSE=minimal mental status evaluation, ³HADS=hospital anxiety and depression scale, ⁴TMT-A=trail making test A, ⁵TMT-B=trail making test B, ⁶NIHSS=the national institutes of health stroke scale. mo, months.

Caregiver strain (*n*= 147) was reported as low as 5% (answering “yes, financial strain”) and up to 29% (“I feel

completely overwhelmed”) by the caregivers at baseline (Table 2) [17]. The items indicating the highest level of strain at baseline were as follows: “Caregiving is confining” (24%), “There have been changes in personal plans” (27%), and “There have been emotional adjustments” (26%) and “I feel completely overwhelmed” (29%). At 18-month follow-up, the same tendency remained but now varying with a slightly lower perception of caregiver strain with 2% “yes” answers (“Caregiving is a physical strain”) to 18% (“I feel completely overwhelmed”) (Table 2). Items indicating most strain at this time point were as follows: “There have been changes in personal plans” (15%), “There have been emotional adjustments” (17%), and “I feel completely overwhelmed” (18%). In general, CSI scores indicated no change/less perceived strain from baseline to 18 months (Table 3). Twelve percent of the participants had a minimal detectable change ± 2.8 of total score, of which 6% was a change for the better (19).

Table 2

All reported answers of Caregiver Strain Index (CSI) items at baseline 3 and 18-month follow-up. The yes/no answers are reported in frequencies (*n*) and percentages (%). In addition, a total score of more than 7 positive answers is reported reflecting a high burden of caregiver strain.

CSI items	Baseline 3 months	18 months
My sleep is disturbed	(<i>n</i> =269)	(<i>n</i> =175)
Yes	42 (16%)	20 (11%)
No	227 (84%)	155 (89%)
Caregiving is inconvenient	(<i>n</i> =266)	(<i>n</i> =170)
Yes	32 (12%)	14 (8%)
No	234 (88%)	156 (82%)
Caregiving is a physical strain	(<i>n</i> =264)	(<i>n</i> =174)
Yes	12 (5%)	4 (2%)
No	252 (95%)	170 (98%)
Caregiving is confining	(<i>n</i> =266)	(<i>n</i> =174)
Yes	63 (24%)	23 (13%)
No	203 (76%)	151 (87%)
There have been family adjustments	(<i>n</i> =266)	(<i>n</i> =172)
Yes	41 (15%)	17 (10%)
No	225 (85%)	155 (90%)

There have been changes in personal plans	(n= 265)	(173)
Yes	72 (27%)	26 (15%)
No	193 (73%)	147 (85%)
There have been other demands on my time	(n= 267)	(n= 173)
Yes	46 (17%)	12 (7%)
No	221 (83%)	161 (93%)
There have been emotional adjustments	(n= 264)	(n= 174)
Yes	69 (26%)	29 (17%)
No	195 (74%)	145 (83%)
Caregiving is a financial strain	(n= 267)	(n= 174)
Yes	15 (6%)	7 (4%)
No	252 (94%)	167 (96%)
I feel completely overwhelmed	(n= 266)	(n= 172)
Yes	78 (29%)	31 (18%)
No	188 (71%) (n= 242)	141 (82%) (n= 122)
(i) Total score of 7 positive answers	n= 10 (4%)	n= 15 (12%)

Table 3

Caregivers divided into groups, based on level of perceived strain, and comparisons of change in Caregiver Strain Index domains between 3 and 18 months, in frequencies (n) and percentages (%).

	Improved	No/minor change	Deteriorated
My sleep is disturbed n= 147	7 (4.8%)	130 (88.4%)	10 (6.8%)
Caregiving is inconvenient n= 140	12 (8.6%)	121 (86%)	7 (5%)
Caregiving is a physical strain n= 143	1 (0.7%)	140 (97.9%)	2 (1.4%)
Caregiving is confining n= 142	18 (12.7%)	115 (81%)	9 (6.3%)

There have been family adjustments <i>n</i> =140	9 (6.4%)	122 (87%)	9 (6.3%)
There have been changes in personal plans <i>n</i> =139	17 (12.2%)	111 (79.9%)	11 (7.9%)
There have been other demands on my time <i>n</i> =143	14 (9.8%)	127 (88.8%)	2 (1.4%)
There have been emotional adjustments <i>n</i> =142	12 (8.5%)	123 (86.6%)	7 (4.9%)
Caregiving is a financial strain <i>n</i> =143	4 (2.8%)	134 (93.7%)	5 (3.5%)
I feel completely overwhelmed <i>n</i> =142	27 (19%)	103 (72.5%)	12 (8.5%)
Total score <i>n</i> =142	36 (25%)	88 (62%)	18 (13%)

In this study, including 269 caregivers of persons with stroke, 40% were females (*n*=108) and 60% males (*n*=161) at baseline. One hundred and ninety-seven persons with stroke (*n*=197) were 0–79 years of age, 38% females (*n*=74) and 62% males (*n*=123) and (*n*=72) were ≥80 years of age, 34 women (47%), and 38 men (53%).

The sample divided into age 0–79 years and ≥80 years indicated a higher strain on the caregiver for persons ≥80 years, especially at 18 months (Table 4). The domains “Caregiving is inconvenient” both at baseline and 18 months, “Caregiving is confining,” and “There have been emotional adjustments” at 18 months indicated a perceived higher strain in the caregiving (for a person ≥80 years of age). In addition, financial strain in the same group showed a tendency to increase, at the 18-month follow-up. When divided into gender groups, female caregivers for persons with stroke ≥80 years reported worse sleep at baseline and 18 months. Male caregivers reported higher emotional strain in persons with stroke ≥80 years at baseline and 18 months.

Table 4

All answers of the Caregiver strain index (CSI) at baseline and 18-month (mo) follow-up in groups divided in age groups 0–79 years and >80 years, with yes/no answers in answer frequencies (*n*) and percentages (%).

	Baseline	18mo	Baseline	18mo
Items (<i>n</i> ; %)	Age 0–79 <i>n</i> =197	Age 0–79 <i>n</i> =139	Age ≥80 <i>n</i> =72	Age ≥80 <i>n</i> =36
–				
<i>My sleep is disturbed</i>				
Yes	29 (15%)	13 (9%)	13 (18%)	7 (19%)
No	168 (85%)	126 (91%)	59 (82%)	29 (81%)
–				
<i>Caregiving is inconvenient</i>				
Yes	18 (9%)	5 (4%)	14 (19%)	9 (26%)

No	176 (91%)	130 (96%)	58 (81%)	26 (74%)
–				
<i>Caregiving is a physical strain</i>				
Yes	9 (5%)	3 (2%)	3 (4%)	1 (3%)
No	186 (95%)	135 (98%)	66 (96%)	35 (97%)
–				
<i>Caregiving is confining</i>				
Yes	46 (24%)	12 (9%)	17 (24%)	11 (31%)
No	149 (76%)	126 (91%)	54 (76%)	25 (69%)
–				
<i>There have been family adjustments</i>				
Yes	26 (13%)	10 (7%)	15 (21%)	7 (21%)
No	168 (87%)	128 (93%)	57 (79%)	27 (79%)
–				
<i>There have been changes in personal plans</i>				
Yes	50 (26%)	16 (12%)	22 (31%)	10 (28%)
No	145 (74%)	121 (88%)	48 (69%)	26 (72%)
–				
<i>There have been other demands on my time</i>				
Yes	34 (17%)	9 (7%)	12 (17%)	3 (8%)
No	162 (83%)	128 (93%)	59 (83%)	33 (92%)
–				
<i>There have been emotional adjustments</i>				
Yes	53 (27%)	18 (13%)	16 (24%)	11 (69%)

No	143 (73%)	120 (87%)	52 (76%)	25 (31%)
–				
<i>Caregiving is a financial strain</i>				
Yes	9 (5%)	7 (5%)	6 (9%)	35 (100%)
No	188 (95%)	132 (95%)	64 (91%)	—
–				
<i>I feel completely overwhelmed</i>				
Yes	59 (30%)	24 (18%)	19 (27%)	7 (20%)
No	137 (70%)	113 (82%)	51 (73%)	28 (80%)

In terms of change between 3 and 18 months, two domains were reported significantly changed (Table 2) and were further analyzed in a regression analysis. In the domain, “there have been other demands on my time,” the main explanatory independent factor was depression (HADS-D, $\beta=0.212$, $p=0.01$) with $R^2=0.08$ at 18months. The second domain, “I feel completely overwhelmed,” the explanatory independent factors at baseline, 3 months, were age ($\beta=-0.235$, $p=0.001$), BI ($\beta=-0.153$, $p=0.0025$), 6MWT ($\beta=-0.166$, $p=0.003$) and HADS-D ($\beta=0.168$, $p=0.01$) with an $R^2=0.137$. At 18 months, HADS-D was the main explanatory independent factor ($\beta=0.196$, $p=0.019$) with $R^2=0.074$ for the same domain.

4. Discussion

In this sample of relatively highly independent persons with stroke, included 3-month poststroke, the caregiver strain, defined as >7 positive answers on total CSI, indicates a slight decrease in perceived caregiver strain over time in the total sample. The main domains of caregiver strain were an inconvenience, sense of confinement, tendency to need emotional adjustments, and altering of plans at both time points (Table 2). There was, however, a perception of higher strain in age groups ≥ 80 years of age, which is in line with earlier studies on the subject [13, 14].

The responses “Caregiving is confining” and “There have been emotional adjustments” both indicated higher strain in the assumed older caregivers than with the “younger” 0–79 years of age (Table 4). This may be related to the caregiver’s health, which may suffer due to not being able to (confining) maintain physical and psychological social interactions with “others” (participation) because of duties within the home and in relation to the person with stroke [20, 21]. It may also be an interaction with the persons with stroke’s worsening health/disability, since physical functioning in general deteriorated between baseline and 18-month follow-up [16, 22]. The tendency of emotional strain has been reported in caregivers of persons with stroke in terms of depression but also in terms of perceived quality of life [20]. The emotional strain in the caregivers has also been related to the level of disability of the person with stroke [20, 22].

In the acute and postacute stages, the tendency of total life crisis, both for the person with stroke and also for their next of kin, has been well described [11]. The last item “I feel completely overwhelmed” was reported relatively high at baseline and slightly less at 18 months, in line with those reports [12]. In addition, there was no difference between 0–79 years or ≥ 80 years of age, indicating that the global perception of a severe life crisis was present in the subacute phase but subdued over time (Table 2). The reason for this may be twofold: it may reflect that the persons with stroke were relatively high functioning and had no cognitive deficits (Table 1). Another reason may be that the municipal services are well developed in Norway, relieving financial and physical strains. This relatively low perception of caregiver strain may be a reflection of the fact that services for formal care are satisfactory for this

group of relatively high functioning persons with stroke and their caregivers [23].

However, there were tendencies for an increased caregiver strain with higher age in the 18-month follow-up, indicating a change for the worse, which may be related to both the person with stroke and their caregiver's health combined with general ageing (Table 4) [24].

The item "financial strain" was reported by 5% in the age group ≥ 80 years and 9% in the group 0–79 years at baseline, again perhaps mirroring a well-functioning welfare state with a functioning social security system for the majority [20]. On the other hand, at 18 months, the financial strain in the group ≥ 80 was reported to have increased (Table 4). This may indicate that those caregivers/persons with stroke encounter increased financial problems in a longitudinal perspective perhaps related to health issues and disability, which may lead to the reduced working capacity for both the person with stroke and their caregiver [20, 24].

Interestingly, the explanatory factor for the domains changing significantly for the worse in terms of perceived strain was depression in the person with stroke, in line with other studies [15]. Depression has also been related to the reported feelings of being overwhelmed and suffering emotional strain [12].

4.1. Limitations

There are several limitations to this substudy. First, the main study was a randomized controlled study but not a prospective cohort including all persons with stroke and their next of kin. The results can only be transferable to persons with stroke with the inclusion criteria of the trial and their married or cohabiting partners. The recruitment of caregivers was in most cases indirect via the person with stroke and the sample may not be representative for a general population of caregivers to persons with stroke. In addition, a relatively high drop-out rate of informants of caregiver strain was registered at 18 months, which makes it challenging to compare the findings from baseline and 18-month follow-up. Furthermore, any in-depth description of caregivers is lacking. However, the sample was large compared to other studies on the subject. The informants were recruited from urban areas, not representing the rural and more sparsely populated areas, which limits the generalizability of the results. The results may be indicative for groups with minor to moderately disabled persons with stroke and their partners and may serve as indicators for the needs in this group of caregivers.

5. Conclusion

In this sample of relatively independent persons with stroke, including 3 months poststroke, caregiver strain was relatively low both at baseline and at 18-month follow-up. Main caregiver strains were reported in terms of a sense of confinement, a tendency for emotional strain, and the alteration of plans at both time points. Depression was one of the main explanatory factors for the perceived caregiver strain. The perception of caregiver strain was higher in age groups ≥ 80 years than age groups 0–79 years.

5.1. Relevance to Clinical Practice

The items indicating the highest level of strain at baseline and 18 months were related to psychological adjustments ("Caregiving is confining" (24% vs. 13%), "There have been emotional adjustments" (26% vs. 17%), "I feel completely overwhelmed" (29% vs. 18%)), and practical issues ("There have been changes in personal plans" (27% vs. 15%)). This indicates a need for supportive psychological and practical services for caregivers during and after rehabilitation, which nurses have an opportunity to initiate to alleviate caregiver strain.

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DETAILS

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Living with Atrial Fibrillation: A Family Perspective

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ABSTRACT (ENGLISH)

Aim. The aim of this study was to obtain insights from patients and their family members on how families are living with atrial fibrillation. *Background.* Atrial fibrillation is the most common cardiac arrhythmia and is often described as an emerging global epidemic affecting an estimated 33.5 million people worldwide. Living with atrial fibrillation not only affects the patient but also may negatively influence family members' perceived health. The perspective of the family has previously been understudied, and more knowledge on how patients and their family members cope and adjust to life with atrial fibrillation may be helpful when developing future support for patients and their family

members when coping with atrial fibrillation. *Methods.* A qualitative phenomenological study with an inductive, descriptive research approach based on Giorgi's descriptive method was used. Data were gathered through 12 dyadic family interviews. The COnsolidated criteria for REporting Qualitative research checklist was followed while conducting the study. *Results.* Three major themes emerged: *emotional differences*, *changes in family life*, and *uncertainty about the future*. Atrial fibrillation had multiple effects on the family. Frequently, several adjustments and adaptations had to be made to accommodate life with atrial fibrillation. *Conclusion.* Patients with atrial fibrillation and their family members feel a need to talk about their emotions and worries. They required support and guidance to manage the challenges of living with atrial fibrillation. These results will be used in a family-focused intervention designed to support families in adjusting and managing their everyday lives with atrial fibrillation.

FULL TEXT

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1. Background

Atrial fibrillation (AF) is the most common cardiac arrhythmia and is often described as the new epidemic among heart diseases [1]. It is estimated that, in 2010, 33.5 million people had AF worldwide, with higher incidence and prevalence rates in the developed countries. This number is expected to increase [2]. AF is a complex disease, and its treatment requires a high degree of adherence to prevent complications [3, 4]. Patients may experience palpitations, dyspnoea, and chest pain, and the burden of symptoms often entails impairment of physical and mental performance and poor health-related quality of life [5]. Patients with AF may experience anxiety, feel that they receive too little support and self-management counselling, and often suffer from distress associated with unpredictable symptoms [6, 7]. Managing life with a chronic illness, such as AF, can be distressing not only for the patients but also for their family members [8–10]. In couples where AF is present, a common concern for the spouse is uncertainty related to limited knowledge about AF [11–13]. Patients with AF have also described how they struggle to regain balance, learning to live with a wide range of symptoms after having been diagnosed with AF [14]. Thus, most families need support and guidance in facilitating successful adjustments to cope with this illness [15, 16]. In addition, knowledge about how the family as a system and unit copes with AF in everyday life is lacking. Furthermore, patients and family members facing a chronic illness may have a need and a desire to talk about their beliefs. Typically, family members wish to be involved in the treatment and want information provided by health professionals [17]. Whereas earlier studies have focused mainly on treatment of patients with AF, the last decade has seen a growing interest in such patients' life trajectory after treatment for AF in general and how they experience living with AF in particular [18, 19]. The changes over time might have influenced the experiences of living with AF. Furthermore, studies focusing on the narrative of patients and their family members living with AF are sparse [20]. The present study will further our knowledge about how patients with AF and close family members view life with AF [21–24].

2. Aim

The aim of this study was to obtain insights from patients and family members about how families are living with AF.

3. Methods

3.1. Design

To explore the experiences of patients and their family members, we chose a qualitative study design using a phenomenological approach and an inductive, descriptive research method [25, 26]. Giorgi's descriptive qualitative approach is a way to approach phenomenology, and it is relevant for obtaining in-depth descriptions of lived experiences [27]. The task was to explore and describe objects of experience precisely as experienced by patients with AF and their family members [25]. Descriptive research is, following Giorgi, basic research that describes the phenomenon being focused on [27]. The family interviews were dyadic (two individuals or more), also known as joint interviews [22, 28]. This approach is used in healthcare research to produce data at a family level [22, 29]. Furthermore, dyadic interviews may be used to produce data on the effects of major disruptions caused by chronic

illness, not only for the sick person but also for their family members and interpersonal relationships [26]. Interviewing a patient and a family member may produce a beneficial synergistic effect, thereby revealing essential phenomena of the lived experiences of the family unit, which would not be uncovered through individual interviews [29]. Furthermore, we were not interested in identifying the variety of experiences but wished to produce family unit narratives according to the theory of family-focused nursing [30]. The COnsolidated criteria for REporting Qualitative research (COREQ) checklist was followed through developing, performing, and reporting the study [31].

3.2. Data Collection and Setting

Data were collected from February to June 2019 through dyadic family interviews with patients with AF. Patients were asked to bring somebody whom they considered to be a close family member [16]. The concept of family was defined as “*family is who they say they are*” [16]. This definition is rooted in the framework of family nursing. Therefore, it was the patient who defined which family member they would bring to the interview, and we did not distinguish between partners and other family members. We informed the patients that it was entirely up to them whom they chose to bring to the interview; it did not necessarily have to be their partner but could be a close friend or neighbour. Furthermore, we chose to limit the interviews to one patient and one family member who had a major role in the patient’s everyday life and with whom the patient felt comfortable sharing feelings and thoughts about AF [16]. Patients and families were recruited from an outpatient clinic in a university hospital department of cardiology in the Capital Region of Denmark. The estimated size of the AF population in the outpatient clinic is 400 annual patients with AF. In recruiting families, we used a purposeful sampling strategy to provide rich and varied data material, for example, differences in gender, age, and time since being diagnosed with AF in a family member with AF and the relationship between patient and family member. The inclusion criteria were Danish-speaking patients ≥ 18 years of age diagnosed with AF regardless of type and treatment. The exclusion criteria were chronic heart failure patients and patients with severe comorbidities. Patients were approached when they met for appointments where nurses from the clinic identified eligible patients and family members accordingly to the inclusion and exclusion criteria. During the recruitment period, 32 patients were asked to participate in the study. Twenty patients declined due to working, not having a family member, or not being interested. However, the recruited patients and the family members represented the variety of the population of the families in the outpatient clinic.

The dyadic family interviews were planned to continue until it was possible to uncover a deeper understanding of the phenomenon of interest, which often occurs with a sample of five to 20 informants [32]. A semistructured interview guide based on a literature search focused on a few broad questions guiding the family interview. The interview guide was only used as inspiration, and the interviewer was always open to any description of the phenomena that could emerge during the interview. The role of the interviewer was to facilitate a situation that would make the patients and their family members reflect upon living with AF and share their experiences through a mutual narrative in order for the researcher to obtain an in-depth understanding of the phenomenon. The family interviews were approached with open questions to stimulate descriptions: “*Can you describe how it is for you to live with one in the family having AF?*” “*How is your everyday life with AF?*” “*How are feelings about AF expressed in your family?*” “*What is important for you to manage everyday life with AF in the family?*” During the interview, the interviewer was aware of both the patient and the family member, and the interview questions were directed towards both by phrasing the questions in a way that allowed both the patient and the family member to describe how they experienced living with AF. This strategy was adopted to obtain insights from the family as a unit by having both parties describe what living with AF was like.

As we had no prior history with the families, the interviewer made a genogram at the beginning of each interview, as recommended by Wright and Leahey [16], to obtain a sense of the family structure. No additional exploration was made as to how the genogram could have added further insights into the family since only one interview was conducted with each family.

The interviews took place according to patients and families’ preferences, either in their own homes or in the hospital in a private room a few days after they consented to participate. The interviews were audiotaped and transcribed verbatim by the first author and three nursing students. All transcripts were stored and analysed in Nvivo12 PRO.

Before interviewing the families, the first author, who conducted the interviews, underwent a preunderstanding exam in a peer interview, which revealed experiences of family members with worries that were rarely in focus in the consultations with healthcare professionals, the latter being mainly focused on the medical aspects of AF. The preunderstanding interview was conducted to ensure a nonjudgemental format for conducting the interviews and to ensure trustworthiness by allowing the researcher to use what phenomenology calls “bracketing,” where one’s own beliefs about a phenomenon are temporarily suspended in an attempt to avoid influencing both the collection and the interpretation of the data [25]. Total bracketing is impossible in practice, but by being conscious of one’s preconceptions, it is possible to keep experiences and prejudices at a distance [32].

3.3. Data Analysis

A qualitative methodological approach employing Giorgi’s phenomenological method was used to analyse data following four steps [25, 26]. The first step focused on gaining an overall sense of the family unit, using the genograms and notes taken with the families during the interviews, listening to the audiotaped recordings, and reading the entire material several times. The researcher used his/her intuition about and reflection on each transcript. In the second step, “*meaning units*” were identified from the text. Meaning units are small parts of the text that are explicated where a phenomenon emerges. The third step involved regrouping and redescribing statements that were relevant for the meaning units, also focusing on the dyadic narrative of awareness, unawareness, togetherness, and separateness in living as a family with AF [22]. In the fourth and last step, an exemplary narrative was made into a single general analysis, which integrated and synthesised the common and essential aspects of the phenomenon, named themes [26, 27]. The process of analysing data was made in steps 1–3 by the first and fourth authors, who created the preliminary analysis, and disagreements were discussed until an agreement was reached. Step 4 involved the second and fourth authors, who are a senior researcher and a professor, respectively, with expertise in qualitative research. The whole team discussed the essence of the phenomenon until all agreed, thereby enhancing the credibility of the analytical process. The research team agreed to stop including participants because the interviews did not yield new data, no new themes occurred, and the phenomenon was deemed to have been captured sufficiently [33].

3.4. Ethical Considerations

All participants received written and oral information about the study, and written informed consent was obtained according to the Helsinki Declaration [34]. Participation was based on willingness, and the participants were informed that data would be safely stored on an encrypted drive and that their identities would be protected when reporting the research findings. Fictitious names were used in the transcribed data. The study was approved by the Danish Data Protection Agency (VD-2019-42) and the local ethical committee (ID: 19007769).

3.5. Findings

Four interviews were held in the patients’ homes, and eight interviews were conducted in a private room at the hospital. The interviews lasted between 35 and 85 minutes (mean 55min). Seven women and five men had AF with a mean age of 66 years (range 49–86 years). The family members included seven women and four men, with a mean age of 64 years (range 49–79 years). The family members were primarily spouses (50%). However, one was a sister, one was a daughter, two were male friends, and one was a female friend who accompanied the patient instead of the husband (Table 1). All patients were interviewed with a family member, except for one, who had to cancel the family interview the same day due to commuting issues. Data from the patient interviewed alone were included in the analysis. The point of data saturation was reached after twelve family interviews had been conducted.

Table 1

Characteristics of patients and family members.

	N	Mean (years) (range)

Patients	12	
Female	7	
Male	5	
Age		66 (49–86)
Family members	11	
Spouse	6	
Male friend	2	
Sister	1	
Female friend	1	
Daughter	1	
Without a family member	1	
Age		64 (49–79)
Years since being diagnosed with *AF		3.2 (1.5 months to 22 years)

*Atrial fibrillation (AF).

The phenomena that emerged from the analysis were captured in the essence of three major themes that described how family life was affected by AF: *emotional differences*, *changes in family life*, and *uncertainty about the future*. The three themes were covered by seven subthemes that emerged from the analysis process (Table 2). The findings show that the essence of living with AF in a family had multiple facets. Still, the families' overall experiences were that despite not being an acute life-threatening disease, AF had multiple effects on emotions in the family, which often led to several adjustments and adaptations of their daily lives.

Table 2

Analysis process from derived meaning units to final themes.

Meaning units	Subthemes	Themes
Talking about atrial fibrillation (AF)	Family members have different worries in their everyday life with AF	Emotional differences
We are still two people	Finding causes	Why our family
The first feeling	Do not be a burden on the family	Do not be a burden to the hospital

Using the network	To see life in a new way and find meaning	Encourage each other
Changed mood	Show or hide emotions	.
AF intervenes in family activities	Everyday life activities change	Change in family life
Care and protection of children living at home	Maintain normal daily life	Changed social relationships
Living with AF affects social life	Talk about prioritising	Different limits on how much you can handle
Get support and motivation for new habits	AF changes the need for knowledge	Changed lifestyle
Family knowledge of AF	Information from AF patients to children Knowledge sharing	.
Family thoughts on AF	Fear of how AF will progress influences everyday life	Uncertainty about the future
Getting the right support living with AF	Support and involvement of family members	Relatives on alert
Rituals and strategies	Fear and myths	AF brings fear of death into everyday life
Thoughts about the future	Master the unpredictable	Thoughts on death

3.6. Emotional Differences

The emotional reactions that patients experienced living with AF often differed from those of their family members. Partners, in particular, appeared to be very concerned, especially in the beginning when their partner was diagnosed with AF. As time went by, the family members became more familiar with AF, the symptoms, and its treatment. There were variations between the families regarding how they talked about AF and the family members' involvement in the challenges that arose in their daily lives. Some patients and their close family members shared very little about their feelings or worries about AF, whereas others shared every single thought about AF in their everyday lives. Some patients explained that they did not share their worries about AF because they did not want to be a burden to their family members or the hospital. Instead, some patients and close family members used their social networks rather than each other to talk about AF.

Female patient: *"I avoided sharing my feelings with him [spouse]. It has to do with the fact that if you know each other very well, you also know how the other person will respond."* (Family 3)

There was also a desire to protect family members, which occasionally meant that patients did not share all their worries about living with AF. In particular, the female patients explained how they kept their feelings to themselves, and some even preferred to go to the hospital on their own. Several women of all ages felt that talking to the doctor offered a private space for addressing their problems in living with AF. Some patients also felt that their spouses should not take time off from work to go with them to the hospital in order not to let their lives with AF interfere with

their spouse's life. However, this was often despite the spouse feeling a need for more information about AF to understand the aetiology behind the arrhythmia.

Male family member: *"Sometimes I worry a lot, and then I try to find some information on the Internet, but it would be better if we had gotten the same information about AF and not... 'I have heard something, and you have heard something different.' I believe the personal and individual experience will always be different, whether you are a patient or a family member. Therefore, we need to be able to talk about different questions."* (Family 6)

The patients and their family members saw their lives after being confronted with AF as being offered a chance to find new meaning in life, for example, taking better care of themselves, minimizing stress, and changing negative lifestyles. Both the patients and their family members expressed that trying to find a new meaning in living with AF often challenged them because of insecurity and a lack of knowledge about symptoms and medication. The patients and their family members described how they were overcoming the challenges in their daily lives and that they felt a need for information about how to live with AF.

Male patient: *"I have had a lot of stress over the years and I have become more and more convinced that my AF is stress-related—and I can still be very busy.... But, especially after the third hospitalization, I needed to get away from it all and understand why."*

Female partner: *"Yes, it was very hard on the family because I did not understand it all and how I could support him."* (Family 4)

It could often be challenging for the family to adjust to the new life situation caused by AF. Confusion and lack of knowledge about AF occasionally burdened the patients and their close family members. Most of the family members expressed that they felt that they were more concerned about AF than the patient with AF. Family members experienced how this often led to anxiety and worries in everyday life situations, for example, when going to a party or on holiday. Several close family members were missing information about the causes of AF, and they were often afraid about what might ultimately happen to the patient's heart in everyday situations.

Male partner: *"I am confused about the heart... what about age and physical function... and being overweight? All these things can be a sign that it's dangerous. I'm worried that her heart can do all sort[s] of things or even stop."* (Family 6)

Patients and family members often had individual perspectives on AF, which could affect their emotions and social interaction with each other living with AF.

3.7. Changes in Family Life

Patients and family members across the represented family relationships described how AF brought several changes to their lives. The families used words like guilt if social activities, work, and the household had been downsized due to lacking energy. Some were concerned that their children might get AF, and they experienced changes in their mood if they felt that they were using much energy to find trustworthy information by themselves to understand the nature of AF. The fear of AF symptoms led to insecurity, which influenced both the patient and the family members. The family members experienced that they were dependent on their close ones to obtain information about symptoms on which they could rely to plan daily activities. This insecurity often affected family activities. For example, family members talked about how they could no longer have a meal at a restaurant if the patient with AF had little energy caused by severe palpitations and shortness of breath, forcing them to stay home. Some patients and close family members refrained from social activities and avoided travelling far from home due to fear of sudden rapid AF, which could lead to isolation, and feelings of irritation and guilt would sometimes arise. A few patients claimed to have learned to ignore their AF symptoms in some situations because they did not want the arrhythmia to change their everyday life with friends and family.

A female patient in her sixties described her relationship with her husband whom she chose not to bring to the interview: *"There are some emotions and maybe also irritation –'why can't he [husband] understand that I do not have the energy right now because I feel very low on energy.'"*

Her sister who took part in the interview responded: *"He is very overprotective [the husband], once he stabbed himself with a needle he passed out... he is not good at these things."*

Female patient: *"Maybe I am not good at talking with him [husband] about it. I just go on, even if I am exhausted."*

(All quotes are from Family 8)

None of the family members had prior knowledge of the nature and symptoms of living with AF. They said that they needed knowledge to understand the many aspects of living with AF to support the patient and try to reestablish a normal everyday life without too much interruption or worry.

Daughter: *"I am thinking like this. 'Could it develop into complications for the heart? Could it suddenly trigger an infarction, or that the heart stops, or could it start an attack?'"* (Family 10)

Some families experienced that their everyday life had become more isolated because they had to limit their social relationships due to reduced energy levels. Furthermore, families described how AF forced them to choose between social activities, either because of a lack of physical and mental energy or to reduce stress to prevent symptoms. Some families felt that the need to prioritise their time and energy for social activities meant that it was very important to be understood by their network of friends.

Male patient: *"I try to be open about what I can and what I can't do. I once had to cancel a skiing trip. I explained why, and of course my friends understood why, but it was super annoying to cancel."* (Family 2)

Living with AF had multiple consequences for patients and family members, and patients and their close ones were confronted with the need to implement various changes in their daily lives.

3.8. Uncertainty about the Future

The patients and their family members described how they experienced many notions and beliefs about the future living with AF, especially in the first months after being diagnosed with AF. The future that patients and family members imagined included fear of aggravation of AF with complications, such as stroke, and fear of death. The deep inner thoughts and reflections about the consequences of AF were not always discussed between the patients and their family members, and family members talked about feeling hopeless and not knowing how to support their patient.

Male partner: *"In my mind, I have all sorts of beliefs and solutions, but at the same time, it feels like being captured and sometimes you give up."*

Interviewer: *"Do you talk with him about your AF or do you keep your feelings to yourself?"*

Female patient: *"No, I do not always talk about it [AF] because it comes and goes."* (Family 7)

Many family members expressed that they were in a permanent state of alert due to lack of control over when and why AF starts. They were aware that this could be a potential stressor for the relationship in their everyday lives.

The female partner of a middle-aged male patient who had been living with AF for 1.5 years described a situation with her partner: *"So, I do not relax when we are together at a party, and of course I say to myself that now I do not have to monitor the other [husband] ... But you can just get a little obsessed and wake up with a feeling of being in a state of alert. I think now, after the third time, it has affected me a lot."* (Family 5)

Male and close one with AF responds: *"yes it has really affected our family and my wife could really need some support and some information about AF because when I come home from the meeting at the hospital, I don't remember to give her all that information."*

Several spouses felt that thoughts of death occasionally arose at night. It was not uncommon for some to watch their partner sleep several times a week. Even though most of the patients and family members knew that AF did not cause cardiac arrest, many felt that they should be prepared for an acute situation that could suddenly occur.

Interviewer: *"Do you observe her at night [female friend]?"*

Male friend to a female patient who had been living with AF for at least two years and with daily symptoms from AF: *"Yes, I actually do... I cannot hear her breathing at all... and when she moves, I notice her pulse... all the time thinking when I'm going to do cardiopulmonary resuscitation. I actually think that."* (Family 8)

Furthermore, most families expressed a need for support from health professionals that could ease their fear and prevent myths about AF. Patients and family members explained how they occasionally had read something about AF on the Internet that made them scared and nervous about what might happen. Family members also described how misinformation would sometimes cause them to be overprotective of their patient with AF in everyday situations.

Both the family member and the close one wished to be informed and involved by the healthcare professionals to allow them to provide mutual support for one another in everyday life with AF.

Female friend: *"I think about how my thoughts go spiralling ...and all of a sudden, I'm thinking... what can happen? And can this happen, and what about this? Then I need someone to say that I should calm down and tell me that this will not happen, and it's not like that."* (family 11)

Male patient and close one with AF responds: *"Yes especially in the beginning, we were thinking a lot about what could happen because you have seen all these movies with cardiac arrest and until you have tried to go to the hospital a couple of times, you are sure that you can die of this."*

This emerging theme made it apparent that patients and family members had fears and worries about AF that affected their beliefs about the future living with AF.

4. Discussion

The current work indicates that not only does AF affect patients, but also the worries and emotions caused by AF may burden close family members. This was expressed in various ways by the family members, who did not always openly share with each other their concerns about AF. Learning to live with AF created a need for the families to understand how the illness manifested itself in daily life, as they would often have to adapt to a new daily rhythm. Families viewed their lives after one of them had been diagnosed with AF as a life filled with feelings of uncertainty about the future, arising from concerns about managing the illness when and if it became worse.

Our findings are consistent with those of other studies, which also found that patients and family members have different ways of coping with AF and that their relationships are being affected by the uncertainty that can be experienced while living with AF [12, 21]. The challenges forced families to develop new strategies. However, for these strategies to be effective, patients and family members must share their emotions and worries [35]. Risom et al. also found that patients with AF could be reluctant to share AF-related psychological distress with family members but that they would often confide in the nurse in a rehabilitation program [35]. Similarly, our study showed that some patients and family members kept their concerns to themselves out of fear of being a burden to each other. Some patients even preferred to visit the doctor alone, which occasionally left family members lacking important knowledge about how to care for their patient. Our findings highlight that it is crucial for healthcare providers to recognise the emotional distress that may be experienced by both patients and their family members. Being confronted with cardiac disease can be stressful, can result in overprotection and negative feelings, and can put pressure on family relationships due to a communication deficit [8]. Furthermore, the theme of *emotional difference* was mirrored in a study that found high levels of anxiety in spouses, which were associated with low perceived health and reduced vitality in their partner and vice versa [9]. Patients and family members affect each other. Therefore, it is important to identify families who need extra support by focusing on the dyadic dynamics influenced by AF. Focusing on the positive resources in the family and the opportunities to make changes in everyday life while living with AF could be beneficial to the health of the patient with AF and the family member. The theme *changes in family life* revealed how patients and family members were confronted with multiple consequences of AF in their daily lives, both as a family and as individuals. Changes in social activity with friends and family members, changes in mood, and a need for changes to their routine and lifestyle challenged patients and family members to reevaluate the context of their daily lives with AF [36]. Our findings are echoed in studies of patients who have diabetes, stroke, chronic obstructive pulmonary disease, myocardial ischemia, and heart failure and needed to adjust to life with a chronic illness [8, 37, 38]. The REACH-HF trial tested an intervention targeting heart failure patients and their family members [39]. The intervention was a comprehensive, evidence-informed, patient-centred, theory-based self-care support program. Compared with usual care, quantitative caregiver outcomes, like anxiety, did not differ significantly. However, the qualitative data revealed that family members who received the intervention were more likely to make positive changes in how they supported the HF patient, and they also experienced increased confidence in the caregiver role [39]. Involving family members supports the premise that future AF interventions should focus not only on the patient but also on the family members who are required to manage the daily challenges and changes in their routine and lifestyle. Therefore, future AF interventions need to

focus on how patients and family members express their need to increase their confidence, knowledge, and capabilities relating to life with AF [40]. Patients in the present study described how the changes caused by AF affected their family structure and roles. Changes in family roles were also found in another study showing that a cardiac event may change family roles as a consequence of cardiac disease [8].

The theme captured in *uncertainty about the future* represents several aspects of patients' and family members' beliefs about how AF may potentially influence their lives. This ranged from a minor to a considerable feeling of uncertainty about the future. Thoughts about how AF could interfere with beliefs about the future were apparent, especially when the patient had just been diagnosed with AF and needed to learn how the manifestations of the illness developed. The theme was similar in families in which a member had a chronic illness as the family needed to familiarise itself with the situation; this is an ongoing process in which the family members cocreate a new context of living with the illness [38, 40]. One study found that being invited to tell their story in encounters with healthcare professionals arranged as family nursing interventions had a positive effect on the wellbeing of patients and family members [37]. Family nursing uses reflexive and therapeutic communication; if conducted in the right way, it can support and empower both patients and family members to be aware of their beliefs, resources, and strategies to cope with AF [36, 40]. Beliefs may be described as the lenses through which we see the world, and they are essential in understanding how families respond to and manage situations that arise from their experience with illness [36]. It is important that nurses understand the patients' and family members' beliefs about an emerging illness, like AF, to enhance wellbeing and healing. Family System Nursing (FSN) recognises that an individual's illness influences the health and wellbeing of their family members and focuses on the interaction, reciprocity, and circularity of beliefs between the patient and their family members [23, 24]. Therefore, giving patients and family members a chance to narrate their illness beliefs and thoughts serves as a way of unburdening oneself, making sense of suffering, and finding hope while living with a chronic illness [15, 16]. Thus, family members are indispensable in supporting self-management and understanding the disease [41]. To systematically involve the patient with AF and their family members would require a shift from patient-centred care to family-centred care through education and supervision of healthcare professionals [42]. A clinical trial using family-focused nursing care for patients with heart failure showed positive results regarding self-efficacy, symptom management, and social activities [43]. Having families narrating their AF stories may, therefore, also contribute to supporting coping with feelings of insecurity and have a positive impact on managing their future with AF. Communication tools to structure conversations with patients and family members and facilitate change may potentially have an effect on the health of patients and family members [16]. However, it requires competence and communication skills, and it requires attention to the family relationships and interventions directed towards the aspects in focus. Furthermore, supporting both the patient with AF and his/her close family member requires that both are willing to communicate and confront their concerns [37]. Our findings indicated that families were missing support interventions targeting both the family members and the patient in order for them to manage everyday life. Family interventions that examine when patients with AF and their family members may benefit from family nursing are warranted.

5. Methodological Considerations and Limitations

One of the limitations of this study was that half of the interviewed families consisted of patients and their spouses. Therefore, the study may have focused more on the perspective of living as a couple than on other family constellations. We ended up including patients who were able to attend with a close family member who was a partner. The results might have been different if more patients had participated with friends and family members with whom they were not sharing their everyday lives. On the other hand, this study shows that, in most cases, the patient chose their partner. Furthermore, interviewing only two family members together limits the finding to the experiences of these two family members. However, many of the challenges faced by couples appear to be similar to those of other family members, who may not be quite as close to the patient's everyday life. Another aspect is the number of patients who did not have a family member or refused to participate in the study, which could raise the question whether how these patients experience their everyday life with AF. We chose to focus on the family narrative, studying the family as a unit. Even so, we could also have focused more on analysing the interactions

between the interviewed family members, which might have added a more dynamic perspective on how the family members influenced each other and coped with their life situations. Furthermore, we did not focus on coping processes in the family, which could have been a relevant aspect.

The dyadic interviews required ethical considerations to ensure that they were performed in a safe setting when the patient and family member shared their experiences [44]. Therefore, the interviewer had to navigate through the interview, being aware of the patients' and the family members' needs and dedicating them equal attention. The dyadic interview could have negatively influenced the findings if the facilitation of the interviews failed to obtain the patient and family member's experiences. However, we cannot know if some patients or family members moderated their answers even though they responded very willingly to the interview questions. Anyhow, interviews were conducted in the hospital and in the families' own homes, and the variety in contexts appeared to be a strength because we were able to unveil similarities between families regardless of the setting in which the interview was conducted.

Rigour was established by carefully following the method suggested by Giorgi [27] and by following the concepts of trustworthiness in qualitative research: credibility, transferability, dependability, and confirmability. To ensure dependability, quotations were used for transparency in showing the participants' voices [27]. Confirmability was obtained by authors discussing the interpretation of the phenomena of interest several times in an iterative process to strengthen the study's credibility [33]. Throughout the entire process of analysis, all authors aimed to remain open-minded about the phenomena of the lived experiences; they attempted to describe the data as they emerged rather than allowing personal preconceptions or theoretical concepts to navigate or explain the concepts [45]. Transferability was enhanced by revealing the interviewers' preunderstanding and by preparing a transparent description of the different significant elements and the process of study. The findings in this study may also be relevant and important in other contexts, for example, families experiencing acute illness or receiving palliative care.

6. Conclusion

The aim of this study was to use the perspectives of the patients and the family members to explore how families live with AF. Three major themes emerged: *emotional differences*, *changes in family life*, and *uncertainty about the future*. These themes captured the essence of how patients and family members experienced their lives living with AF. The study found that patients and their family members saw their life with AF as one fraught with many concerns that caused different emotions that were not always shared. Families did not always share emotions, either to protect each other or out of a lack of knowledge about AF. Furthermore, AF caused changes in how the family planned social life, work, and household activities. Patients and family members talked about their feelings of uncertainty about the future and living with the arrhythmia. In some family members' minds, AF was associated with thoughts about a heart attack or acute stroke. When patients are confronted with AF, the patient and family members should be given the opportunity to talk about issues from a family perspective. In addition to treatment, discussions should focus on concerns about AF, including the risk of severe palpitations and anxiety about the occurrence of a stroke or cardiac arrest. Knowledge about the lived experiences of how families cope with an arrhythmia, like AF, should lead to a shift in clinical practice regarding how healthcare professionals facilitate knowledge and instructions for living with AF. Future research is necessary to explore how nurses and other clinicians may engage in and communicate with patients living with AF and their families.

Authors' Contributions

Stine Rosenstrøm, Signe Stelling Risom, and Anne Brødsgaard were involved in the study design and the analysis. Stine Rosenstrøm conducted the interviews and drafted the manuscript. All authors were involved in critical revisions and important intellectual content.

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Impacts of Nursing Work Environment on Turnover Intentions: The Mediating Role of Burnout in Ghana

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ABSTRACT (ENGLISH)

Background. The nursing practice environment supports excellence and decent work and has the influence to entice and retain the quality nursing workforce. Appreciating the dynamics that affect the turnover intention of RNs offer reasonable solutions to the challenges of the nursing shortage, which directly influence the quality of nursing care. There is a paucity of information on the impacts of these concepts among RNs in Sub-Saharan African. The study therefore aimed at determining the impacts of work environment and burnout on turnover intentions among RNs in Ghana. **Methods.** A descriptive cross-sectional design using a simple random and proportionate stratified sampling with a sample of 232 RNs from Municipal and Regional Hospitals, Sunyani, West-Central part of Ghana completed

validated instruments measuring work environment, burnout, and turnover intentions. Descriptive analysis was done to find out RNs' perceptions of their work environment and turnover intentions. Mediation analysis by Baron and Kenny's approach was used to determine the mediating effect of burnout on the relationship between the domains of PPE and the turnover intention of RNs. STROBE checklist was used as the reporting tool. *Results.* While most RNs had a positive perception about their work environment, greater number of them had turnover intentions. There were significant associations between some nursing work environment facets and turnover intention. The results also showed a statistically significant relationship between nurse-physician relation ($\beta = .353$, $t = 5.476$, $p \leq .001$), nurse manager leadership ($\beta = -0.485$, $t = -8.192$, $p \leq .001$), nursing foundation for quality care ($\beta = .400$, $t = 7.059$, $p \leq .001$), staffing and resource adequacy on ($\beta = 0.485$, $t = 8.183$, $p \leq .001$), and turnover intention as mediated by burnout. *Conclusion.* Burnout resulting from an unsafe work environment impact RNs' turnover intention. This phenomenon can potentially affect the human resource management and quality of nursing care. Policy strategies aimed at ensuring a professional practice environment and decreased burnout can therefore improve retention of RNs at their workplace.

FULL TEXT

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1. Background

Globally, the quality of the nursing workforce and the existence of a professional practice environment (PPE) are in close association with client care satisfaction, quality of care delivery, and positive staff job outcomes [1,2]. The subject of staff turnover is an important area in every health care setting, and it needs thorough research to sustain the evidence-based nursing practice in health care organizations, especially in low-resourced countries.

It is reported that health facilities with a positive work environment and adequate nursing workforce had improved outcomes for both patients and nursing staff [3–5]. The evaluation of quality care and job satisfaction by Registered Nurses (RNs) in the high-resourced countries ranges from worst to best. It is noteworthy to know that countries using the Magnet Certification to encourage value-added practice environments such as the United States have improved in their provision of quality care to patients and other job outcomes [6].

Among the major challenges of low-and-middle-income countries (LMICs) in the work environment is an unbalanced nursing workforce mix with its corresponding negative effects on job outcomes (job dissatisfaction, higher staff turnover, and poor quality of care delivery). Studies have shown a higher incidence of turnover intentions of RNs in LMICs [7,8], though the same cannot be said about the high-resourced countries [9]. This phenomenon, if not effectively tackled, can cause a lot of challenges for health care providers in the long run globally.

Staff turnover is the process by which workers vacate their job or are transferred from the worker's employment [10]. Health labor force scarcities have consequences on global health care delivery and quality of patients' care; appreciating the challenges of turnover rate and retention of staff is essential on the discussion of policy strategies for improving the nursing workforce. Institutions where staff freely express their plans of quitting their job usually have higher turnover [11,12]. High staff turnover intentions in many organizations are attributed to factors such as poor quality of staffing and inadequacy of working material to care for the patient [13–15]. Such poor work conditions present high work demand with low RNs' autonomy over their job, inadequate group support, and increased physical and emotional work demand. Lack of support from nurse managers, unjustified workloads, and increased emotional exhaustion of RNs mostly lead to increased staff intentions of resignation [10–12]. Moreover, most RNs leave their job owing to a lack of professional/career development and poor organizational climate [12,13]. Nursing leadership consciousness of the reasons behind turnover intention can help improve the organizational culture [14,15]. It can also inform nurse managers and administrators about important pillars in health care delivery that makes the nursing workforce satisfied [10,16,17].

In high-resourced settings, though RNs' turnover intentions are low, the lack of leadership support, inadequate involvement of RNs in hospital affairs, and material and human resource constraints at the workplace are observed to be predictors of RNs' turnover intention. Again, nurses' emotional exhaustion and perception of job engagement

are significant mediators of nurses' turnover intentions in an organization [18,19].

In LMICs settings such as Ghana, where turnover intention for workers is projected to be 25.9%, increased burnout, limited prospects in the area practice, and bias in career upgrade are cited as the reason for turnover intentions. Burnout among staff who remain to work in the practice environment [20–22] accounts for the high turnover of health staff in the health care settings.

The high turnover intention in any organization presents its challenges, notably is high monetary loss. Moreover, the financial costs of RNs quitting their job in organizations are projected to be higher than before [23–25]. With a very challenging nurse-patient ratio in Ghana, there is still a reportedly high rate of turnover intention and/or turnover among skilled workers [26,27]. With the health care industry depending on the few remaining RNs, the challenge of burnout also emanates.

The problem of high staff turnover rate is an important area in every health care setting, and it needs thorough discussion in the quest to sustain quality in the health care industry. Addressing this problem can fix the quality of patient care challenge in most health facilities. Anecdotally, more RNs are leaving their job either for greener pastures in high-resource countries and/or joining other professions due to the associated challenges in working in public health facilities in Ghana. Contrariwise, there is limited data on the Ghanaian nursing work environment and burnout; and its implications on turnover intentions among RNs. The study, therefore, assessed the influence of work environment and burnout on turnover intentions among RNs in Ghana. Thus, the study sought to ascertain RNs' intention to leave their job, assess the relationship between work environment and turnover intention of RNs, and determine the predictors of turnover intentions among RNs. Findings can inform policies to reduce nursing workforce turnover, thereby addressing unhealthy practice environment, burnout, and quality of patient's care challenges, especially in sub-Saharan Africa.

1.1. Theoretical Framework

The Causal Model of Professional Nursing Practice Environment and Nursing Job Outcome was proposed and used by Panunto and Guirardello [28]. The model assumes that the nature of the practice environment impacts the nursing job outcomes when mediated by burnout [29,30]. It seeks to clarify the work environment and ways to improve it. The model is composed of exogenous variables PPE (autonomy, control over work environment, nurse-physician relations) and endogenous variables (job satisfaction, quality of patient care, and intention to leave their job) as mediated by burnout (emotional exhaustion, depersonalization, personal accomplishment). Autonomy, control over the work environment, and nurse-physician relations influence each other while they individually impact the burnout dimensions and nursing job outcomes [28]. Theoretically, the three elements of the PPE were operationalized based on Lake's Practice Environment Scale on Nursing Work Index [31]. Panunto and Guirardello used these designations to replace the features of their model; nurse manager ability, leadership, and support (control over work environment) were described as the capacity to manage resources, support nurses, and the practices needed to deliver quality care. Collegial nurse-physician relationships (i.e., nurse-physician relations) reflected the total worth of the relationship between nurses and physicians. Nurse participation in hospital affairs (i.e., control over work environment) was explained as the degree by which nurses were involved in decision-making regarding healthcare management. Adequate staffing and resources (i.e., control over work environment) measure the availability of human and material resources to meet quality patient care. Nursing foundations for quality care (autonomy) reflected the professionalism of nursing in outlining the standards by which care is given to patients rather than depending on medical models to provide care. The interaction of these features was suggested to impact emotional exhaustion, depersonalization, or personal accomplishment, and in effect, results in the nursing job outcomes; thus, quality nursing care, job satisfaction, and intent to leave a job [32]. The causal model encodes appropriate knowledge about the tendency of specific occurrences to cause other event types. Thus, this model is used to determine the causes of RNs turnover, given assumptions about poor work environment and burnout. The model is, however, complex and cannot handle some situations. The weaknesses also include the issue of multiple roles elements, elements that affect more variables in the model. This is demonstrated in the interactions of the various facets of the practice environment, dimensions of burnout, and nursing job outcomes.

2. Methods

2.1. Study Design and Setting

A cross-sectional survey was adopted to assess the participant's views on the influence of work environment and burnout on turnover intentions of RNs in Sunyani Municipality, which is found in the middle belt, West-Central part of Ghana, with a population of 123,224 [33]. The population involved 550 RNs in public health facilities who agreed to take part in the research. RNs with at least one year of postqualification experience were included in the study.

2.2. Sample Size and Sampling Method

A sample of 255 RNs was used as estimated using Yamane's [34] formula for calculating sample size. The recruitment flowchart is presented in Figure 1. Participants were drawn through a multistage sampling method; thus, a simple random sampling technique was used to select two [2] hospitals from seven public facilities in Sunyani for the study. A proportionate stratified sampling approach was then used to assign a proportionate number to each facility based on the nursing workforce of the two settings to ensure unbiased representation (Sunyani Municipal Hospital –77 and Regional Hospital –178). A convenience sampling was used in recruiting the participants throughout all three shifts run by the RNs in the two hospitals. It was ensured that questionnaires were adequately completed before collection. There was a 91.0% response rate.

[figure omitted; refer to PDF]

2.3. Data Collection

The instruments used for the study were standard tools. The instrument comprised of four [4] subsections: sociodemographic information and three [3] other scales. The Practice Environment Scale of Nursing Work Index (PES-NWI) was adapted to measure the nursing work environment. The PES-NWI comprises 32 items divided among five subscales measured on a four Likert scale 1–4 (1=strongly disagree; 4=strongly agree). The sum and average of the scales score provide the PES-NWI score. Other studies that have used the PES-NWI have established reliability coefficient between 0.84 and 0.92 [29,35]. Burnout was measured using the Maslach Burnout Inventory (MBI) Scale [36]. MBI consists of 21 items on a Likert scale of 1–7 (1=Never; 7=Everyday). Burnout is the sum of all 21 items. Several studies have shown acceptable tool reliability and validity [27,37]. A single-item tool was used to measure the turnover intentions of RN on a Likert scale of 1–4 (1=strongly disagree; 4=strongly agree). Ethical approval was sought from Noguchi Memorial Institute for Medical Research Institutional Review Board–IRB (CPN 045/16–17) and clearance from the Ghana Health Service (GHS) Regional Health Directorate (Brong Ahafo) before the commencement of the research. Consent was obtained from the respondents before the questionnaire was given to them. The benefits and possible risks were also explained to the respondents. Additionally, respondents' anonymity and confidentiality were assured by indicating that they were not required to write their name on the questionnaire and by assuring them that their responses would not in any way be linked to them.

2.4. Data Analysis

Statistical Package for Social Sciences (SPSS), version 25.0, was used for the statistical analysis. Data were analyzed at a significance level of 0.05 and a power of 95%. Descriptive analysis was done to find out the frequencies, percentages, mean and standard deviation of RNs' perceptions of practice environment and turnover intentions. The hypothesized model was tested by mediation analysis using [38] Baron and Kenny's approach. The mediation analysis requires the conditions that: practice environment (the predictor) must be significantly associated with turnover intention (the outcome); practice environment (the predictor) must be significantly associated with burnout (the mediator); finally, the turnover intention is regressed on both practice environment (the predictor) and burnout (the mediator). If the effect of the predictor (practice environment) on the outcome (turnover intention) with the presence of the mediator (burnout) is zero, then there is full mediation. If all the conditions are satisfied except for the final condition, then there is a partial mediation. The predictor variable (practice environment), the mediator (burnout), and the outcome variables (turnover intention) were normally distributed and linear relationships existed among them.

3. Results

3.1. RNs' Perception of Work Environment

The means and standard deviations for the study variable of PPE are found in Table 1. RNs reported a relatively moderate perception of PPE (65.87). Concerning the individual subscales, there were moderate perceptions of nurse manager leadership, ability and support (mean=21.98), collegial nurse-physician relation (mean= 15.17), staffing, and resource adequacy (mean= 15.47), nurses' participation in hospital affairs (mean=7.03), and nursing foundation for quality of care (mean=8.71).

Table 1

Nurses' perception about their professional practice environment.

PES-NWI subscales	Frequency	Percent	Min	Max	Mean	SD
Nurse manager ability, leadership, and support	Dissatisfied	140	60.3	Satisfied	92	39.7
11	44	21.98	3.56	Collegial nurse-physician relations		
7	28	15.17	4.19	Poor	137	59.1
Good	95	40.9	Staffing and resource adequacy			7
28	15.47	3.78	Inadequate	129	55.6	Adequate
103	44.4	Nurses' participation in hospital affair			3	12
7.03	1.68	Dissatisfied	118	50.9	Satisfied	114

49.1	Nursing foundation for quality of care			4	16	8.71
2.07	Availability	89	38.4	Non-availability	143	61.6
Total PES score			32	128	65.87	9.68

(Field Data, 2017). PES: Practice Environment Scale, NWI: Nursing Work Index, SD: Standard Deviation. Turnover intention of the RN.

The result shows the mean score for RNs' intention to leave the job to be 2.94 (SD=1.07), which is high and indicates that RNs had turnover intention, while 39.2% of the nursing workforce had intentions to leave the job, about one-third (31.5%) were indecisive on their intentions to leave the job.

3.2. Mediation Effect of Burnout on the Relationship between Work Environment and Turnover Intention

Baron and Kenny (1986) proposed a four-step approach in which several regression analyses are conducted and the significance of the coefficients are examined at each step. In step one, the linear regression analysis was used to establish the relationship between the domains of the work environment (nurse manager leadership, ability and support; nurse-physician relations; nurse participation in hospital affairs; staffing and resource adequacy; nursing foundation for quality care) and turnover intention. The results showed a statistically significant relationship between all the domains of work environment and turnover intention ($p > .05$); except nurse participation in hospital affairs. Step two sought to establish the relationship between the domains of the work environment (independent variables) and burnout (mediating variable). The results also showed a statistically significant relationship between all the domains of work environment and burnout ($p > .05$). In step three, there was a statistically significant relationship between all the domains of the work environment except one and the turnover intention of the RNs. These findings imply that all the independent variables met the assumptions for a mediation analysis as required by Baron and Kenny (1986), except for nurse participation in hospital affairs.

3.3. Mediation Effect of Burnout on the Relationship between Nurse-Physician Relation and Turnover Intention

The results in Table 2 below revealed a complete mediating effect of burnout on the relationship between nurse-physician relationship and turnover intention. The regression coefficients in model one of the mediation analyses initially revealed a significant relationship between the nurse-physician relationship and turnover intention ($\beta = -0.130$, $t = -1.993$, $p = 0.048$), indicating a significant total effect of the nurse-physician relationship on turnover intention. With the inclusion of the mediating variable (burnout) in model two of the mediation analysis, there was a significant relationship between burnout and turnover intention ($\beta = 0.353$, $t = 5.476$, $p \leq .001$). However, the indirect effect of the nurse-physician relationship on turnover intention became insignificant ($\beta = -0.026$, $t = -0.399$, $p = .690$). This implies that the influence of the nurse-physician relationship on turnover intention is completely mediated by burnout.

Table 2

Mediation effects of burnout on the relationship between Nurse-Physician Relation and Turnover Intention.

Model variables	Unstandardized	Standardized coefficients	t	Sig.

Coefficients		B	Se	Beta	1	(Constant)
3.350	0.431		7.774	0.000	Nurse-physician relation	-0.028
0.014	-130	-1.991	0.048		.	
2	(Constant)	1.072	.581		1.844	0.066
Nurse-physician relation	-0.006	0.014	-0.026	-0.399	0.690	Burnout

Dependent variable: Turnover Intention; Mediating variable: Burnout; Criterion level=.05.

3.4. Mediation Effect of Burnout on the Relationship between Nurse Manager Leadership Styles and Turnover Intention

In assessing the regression coefficients of the mediation effect of burnout on the relationship between Nurse Manager's Leadership Styles and turnover intention in Figure 2, the first model revealed a significant relationship between Nurse Manager's Leadership Styles and turnover intention ($\beta = -0.553$, $t = -10.038$, $p \leq .001$). When the mediating variable (burnout) was included in the analysis in model two, the indirect effect of Nurse Manager's Leadership Styles on turnover intention remained significant, but with a reduced effect size ($\beta = -.485$, $t = -8.192$, $p \leq .001$). This implies that the relationship between Nurse Manager's Leadership Styles on turnover intention is partially mediated by burnout.

[figure omitted; refer to PDF]

3.5. Mediation Effect of Burnout on the Relationship between Nursing Foundation for Quality Care and turnover intention

The results of the impact of burnout on the relationship between the Nursing Foundation for Quality Care and turnover intention are presented in Table 3. In assessing the regression coefficients of Nursing Foundation for Quality Care on turnover intention in model one, the results revealed a significant relationship between Nursing Foundation for Quality Care and turnover intention ($\beta = .449$, $t = 7.630$, $p \leq .001$). When the mediating variable (burnout) was included in the analysis in model two, the indirect effect of Nursing Foundation for Quality Care on turnover intention through burnout remained significant ($\beta = .400$, $t = 7.059$, $p \leq .001$), with a reduced effect size. This implies that burnout partially mediates the relationship between Nursing Foundation for Quality Care and turnover intention.

Table 3

Mediation effects of burnout on the relationship between nursing foundation for quality care and turnover intention.

Model variables	Unstandardized coefficients	Standardized coefficients	T	Sig.

B	Se	Beta	1	(Constant)	0.578	0.267
	2.164	0.032	Nursing foundation for quality care	0.212	0.028	0.449
7.630	0.000	-				
2	(Constant)	-0.543	0.333		-1.629	0.105
Nursing foundation for quality care	0.188	0.027	0.400	7.059	0.000	Burn out

Dependent variable: Turnover Intention; Mediating variable: Burnout; Criterion level=.05.

3.6 Mediating Effect of Burnout on the Relationship between Staffing and Resource Adequacy and Turnover Intention.

The regression coefficients in model one of the mediation analyses as found in Figure 3 initially revealed a significant relationship between the Staffing and Resource Adequacy and turnover intention ($\beta = .552$, $t = 10.031$, $p = .048$). This indicates a significant total effect of Staffing and Resource Adequacy on turnover intention. With the inclusion of the mediating variable (burnout) in model two of the mediation analysis, the relationship between burnout and turnover intention was significant ($\beta = .164$, $t = 2.774$, $p = .006$). The indirect effect of Staffing and Resource Adequacy on turnover intention was still insignificant but with a reduced effect size ($\beta = .485$, $t = 8.183$, $p = .006$), implying the influence of Staffing and Resource Adequacy on turnover intention.

[figure omitted; refer to PDF]

4. Discussion

The turnover intention of the RNs is influenced by the domains of the work environment, and this relationship is mediated by burnout. This finding proves that the work environment has a direct significant relationship with RNs' turnover intentions, and it is consistent with a study that concluded nurse-physician relationship, nursing leadership, staffing, and resource adequacy, and nursing foundation for quality care to be correlated with RN intention to leave [9]. Nurse Managers' leadership styles safeguard quality practice environments and, for that matter, have a greater rate of retaining staff. The findings thus support the assertion that nurse manager ability, leadership, and support impact RNs' intention to stay [29,33]. There is a significant influence of the nurse-physician relations on turnover intention of the RN when burnout mediates the relationship. This implies a likelihood of RNs requesting a transfer or may have high intentions to leave an organization when there is a poor relationship with a physician [39]. This perhaps explains why the increase in poor nurse-physician relations corresponds with the intention of RN to leave a job. The relationship between staffing and resource adequacy and turnover intention nurses is fully mediated by burnout. This result agrees with findings from previous studies [40,41]. Implementing a well-designed, effective staffing plan in the workplace will go a long way to reduce turnover in an organization.

Again, the high turnover of RNs presents many challenges in the care of patients. The study reported RNs generally

having positive perceptions about their practice environment. The study agrees with what was reported by [42], indicating encouraging views on most features of their work environment. There were, however, poor perceptions on some facets of the practice environment. With the recent report of inadequate nursing staffing and material resources, it is essential to evaluate the reason behind RNs' intention to leave their profession [37,43,44]. From the current study, RNs had a higher intention of leaving their profession. This position is not different from a study on RNs in South Africa which indicated that about half of all RNs have the intention of leaving their job within two years [45]. Similar findings of a higher rate of turnover intentions have also been observed across the globe [28, 32, 46]. This, however, contradicts finding among RNs in Europe, which projected RNs having lower turnover intention [9]. The differences in the findings can be attributed to the setting of the studies. While the current study was carried out in a low-middle-income country, the previous studies were conducted in countries with more advanced economies. Indeed, practice environment factors in the European hospitals may be different from the sub-Saharan African health settings.

Healthcare delivery in recent times is extremely specialized, and therefore, highly experienced nurses are needed in the healthcare settings. Nursing managers should provide insightful leadership that can be useful in creating and maintaining a work environment that supports the nursing workforce. This may include focusing attention on burnout reduction strategies; thus, improving the availability of both human and material resources in the clinical settings, advocating for a healthy nurse-physician relation, and also improving RNs' participation in hospital affairs [47]. From the above discussion, it suggests that in discussing policy strategies on nursing workforce retention, the overall domains of work environment and burnout impact the turnover intention in many settings at most times. Health care administrators should, therefore, expand the discussion beyond financial incentives as a way of tackling the increased turnover of RNs [48,49]. The resultant effect will be improving nursing job outcomes through the retention of skilled and experienced RNs, which ultimately will help improve the provision of quality nursing care to the patient.

4.1. Limitations of the Study

Though the model contained the quality of care and job satisfaction constructs, the questionnaire did not capture the influence of the work environment on both constructs, which is an important aspect to investigate in future research. Moreover, as a constraint for all socially inclined studies [50], the questionnaire was not absolutely and culturally sensitive to determine the true opinions of participants. The tool was, however, made clear to obtain the needed data.

5. Conclusion

A poor work environment coupled with burnout increases RNs' turnover intentions. Though most of the RNs had a positive perception of their practice environment, they also had high turnover intentions. Ensuring a healthy workplace for nurses can significantly reduce burnout; and as such, will help keep experienced RNs. With high turnover intention among RNs in Ghana, there are potential effects on the human resource distribution within the clinical setting in particular, and it can compromise the quality of care given to patients.

Additional Points

All methods were performed following the STROBE reporting checklist.

Ethical Approval

Ethical approval was sought from Noguchi Memorial Institute for Medical Research Institutional Review Board-IRB (CPN 045/16-17) and clearance from the Ghana Health Service (GHS) Regional Health Directorate (Brong Ahafo) before the commencement of the study. All participants gave verbal consent before answering the questionnaire.

Disclosure

The document was once submitted at research square as preprint [51] but has not been published elsewhere. Part of the methodology used has also been cited as referenced [7].

Authors' Contributions

CAP, ED, and FN conceptualized and designed the study method. CAP and FN collected, analyzed, and interpreted the data. CAP drafted the original manuscript. All authors read, revised, and approved the final manuscript for

submission.

Glossary

Abbreviations

CHPS:Community-based Health Planning and Services

GHS:Ghana Health Service

LMICs:Low-middle-income countries

MBI:Maslach Burnout Inventory

PES-NWI:Practice Environment Scale of Nursing Work Index

PPE:Professional Practice Environment

RNs:Registered Nurses

SDA:Seventh Day Adventist.

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Use of Foundational Knowledge as a Basis to Facilitate Critical Thinking: Nurse Educators’ Perceptions

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ABSTRACT (ENGLISH)

Nurse educators are required to tailor didactic activities to meet the learning needs of students and outcomes, as well as fostering engagement in CT using foundational knowledge as a base. [...]the researcher decided on the abbreviation of each category and the corresponding alphabetized codes. The transcribed audio-taped interviews, field notes, and Tesch’s protocol for data analysis were presented to an independent coder, who was purposively selected based on a PhD qualification and experience in the qualitative research method and data analysis methods. [...]transferability was established through the provision of detailed information that will enable prospective researchers to transfer

FULL TEXT

This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. Critical thinking frequently involves the ability to interpret information and make informed decisions based on such information, which usually includes foundational knowledge. There is a need in nursing practice for graduates with critical thinking skills to enable them to make informed clinical decisions that will benefit patients. The facilitation of critical thinking has been elusive to many nurse educators. Critical thinking (CT) is not taught in a vacuum, but

integration into content has been found to be beneficial in its facilitation. Consideration of foundational knowledge as a basis for facilitation of CT during teaching and learning remains a challenge in nursing education. This paper explored and described the perception of nurse educators on how foundational knowledge can be used as a basis to facilitate CT during teaching and learning. A qualitative, exploratory, and descriptive design that is contextual in nature was employed. A sample of thirteen ($n=13$) nurse educators was purposively selected, and data were collected through unstructured individual interviews. The collected data were transcribed verbatim and analysed using Tesch's method of qualitative data analysis. The following themes emerged from the analysed data: (i) conducive environment for thinking; (ii) facilitation strategies to stimulate foundational knowledge; and (iii) foundational, conceptual, and procedural knowledge. It was concluded that CT does not take place in a vacuum and therefore foundational knowledge will be used by students in class to answer questions and in clinical settings as they reason about patients' health problems and to come up with relevant and accurate care plans. They will use the foundational knowledge as an anchor upon which they construct new knowledge using their facilitated CT skills.

1. Introduction

Foundational knowledge is the original knowledge upon which new knowledge is built. It can take the form of knowledge of a problem, the solution and foundational competencies that include capacity for critical thinking [1]. It further includes the domain knowledge acquired through education and practice experience in a particular field [2]. Foundational knowledge is made up of the facts, theories, principles, methods, skills, terminology, and modes of reasoning that are essential to more advanced or independent learning in an academic discipline [3]. Students in nursing programmes are expected to identify, explain, and apply foundational concepts, terms, and nursing-related theories to practice. It is mandatory for students to have foundational knowledge as a prerequisite for other courses as they progress from one level to another; for example, the foundational knowledge of sociology is required for holistic care of patients [4]. Foundational knowledge is activated as students return to basic knowledge involving clarification of terminology, distinction between related terms, analyses of definitions considering ensuing learning, and contradictions in the application thereof [5].

Foundational knowledge refers to the basic information that students need to solve problems and construct new knowledge [1]. All nursing students learn from the same body of nursing knowledge that allows for greater depth and breadth of foundational knowledge [4]. On the other hand, CT is the intellectually disciplined process of actively and skillfully conceptualizing, analysing, evaluating, and synthesizing information as a guide to belief and action [6]. Facilitation of critical thinking involves the use of foundational knowledge and skills. Nurse educators are required to tailor didactic activities to meet the learning needs of students and outcomes, as well as fostering engagement in CT using foundational knowledge as a base. The challenge is in the understanding that CT does not take place in a vacuum but is in a context of domain-specific foundational knowledge [7]. This raises the question of how foundational knowledge can be used as a basis to facilitate CT.

2. Materials and Methods

The researcher used a qualitative, exploratory, and descriptive design that was contextual in nature [8]. The design was found to be appropriate in that the nurse educators were given an opportunity of sharing their perceptions on how foundational knowledge is used to facilitate critical thinking. A purposive sample of thirteen ($n=13$) nurse educators who taught in the undergraduate Bachelor of Nursing programme participated in the study. The sampling method was appropriate in that the participants gave in-depth information regarding the research topic.

2.1. Study Setting

The nursing department is located in the Faculty of Health Sciences at a university in Johannesburg. The research was conducted in a department of nursing, where the interviews took place in each participant's office where the researcher and the interviewee were present.

2.2. Participants

A purposively selected sample was approached face-to-face. The participant was selected based on their experience in teaching in higher education and their in-depth knowledge in nursing. The sampling method was suitable in that participants would be able to provide in-depth and meaningful information. The participants consisted

of 13 nurse educators whose ages ranged from 30–60 years. Their experience of teaching in higher education ranged from 10–30 years. Four ($n=4$) held a PhD qualification, while nine ($n=9$) held a Masters qualification in nursing, also holding an additional qualification in nursing education and registered as such with the South African Nursing Council. Nurse educators who did not meet the inclusion criteria were excluded. The sample size was determined by data saturation which was reached at the tenth participant; however, further interviews were undertaken with the remaining three participants to confirm data saturation [8].

2.3. Data Collection Procedure

Data were collected on a date and time determined by the participants in their offices. Unstructured individual interviews were used to collect data from the participants who responded to the following central question: “How can foundational knowledge be used as a basis to facilitate critical thinking?” Follow-up questions were asked based on the participant’s response. The participants consented to the use of an audiotape to record the interview to enable the researcher to obtain verbatim transcription of the data and field notes on their nonverbal cues. The interviews lasted for 60–90 minutes. The researcher used communication strategies, such as probing, paraphrasing, and reflecting to ensure the participants do not move off the focus of the study and to elicit the meaning and accuracy of the collected data. The interviews were held in English. The transcripts were taken back during analysis to the participants as a member checking procedure to ensure that the responses were accurately recorded, thereby establishing credibility, confirmability, and dependability of the data [9].

2.4. Ethical Considerations

The study was approved by the Ethics Committee of the Faculty of Health Sciences at the University of Johannesburg as a part of a PhD project (14/05/00). Signed informed consent was provided by the participants and participation was voluntary. Their anonymity and confidentiality were ensured in that neither their names nor information were used anywhere in the study. The participants were also made aware of their right to withdraw at any stage from the study without repercussions [10].

2.5. Analysis

The researcher and independent coder analysed the data using Tesch’s eight-step open coding method of data analysis [11]. Recorded interviews were transcribed verbatim. This involved listening to the tapes and reading each transcript several times to get a sense of the whole and gain accurate information. The researcher wrote ideas as they came to mind. The most interesting and shortest interview was chosen and read through to look for underlying meaning in the information, while continuing to record any thoughts that came to mind in the margin. After completing this task, a list of all the topics were made and similar topics were clustered together. The researcher then arranged the topics into columns that were assembled into major topics, unique topics, and leftovers. The list was examined against the original data. Abbreviations of topics were done as codes and these were written next to appropriate segments of the text to determine whether new categories emerged. The researcher found the most descriptive wording for the topics and arranged them according to the way they were related to each other. Lines were drawn between categories to show interrelationships. Finally, the researcher decided on the abbreviation of each category and the corresponding alphabetized codes. The material belongs to each category in one place and performed a preliminary analysis and the existing data were recoded.

The transcribed audio-taped interviews, field notes, and Tesch’s protocol for data analysis were presented to an independent coder, who was purposively selected based on a PhD qualification and experience in the qualitative research method and data analysis methods. The independent coder analysed data independent of the researcher, after which a consensus meeting was held to compare data analysis and codes, further ensuring credibility and dependability of data analysis and findings. Trustworthiness was established using strategies of credibility through member checking, whereby themes were taken back to the participants to ensure accuracy and prolonged engagement. Dependability was ensured by providing detailed data of the methods used in the study and confirmability through keeping an audit trail. Lastly, transferability was established through the provision of detailed information that will enable prospective researchers to transfer findings to other contexts. The following themes emerged from the categories: conducive environment for thinking, strategies to stimulate foundational knowledge,

and the use of critical thinking language.

3. Results

Thirteen ($n=13$) nurse educators participated in the study. There were 10 women and 3 men, with teaching experience from 10–30 years. Their age ranged from 30 to 60 years. Data analysis yielded three themes, namely, (i) conducive environment for thinking, (ii) facilitation strategies to stimulate foundational knowledge, and (iii) foundational, conceptual, and procedural knowledge.

3.1. Conducive environment for Thinking

The nurse educator cited the importance of a conducive learning environment in the facilitation of critical thinking. Nurse educator P7 said: “Where there is trust, the learners will feel free to engage in discussions, arguments and sharing of ideas without fear of being judged. They will know that it is ‘ok’ to make mistakes.” Another added that it is important to allow the students to engage freely with the classroom activities without fear of being ridiculed or made to feel stupid.

I agree that an environment where there is trust the learners understand that they can challenge their own thinking and that of others, with the teacher included, without fear of victimization is one that is conducive to thinking. (P4)
“Mutual respect between the nurse educator and students is also important, in that it will assure the students that their input is also valued and important. (P1)

...the student must be made aware that in the critical thinking the nurse educator is a *co-learner*. (P2)

The classroom environment needs to be one where there is mutual trust between the nurse educator and students and among students themselves. This trust relationship will make the students feel psychologically safe and interact or voice their opinion [12].

3.2. Facilitation Strategies to Stimulate Foundational Knowledge

The nurse educators asserted that teaching strategies that will stimulate retrieval of foundational knowledge and the use thereof in critical thinking should be used. This was supported by the following assertions by the participants:

The educator must use content and teaching strategies that will enable the student to use their foundational knowledge, such as concepts, categories and theories related to a discipline to enable them to use their facilitated critical thinking skills to build domain-specific knowledge. (P1)

Questioning is one of the strategies that can be used to stimulate foundational knowledge that can be used as a base to facilitate critical thinking. (P9)

Nursing discipline-specific knowledge construction depends on the foundational knowledge of subjects such as biological sciences through which critical thinking can be facilitated. (P5)

Foundational knowledge gives students confidence in practice with an understanding that they have a solid base upon which their critical thinking skills are developed. It is used to draw inferences from, deduce, or move inductively from to draw conclusions about the issue at hand through the application of CT. The participants said:

...the ability to use foundational knowledge as a frame reference enables students to adopt the underlying perspectives, paradigms, processes, and methods of inquiry of one or more disciplines, which can in turn enable an interdisciplinary perspective through the application of their critical thinking skills. (P3)

Critical thinking teaching methods, such as argumentation and group discussion should be used to stimulate the students to use their foundational knowledge to construct new knowledge for themselves through their critical thinking skills. (P6)

The facilitated critical thinking skills will enable the students to learn meaningfully by drawing from their foundational knowledge to solve problems in a meaningful manner. (P12)

3.3. Foundational, Conceptual, and Procedural Knowledge

Foundational knowledge is used as a trigger to apply CT skills in emerging areas of science, in core courses of nursing science and research methods, prerequisite student knowledge and skills, and in-depth interdisciplinary training in supporting area of nursing content and methods [13]. The participants asserted that:

Foundational knowledge aids the knowledge related to concept used in nursing. (P7)

Using conceptual knowledge also brings into play the use of procedural knowledge that is applied to skills required

in practice. (P4)

Foundational knowledge serves as a conception from which the students pull out concepts that they use to analyse, apply knowledge, and make sense of what is being taught. (P2)

It will be difficult for the student to think critically about the taught content if they don't have the necessary nursing and related sciences foundational knowledge. (P1)

The students need to go through a number of schema of foundational knowledge to draw, analyse and arrive at a judgement (CT skills) that determines its relevance and how it can be used to solve a problem. (P8)

4. Discussion

The classroom environment should exhibit democratic values such as dialectical dialoguing, negotiating, and consensus-building to enable the students to develop freedom in expressing their views [14]. The students should share their thoughts without fear of ridicule and negative attitudes that hinder CT. According to this principle, for example, an environment where the class rules are agreed upon by the class supports CT. The learning environment climate needs to encourage the students to feel free to take risks and try out new things in the learning area. The student should feel that their attempts to solve problems are respected. The learning area needs to be organized in a manner that makes working together easy for students [7].

The foundational knowledge provides a core set of knowledge that allows the student whose CT is facilitated to identify problems that are important to the discipline and to develop appropriate solutions. Foundational knowledge forms a basis for students to resolve practice problems using discipline-specific knowledge coherently and meaningfully through their taught CT skills [15]. It was asserted [1, 15] that to solve problems specific to the discipline of nursing, the student must be familiar with foundational knowledge from a range of related disciplines that form a framework within which they will develop CT skills [1]. Foundational knowledge is enduring in that it is used repeatedly to solve problems within the discipline by applying CT skills, such as argumentation. As new phenomena within a discipline emerge (for example, new treatment modalities), foundational knowledge provides the basis for the students to apply CT to predict and explain phenomena within the discipline [3]. This type of knowledge is also substantive and is based on sound, innovative, insightful research and is coherent. It is not piecemeal; instead, it is integrated and cumulative. For content to be learnt meaningfully, foundational knowledge provides a set of general principles that allows for the use of CT to scaffold discipline-specific theoretical and practical aspects for problem-solving and decision-making [12].

The above assertion is supported by researchers [5] who cited that basic, foundational learning of facts, theories, formulas, and skills involving a higher level learning associated with, for example, evaluation of knowledge through application of critical skills includes discipline-specific knowledge and skills, as well as discipline- and profession-transcendent competencies (writing and speaking, information literacy, and research). CT from disciplinary and/or interdisciplinary perspectives involves the student's ability to adopt the underlying perspectives and paradigms, processes, and methods of inquiry of one or more disciplines. The ontology of critical thinking refers to knowledge representation [4]. It involves development of intelligent application of domain-specific knowledge. CT includes the intellectual skills associated with high-quality, self-aware thinking, conceptual clarity, logical reasoning, the ability to interpret information from multiple perspectives, and representing others' ideas with integrity [6].

Foundational knowledge in these content areas will provide in-depth training in the content and methods needed for facilitating the CT of students in nursing science [16]. Conversely, the belief is that students' attainment of foundational skills and factual knowledge occur without active engagement in CT. On the contrary, discipline-specific roles require a degree of domain-specific knowledge; therefore, students may choose to use knowledge based on prior educational or professional experience, giving them enough foundational knowledge to construct better arguments and justifications as CT skills [17]. In this instance, the nurse educator can use argumentation as a teaching strategy in order to stimulate dialogue that will force the students to tap into their foundational knowledge as they analyse, evaluate, justify, and pass judgement on the issue under discussion. The educator is required to have the ability and willingness to recognize the importance and value of strong foundational knowledge that provide a basis for facilitating CT [7].

On the other hand, CT reflects the capacity for higher-order thinking, including reflection on one's own thinking, evaluation of information, and hypothetical thinking about alternatives [18]. Students should be encouraged to analyse, compare and contrast, draw inferences, and explain the content using their foundational knowledge. These CT skills are employed by the student to progress to developing functional, conceptual, and procedural knowledge that is applied in practice. Although written tests and examinations are still needed to assess the foundational knowledge comprehensively, integrating assessment of CT skills is essential to determine the competence of a student [18]. Teaching and learning should allow for greater application of foundational knowledge, decision-making, CT, leadership, research utilization, and resource management in clinical practice [7]. Integration of all areas of the discipline affords the opportunity for students not only to provide relevance to practice but also to delineate discipline approaches, whilst integrating foundational knowledge into their facilitated CT to solve problems [19].

CT activities that involve evaluation of cases by students from a variety of disciplines lead to horizontal integration of foundational knowledge that is both intradisciplinary and interdisciplinary in nature [20]. Likewise, CT is more than using a particular skill in an appropriate context; it is both the ability to recognize when a skill is needed and the willingness to apply it. It is highlighting the importance of teaching students how to use their CT skills specifically, CT requires the right knowledge, thinking skills, and the right attitude [6, 16]. Furthermore, developing the attitude, or dispositions, of a critical thinker is an essential component of CT and that many errors occur because people do not think critically, not because they are not able to do so but because they are not disposed to doing so. Therefore, a range of important CT dispositions including a unique focus on planning, mindfulness, and metacognitive monitoring is highlighted [21].

It is, therefore, important for nurse educators to unearth different methods of teaching that engage and encourage students to be actively involved in CT and to make it their daily cognitive tool to enhance their quality of patient care. This challenges the nurse educators to reshape education by adopting instructional strategies that equip students with CT skills, which will empower them to solve practice problem creatively while collaborating with other role players in the multidisciplinary healthcare team in the day-to-day care of patients [12, 20]. This enhances the use of interdisciplinary learning and knowledge construction using critical thinking skills. Given the centrality of self-efficacy to the aforementioned areas of influence on the nursing practice of students and graduates, it is vital to recognize the importance of both self-efficacy and foundational knowledge in the facilitation of CT [22].

In fact, it could be argued that clinical practice lies at the intersection of self-efficacy in CT and knowledge of core concepts of a discipline [15]. Foundational knowledge involves understanding and remembering information and ideas, developing the ability to apply acquired skills, such as performing a complex nursing procedure meant to trigger critical, creative, and/or practical thinking, linking concepts, ideas, and experience. Finally, the student will acquire new skills of an intellectual nature, thereby becoming self-aware and exhibiting attributes of CT, such as intellectual humility, intellectual perseverance, and fairness in judgement among others [13].

Educator-directed reinforcement of independently acquired knowledge to connect foundational knowledge and its application is important. This involves moving towards acquisition of foundational knowledge outside the classroom through the development of self-paced learning content and using class time for active and applied-primarily case-based-learning which provides for acquisition of CT skills [4, 19]. Foundational concepts may be necessary to achieve the full benefit of applied learning, such as analysis of clinical cases. The focus lies in the educator's ability to identifying essential foundational content and condensing foundational knowledge. They need to concentrate on key concepts with emphasis on such knowledge and its application and active knowledge construction as a means for stimulating CT and a deeper sense of learning [23, 24]. Integration involves the blending of foundational knowledge across subject areas (often within the same discipline) that require the students' use of facilitated CT skills to apply that knowledge to problem-solving and decision-making in clinical practice.

Students are usually challenged to use CT to connect different types of foundational knowledge (horizontal integration) and then apply it practically to a real or fictional patient (vertical integration) [1, 17]. The use of foundational knowledge of the discipline in practice should include the application of CT skills [25]. Foundational knowledge involves using propositional knowledge and beliefs concerning the meaning and descriptions of relevant

concepts and the relationships between them. It includes multiple factors that are identified as being significant to the teaching and learning of CT, the ontological status of CT, and the purpose of teaching it [18].

Foundational knowledge is what is needed to know which is core content knowledge of the disciplines, information literacy (sometimes called digital literacy), and cross-disciplinary knowledge or synthetic knowledge [2]. The suggestion is that the conceptual knowledge (information) and procedural knowledge (process-based information) used for problem-solving or step-by-step task completion forms the basis for acquisition of domain-specific knowledge [26]. For example, the student who analyses relationships between a respiratory condition and cardiac output and those defined as "other" will need conceptual knowledge of the respiratory and circulatory systems and mechanisms within the two systems to understand their points of convergence or divergence. However, they rely on procedural knowledge of various disciplines to promote critical probing, for example, physiology, physics, and so on. The foundational knowledge will form a basis on which the CT skills within the knowledge parameters are facilitated, developed, and applied to problem-solving [27]. Therefore, it is essential to integrate units forming their existing schema to promote the students' ability to think critically about the presented content. Foundational knowledge provides foundational competencies that include the capacity for CT and the domain or technical knowledge acquired through education and practice experience in a particular field [26].

This means that foundational knowledge includes multiple factors that have been identified as being significant to the teaching and learning of CT, the ontological status of CT, and the purpose of their facilitated CT skills to explore contemporary educational experiences and to promote the fundamental principles of learning [3, 24]. Therefore, it is important that the educator is aware of the importance of the use of foundational knowledge as a basis of facilitating CT skills in students. The student draws from the schema forming their foundational knowledge as a point of reference to think critically. The educator needs to scaffold the foundational knowledge of the students to enable them to use facilitated CT skills to construct new knowledge [20].

5. Conclusions

This study has implications both for nursing education in the classroom and clinical setting. The nurse educator and the clinical facilitator need to understand what foundational knowledge is relevant for each level of study, be able to engage the students in such a manner that they are able to retrieve it. Furthermore, they must be able to select appropriate teaching strategies that will facilitate the students' critical thinking skills to enable them to use their foundational knowledge as an anchor upon which they will be able to develop domain-specific and discipline-specific knowledge [20]. Nurse educators need to make use of dialogue that involves questioning and group discussions as facilitation strategies while assessment involves identification of arguments, analysis of arguments, identifying flaws in arguments, evaluating credibility of an argument, and building further argument. These strategies will encourage the students use their meta knowledge consisting of critical thinking to draw and apply on their foundational knowledge which consists of core disciplinary knowledge, cross-disciplinary knowledge, to problem-solving through collaboration with others [2].

It can be concluded that CT cannot be taught in isolation but that foundational knowledge forms a basis for its facilitation. The use of foundational knowledge to facilitate CT as an essential skill in nursing is recommended. This means that foundational knowledge is important in that it forms a knowledge-specific frame of reference that will be used to create new knowledge using their facilitated critical thinking [18]. It is important to trigger cognitive identification of stored knowledge during teaching and learning to enable the student to develop and apply critical thinking skills to construct new knowledge that will be used in real-life clinical settings.

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Incidence and Associated Factors of Failed First Peripheral Intravenous Catheters among Adult Patients at Medical Surgical Wards in Public Referral Hospitals of West Amhara, Ethiopia, 2021

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ABSTRACT (ENGLISH)

Background. Complications of peripheral intravenous catheters cause problems in clinical practice and bring high costs in terms of morbidity and mortality of patients. Therefore, this study aimed to assess the incidence and associated factors of failed first peripheral intravenous catheters among adult patients in selected Public Referral

Hospitals of West Amhara Regional State, Ethiopia, 2021. *Materials and Methods.* An institution-based prospective observational study was conducted among 423 adult patients from January to February 2021. Patients were selected using systematic random sampling techniques. The data were collected using interviewer-based, structured questionnaires and observational checklists. EPI-DATA 3.1 and SPSS version-23 were used for data entry and analysis, respectively. Frequency, percentages, and means were calculated. The outcome variable was determined and graded based on phlebitis and infiltration scales. Binary and multivariable logistics regressions were computed. *Results.* Four hundred and seventeen first peripheral cannula sites from 418 patients were followed for 2,565 peripheral catheter hours. A failed first peripheral intravenous catheter was observed in 124 (29.7%, CI: 25.6–34) adult patients. Patients who were female (AOR=0.4, 95% CI: 0.22–0.74) had cannula duration of 49–72 hours (AOR =0.31, 95% CI: 0.14–0.7) and 73–96 hours (AOR=0.39, 95% CI: 0.17–0.9), and patients who had been given electrolytes (AOR=0.31, 95% CI: 0.11–0.86) were more likely to have failed first peripheral intravenous cannula. *Conclusions.* Failed first peripheral intravenous cannula is much higher as compared to the acceptable rate of ≤5% by the Infusion Nurses Society. Hence, all patients with peripheral intravenous catheters are screened for catheter failure at least once a day. Providing appropriate nursing care and patient education is also required to reduce the risks.

FULL TEXT

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1. Background

A peripheral intravenous catheter (PIVCs) is a short catheter inserted into the vein on the peripheral areas of the patients [1]. It is the most frequently used invasive clinical/hospital procedure for the patients admitted to the hospital [2–5]. Around 33%–67% of patients have a PIVC inserted during their hospitalization with the cannula remaining in place for considerable duration [6, 7]. It provides access to the administration of intravenous fluids, medications, blood products, and nutrients to the patient [4].

However, the procedure is not free of risks as it puts the patient susceptible to local and systemic complications [4, 8]. It has unacceptably high failure rates [9, 10], and the failure rate lies between 35% and 50% [5]. PIVCs usually fail prematurely before the end of the treatment because of complications [11]. Failures take in the form of phlebitis, infiltration, occlusion/mechanical failure, dislodgment, and infection, any of which alone or in combination leads to removal of the catheter before the end of its intended dwell time [5, 6]. These complications are serious yet preventable adverse events to the patients [12]. They lead to problems in clinical practice and cause patient discomfort/pain, catheter replacement, increased medical treatment and length of hospital stay, with high cost in terms of morbidity and mortality [4, 6, 12], and increases the workload for replacement and follow-up of the devices [11].

In a prospective study on the incidence of PIVC failure at Manacor hospital, Spain was 41.8% [12]. In developing countries, due to scarcity of resources, and economic problems, the incidence of PIVC complications including phlebitis is high [7]. The phlebitis rate ranges from 2.3%–67% [13] and becomes one of the most attention-drawn complications [1, 14]. In another prospective study among adult patients, the incidence of phlebitis was 31.4% [15]. Many factors influenced the development of PIVC complications such as the use of irritant drugs and fluids, size of cannula, anatomical location/site of insertion, large gauge catheter size, duration of cannulation/catheter used for longer than 48 hours, age, gender, and associated diseases [3, 4, 9, 13, 15].

Previous observational studies have recommended interventions namely regular assessment [11] and routine replacement of the catheter as an intervention to reduce the incidence [8, 16]. In addition, the association for Vascular Access (AVA) developed guidelines to ensure a higher level of safety for the patient and promote complication-free device longevity [2]. Jackson recommended points to reduce the incidence of infusion-related complications. These recommendations are observing the site at least daily, securing cannula with a proven dressing, replacing loose, removing contaminated dressings, inserted away from the joints whenever possible, using aseptic technique, considering policy position on re-siting of the cannula, plan, and document continuing care, using

the smallest and suitable gauge cannula, and replacing the cannula at the first indication of complications [17]. To date, the issue of PIVC remains unresolved and a public health challenge [18], and the incidence of complications is still higher. There is certainly a pressing need for credible research and forwarding suggestions on this area. However, in Ethiopia, there is no published scientific research describing the incidence of peripheral intravenous catheters' complications among adult patients. The primary aim of this study is to assess the incidence and factors of failed first peripheral intravenous catheters among adult patients in Public Referral Hospitals of Amhara regional state, Ethiopia. The finding would provide directions for the prevention of peripheral catheter failure, improvement of patient outcomes, and reduction of hospital care costs. It would also help operational-level hospitals' managers, Amhara National Regional State Health Bureau, and Federal Ministry of Health Ethiopia to plan such interventions and policy-making, aiming improvement of PIVC.

2. Materials and Methods

2.1. Study Settings and Period

This study was conducted in Public Referral Hospitals of West Amhara Regional State, Ethiopia from January to February 2021. The regional state contains 28 million population in mid-2018 and it has 14 zones, three city administrations, and 180 woredas (139 rural and 41 urban [19]. It also has 80 hospitals (8 referrals, 2 general, and 73 primaries), 847 health centers, and 3,342 health posts [20, 21]. Despite the increased number of health facilities, shortages of skilled health personnel, medical equipment, drugs, and medical supplies, and inefficient and inequitable use of health resources are the challenges of the region [21, 22]. Five referral hospitals (Debre Markos referral hospital, Tibebe Gion referral hospital, Felege Hiwot referral Hospital, Debre Tabor Referral Hospital, and University of Gondar referral Hospital) were included in the study [21].

2.2. Study Design and Population

An institution-based prospective multi-center observational study was conducted among adult patients who were admitted to medical and surgical wards. The source population was all adult patients admitted to medical and surgical wards in each hospital. All adult patients with age greater than or equal to 18 years, who had peripheral intravenous catheter cannula insertions during the time of the study, and agreed to participate in the study were included. Patients with preexisting skin rashes, lacerations, and trauma at insertion sites, unconscious, psychiatric illness, patients who had a history of allergy to any medications, burn at PIVC insertion sites, patients who refused to give written informed consent, and those with previously inserted peripheral intravenous catheter cannula from outside hospitals were excluded [21].

2.3. Sample Size, Sampling Technique, and Procedures

To calculate the sample size, we considered the incidence of the first PIVC complication as 50% and with an alpha error of 5% and a power of 95%. Then, 423 sample sizes were required for the study. There are five referral hospitals in West Amhara regional state from which the samples were taken. The total sample size was allocated to each hospital proportionally based on the number of patients they have. Then, patients were selected using systematic random from each hospital [21].

2.4. Study Variables

In this study, the dependent variable was failed the first intravenous catheter. Patient-related characteristics such as age, sex; comorbidities such as diabetes, renal problems, liver dysfunctions, surgery, and others; and peripheral intravenous cannula characteristics such as the size of catheter, type of dressing, site of insertion (upper arm, cubital fossa, forearm, wrist, hand), and nature of peripheral intravenous cannula infusate, antibiotics, blood products, and electrolytes were the explanatory variables.

2.5. Operational Definition

PIVC failure is defined as unplanned PIVC removal with mechanical complications (phlebitis and infiltration) or infection before the completion of any scheduled intravenous therapy [12].

Failed first intravenous catheter: A composite measure of first intravenous catheter failure outcomes from phlebitis and infiltration.

(i) **Phlebitis** is defined as the presence of two or more signs of pain, tenderness, warmth, erythema, swelling, or a

palpable cord with or without purulent drainage from the catheter insertion site. The severity of phlebitis was graded using the Visual Inspection Phlebitis (VIP) scale. The scale can range from 0, indicating no symptoms of phlebitis, to 5, with signs of purulent drainage, redness, and a palpable cord greater than 3 inches. According to the standards of the Infusion Nurses Society (INS), the accepted phlebitis rate is 5% or less [13].

(ii) **Infiltration** is defined as the permeation of IV fluid into the interstitial compartment, causing swelling of the tissue around the site of the catheter. All PIVCs were changed for a score of 2 or more, determined by the presence of a cold or warm skin region around the insertion site, pain, redness, and/or edema extending from 1 inch to 2 inches from the PIVC site/beyond the tip of the catheter.

2.6. Data Collection Tools, Measurements, and Procedures

Interviewer-based structured questionnaires were adapted from validated and standardized existing tools to measure peripheral intravenous catheter-induced complications. The PIVC insertion technique at hospitals is standardized based on the hospital policy and infection control protocol for procedures. But the recommended changing and replacing peripheral intravenous cannula is after 72–96 hours [8]. Observational checklists were used to collect patient-related and peripheral intravenous cannula-related characteristics. The Visual Inspection Phlebitis (VIP) scale [17] from the third edition of the standards for infusion therapy was used to assess phlebitis. The Infusion Nurses Society Infiltration Scale was used to assess infiltration. Only the first insertions of PIVCs were included in the study (21).

2.7. Follow-Up of Patients

Recruitment of patients took place at medical and surgical wards immediately at admission. Primarily, data collectors invited the participants to participate in the study. Those who accepted the invitation were asked for their consent. Then identification code was given for records of enrolled participants and follow-up was carried out until the intravenous cannula was discontinued. Data collectors assessed the PIVC site every 12 hours.

2.8. Peripheral Intravenous Catheter Care in the Hospitals

PIVCs were usually inserted, and maintained by ward nurses using an aseptic technique. There is no firm policy of scheduled replacement of peripheral catheters during the study period. As a result, most of the peripheral catheters were left in place beyond 72 hours unless a complication is seen. PIVCs that had to be discontinued before 72 hours were because of complications, early discontinuation of IV infusions, and patients' discharge. But the recommended optimal replacement time of an intravenous catheter ranges from when "only clinically indicated" to three days [16, 18].

2.9. Data Management and Analysis

EPI- DATA 3.1 and SPSS version-23 software were for data entry and analysis, respectively. Descriptive statistics such as frequency, percentages, means, and standard deviations were calculated. The outcome variable was categorized as having and not having complications (Yes/No) and graded based on phlebitis and infiltration scales. Binary and multivariable logistics regressions analyses were computed. Finally, texts, tables, and graphs were used to report findings.

2.10. Quality Assurance Mechanisms

Before collecting the data, the face and content validity of the data collection tool was assured and checked by inviting experts in the field. The data collectors and supervisors were trained about the study purpose and protocol. The research data collection tool was piloted (pre-tested) to check the fitness of the tool for the study settings and necessary correction was made. The investigators exchanged all the necessary information regarding the data collection procedures with the supervisors on a daily basis. Furthermore, the respondents had been given brief orientation (information sheet was read) before the interview, and supervision was also done at the spot by the supervisors. In addition, detailed feedback was provided to the data collectors. The collected data were coded per operational definitions of the study variables and checked-rechecked by the principal investigators for its completeness [21].

2.11. Ethical Considerations

The overall study protocol was approved by the Institutional Ethical Review Board of the University of Gondar (

December 15th, RNo: V/P/RCS/05/SAS/2020). Supportive letters were obtained from Amhara Regional state health bureau and then their copies were delivered to each hospital. Oral consent was obtained from each conscious participant and assent from the unconscious, disoriented, and intubated patients after clearly informing the purpose of the study. Name and other personal identifiers were not to be recorded to maintain the privacy and confidentiality of the data. The chance to ask anything about the study as well as the right to refuse or stop respond at any moment was given to participants (21).

3. Results and Discussion

3.1. Results

3.1.1. Sociodemographic Characteristics of Patients

Of 423 study participants, 418 patients responded to the questions fully, which gave a response rate of 98.8%. A higher proportion of the study participants, 199 (47.6%), were from the University of Gondar Comprehensive Referral Hospital. The age of the patients ranged from 18–90 years (mean 42.85 ± 16.64). In terms of sex and marital status, most of the participants were males (249—59.6%) and married (271—64.8%), respectively. The higher proportion of the participants (105—25.1%) were not able to read and write, and 112 (26.8%) were farmers in occupation (Table 1).

Table 1

Sociodemographic characteristics of participants to assess the incidence and associated factors of failed first intravenous catheter among adult inpatients at medical-surgical wards in Public Referral Hospitals of West Amhara Regional State, Ethiopia, 2021 ($N=418$).

Variable category		Frequency	Percentage
Study hospitals	University of Gondar comprehensive referral hospital	199	47.6
Tebebe Gion referral hospital	60	14.4	Felegehiwot referral hospital
55	13.2	Debretabor referral hospital	54
12.9	Debremarkos referral hospital	50	12.0
—			
Patient unit category	Medical ward	197	47.1
Surgical ward	221	52.9	
Age category	18–33	147	35.2

34–50	146	34.9	>50
125	29.9		
Sex	Male	249	59.6
Female	169	40.4	
Marital status	Single	86	20.6
Married	271	64.8	Divorced
38	9.1	Widowed	23
5.5	-		
Educational level of patient	Not able to read and write	105	25.1
Able to read and write	82	19.6	Grade 1–4
20	4.8	Grade 5–8	50
12.0	Grade 9–12	80	19.1
Colleague and above	81	19.4	
Occupation of patients	Housewife	55	13.2
Student	41	9.8	Merchant
69	16.5	Farmer	112
26.8	Government employee	78	18.7
Private employee	37	8.9	Daily borer
21	5.0	Other specify*	5

*No job= 1, priest= 1, and retired=3.

3.1.2. Peripheral Intravenous Cannula-Related Features

Four hundred and seventeen peripheral cannula sites from 418 patients were followed for 2,565 catheter hours. One

hundred and twenty-five (29.9%) of patients had associated disease in addition to the main admission diagnosis. Majority of peripheral catheter sizes were G-18 in 218 (52.2%) and G-20 in 183 (43.8%), respectively. Plaster-based dressing was applied for the majority of catheter sites, 415 (99.3%). 166 PIVCs were frequently inserted in forearms (39.7%) followed by wrists in 107 (25.6%). Antibiotics were the major infusate, 376 (90%) administered through the peripheral cannula followed by glucose, 183 (43.3%). The duration of the peripheral cannula on the patients ranged from an hour to 168 hours. A larger proportion (224—53.6%) of the cannula stayed with the patient for less than 48 hours and 49 (11.7%) of the cannula stayed for more than 96 hours. (Table 2).

Table 2

Peripheral intravenous cannula-related features to assess the incidence and associated factors of failed first intravenous catheter among adult inpatients at medical-surgical wards in Public Referral Hospitals of West Amhara Regional State, Ethiopia, 2021 (*N*=418).

Variable category		Frequency	Percentage
Presence of comorbidity	Yes	125	29.9
No	293	70.1	
Types of comorbidities	Diabetes	26	6.2
Renal problems	19	4.5	Liver dysfunction s
5	1.2	Surgery	5
1.2	Others****	67	16.0
-			
Peripheral intravenous cannula-related characteristics			
Size of cannula	G16	9	2.2
G18	218	52.2	G20
183	43.8	G22	8
1.9	-		
Type of dressing	Plaster	415	99.3
Transparent	2	0.5	Gauze

1	0.2		
Site of insertion	Upper arm	22	5.3
Cubital fossa	31	7.4	Forearm
166	39.7	Wrist	107
25.6	Hand	90	21.5
Others**	2	0.5	
Duration of the peripheral cannula	<24 hours	122	29.2
24–48 hours	102	24.4	49–72 hours
83	19.9	73–96 hours	61
14.6	>96 hours	49	11.7
–			
Nature of peripheral intravenous cannula infusate	Glucose (0.09%/0.45% NaCl, Dextro/NaCl)	183	43.3
Antibiotics	376	90	Glucose (D30 water)
59	14.1	Blood products	31
7.4	Electrolytes	32	7.7

** : Jugular vien-1, Leg=1. ***Antihypertensive, antimalaria, antipain, diuretics, atropine, PUD medications. **** Anemia, aspirational pneumonia, asthma, bed sore, BPH, CAP, dermatitis, disseminated TB, fracture, gastric cancer, HAP, hemorrhoid, PCP, RVI, pancytopenia, paraplegia, PTB, seizure, and leishmania.

3.1.3. The Incidence and Severity of Peripheral Cannula-Related Complications

Complication related to the peripheral catheter was observed in 124 (29.7%, CI: 25.6–34) patients. Phlebitis accounted for the majority, 100 (23.9%) of the complications. Regarding the severity of the complications, the majority of the complication was grade 1 in both phlebitis and infiltration (Table 3).

Table 3

The incidence and severity of peripheral cannula-related complications to assess the incidence and associated factors of failed first intravenous catheter among adult inpatients at medical-surgical wards in Public Referral Hospitals of West Amhara Regional State, Ethiopia, 2021 (*N*=418).

Variable category		Frequency	Percentage
Presences of complication related to the cannula	Yes	124	29.7
No	294	70.3	.
Types of complication			
Phlebitis	Yes	100	23.9
No	318	76.1	.
Grading of phlebitis	Grade 1	69	16.5
Grade 2	29	6.9	Grade 3
2	.5	.	.
Infiltration	Yes	25	6
No	393	94	.
Grading of infiltration	Grade 1	19	4.5
Grade 2	4	1.0	Grade 3

3.1.4. Factors Associated with Peripheral Cannula Complications

Bivariate and multivariable logistic regression analysis was carried out to see the effect of independent variables on the dependent variable. In the bivariate analysis age category from 34–50years, being female sex, presence of comorbidity, peripheral cannula duration more than 24 hours, and administering electrolytes were significant factors for the incidence of PIVC complications. The patients who were in the age group of 34–50-year-old were 0.56 times more likely to have PIVC complications as compared to the age group ≥ 50 years old (COR=0.56, 95% CI: 0.33–0.96). The patients who had comorbidity were 0.56 times more likely to have PIVC complications as compared to those who had not (COR=0.56, 95% CI: 0.36–0.88).

Being female sex, peripheral cannula duration of 48–96 hours, and administering electrolytes were significant factors for the incidence of PIVC complications in the multivariable logistic regression analysis. Being female patients were 0.4 more likely to have PIVC complications as compared to male patients (AOR=0.4, 95% CI: 0.22–0.74). Patients who had peripheral cannula duration from 49–72 hours were 0.31 more likely to have PIVC complications as compared to patients who had less than 24 hours duration (AOR=0.31, 95% CI: 0.14–0.7). Patients who had peripheral cannula duration from 73–96 hours were 0.39 more likely to have PIVC complications as compared to patients who had less than 24 hours duration (AOR=0.39, 95% CI: 0.17–0.9). Patients who had been given

electrolytes through the PIVC were 0.31 more likely to have PIVC complications than their counterparts (AOR=0.31, 95% CI: 0.11–0.86) (Table 4).

Table 4

Factors associated with the incidence of failed first intravenous catheter among adult inpatients at medical-surgical wards in Public Referral Hospitals of West Amhara Regional State, Ethiopia, 2021 (N=418).

Variable		Is there a complication related to the peripheral cannula		COR (95% CI)	AOR (95% CI)
Yes	No	Patient unit category	Medical ward	64	133
1	1	Surgical ward	60	161	1.29(0.85–2)
0.99(0.53–1.86)	-				
Age category	18–33	44	103	0.71(0.41–1.22)	1.05(0.47–3.36)
34–50	51	95	0.56(0.33–0.96)*	0.79(0.39–1.62)	>50
29	96	1	1	.	
Sex	Male	56	193	1	1
Female	68	101	2.32(1.51–3.56)**	0.4(0.22–0.74)**	.
Marital Status	Single	22	64	1.87(0.71–4.92)	2.5(0.0.65–9.76)
Married	80	191	1.54(0.64–3.69)	1.35(0.43–4.23)	Divorced
13	25	1.24(0.42–3.61)	1.9(0.46–7.8)	Widowed	9
14	1	1	.		

Educational level of patient	Not able to read and write	26	79	1.6(0.85–3.04)	1.4(0.45–4.47)
Able to read and write	21	61	1.54(0.78–3.01)	0.96(0.33–2.85)	Grade 1–4
4	16	2.11(0.64–6.93)	1.86(0.36–9.5)	Grade 5–8	13
37	1.5(0.69–3.28)	1.38(0.49–3.89)	Grade 9–12	32	48
0.79(0.42–1.5)	0.6(0.25–1.52)	Colleague and above	28	53	1
1	-				
Occupation of patients	House wife	17	38	1	
Student	14	27	0.56(0.06–5.38)	0.37(0.1–1.4)	Merchant
18	51	0.48(0.05–4.74)	1(0.35–2.86)	Farmer	28
84	0.71(0.07–6.76)	0.92(0.36–2.32)	Government employee	25	53
0.75(0.08–6.99)	0.433(0.13–1.48)	Private employee	15	22	0.53(0.06–4.99)
0.53(0.16–1.75)	Daily borer	6	15	0.37(0.04–3.6)	0.48(0.13–1.74)
Other specify*	1	4	0.63(0.06–6.8)	0.85(0.07–9.6)	.
Presence of comorbidity	Yes	48	77	0.56(0.36–0.88)*	0.87(0.48–1.59)

No	76	217	1	1	.
Size of cannula	G16-G18	59	168	0.68(0.45–1.04)	1.74(0.92–3.13)
G20-G22	65	126	1	1	.
Site of insertion	Upper arm	7	15	1	1
Cubital fossa	10	21	0.98(0.3–3.2)	2.27(0.46–11.3)	Forearm
51	115	1.1(0.41–2.74)	1.78(0.47–6.64)	Wrist	31
76	1.14(0.43–3.1)	2(0.52–7.78)	Hand	23	67
1.4(0.5–3.75)	1.35(0.35–5.27)	Others* *	2	0	
	-				
Peripheral cannula duration	<24 hours	21	101	1	1
24–48 hours	34	68	0.42(0.22–0.78)*	0.58(0.28–1.2)	49–72 hours
35	48	0.29(0.15–0.54)**	0.31(0.14–0.7)**	73–96 hours	21
40	0.4(0.2–0.8)*	0.39(0.17–0.9) *	>96 hours	13	36
0.58(0.26–1.27)	0.57(0.23–1.4	Nature of peripheral intravenous cannula infusate			
Glucose (0.09%/0.45% NaCl, Dextro/NaCl)	Yes	14	23	0.8(0.53–1.23)	0.89(0.51–1.54)
No	22	51	1	1	.
Antibiotics	Yes	34	70	0.83(0.4–1.7)	1.16(0.49–2.75)

No	2	4	1	1	.
Glucose (D30 water)	Yes	6	13	0.82(0.45 –1.5)	1.79(0.68 –4.7)
No	30	61	1	1	.
Blood products	Yes	5	6	0.52(0.25 –1.1)	0.6(0.23– 1.54)
No	31	68	1	1	.
Electrolytes	Yes	3	4	0.37(0.18 –0.76)*	0.31(0.11 –0.86)*

*Significant at $P < 0.05$; **highly significant at $P < 0.01$. The bold variables are significantly associated in both bi-variable and multivariate analyses.

3.2. Discussion

In this study, a complication related to the peripheral catheter was observed in one-third of the patients, and phlebitis accounted for the majority of the complications. The majority of the complication was grade –1 in both phlebitis and infiltration. Age category from 34–50 years old, being female sex, presence of comorbidities, peripheral cannula duration more than 24 hours, and administering electrolytes were significant factors for the incidence of a failed first peripheral intravenous catheter.

This study revealed that one-third of the first peripheral intravenous cannula had catheter failure outcomes either in the form of phlebitis or infiltration. This rate is consistent with the study conducted in Air Force Hospital Kalaikunda [15], and the University of Tokyo in Japan (29.2%) [23]. But it is much higher than the expected rate ($\leq 5\%$) of PIVC complications recommended by the Infusion Nurses Society [13]. This might be due to scarcity of resources and economic problems to change the PIVC as per the recommendations [7]. It is also higher than in another study conducted in Japan (7.5%) ([14]. This might be because study participants were from intensive care units in Japan where serious follow-up of the patients had taken place. It is lower than a study finding at King Abdulaziz Medical City, Riyadh, Saudi Arabia (39.3%) [24]. The difference might be since, in this study, the incidence of failed PIVC was calculated from the first inserted peripheral cannula and composited from phlebitis and infiltration, but it was calculated from the whole inserted peripheral cannula and other complications were added in Saudi Arabia.

The current study indicated that the majority of the complications were grade –1 in both phlebitis and infiltration. This finding is in line with the study finding in China where most of the complications in phlebitis (88.4%) and infiltration (93.7%) were grade –1(10). It is also supported by a study conducted in Japan where 72.6% of phlebitis was Grade –1 [14].

The patients' characteristics and condition are also risk factors for phlebitis that should be considered in an individual's care [24]. The current study indicated that the odds of having failed PIVC are higher among female patients as compared to male patients. This finding is supported by a study conducted at Queensland, Australia where female sex was a non-modifiable factor associated with an increased risk of PIVC failure [6]. This finding was in agreement with the conclusion of a study finding at King Abdulaziz Medical City, Riyadh, Saudi Arabia where phlebitis was predicted with female sex [24].

This study reported that patients who had peripheral cannula duration of 48–96 hours were more likely to have PIVC complications as compared to patients who had less than 24 hours duration. According to the Infusion Nurses Society (INS) guidelines, there is no need to change the peripheral intravenous cannula for adult patients after 72 hours unless clinically indicated [16].

The Centers for Disease Control and Prevention advocate replacing catheters every 72–96 hours in the adult patients in order to reduce complications [8, 24]. However, in the present study peripheral catheters left in for over 96 hours did not show a higher incidence of complications. This finding was in line with a study's findings in China and King Abdulaziz Medical City, Riyadh, Saudi Arabia where duration for PIVCs insertion was not a significant predictor of the complications [10]. This was in agreement with the notion that routine replacement of PIVCs does not affect on the incidence of catheter failures [24] and the catheter for adult patients should be changed when clinically indicated only [16]. But, breaching the recommendation of routine removal of catheters at 72–96 hours is up to the decision to the clinical judgment of nurses [12].

3.2.1. Strength and Limitation of the Study

A prospective follow-up study was employed to see the development of the outcome variable, and all efforts were made to avoid sources of bias related to patient follow-up during the study. As a result, the finding of this study can be reasonably generalized to a larger group of population and institutions.

The interpretation of this finding should account for the following limitations. First, the follow-up time of the study was short. Second, the outcome occurrence after removal of PIVCs and discharging of the patient was not followed.

4. Conclusions

The incidence of the failed first peripheral intravenous catheter was much higher than the acceptable rates. A large proportion of first intravenous catheter failure occurred in the form of Phlebitis. Comorbidity, being female, cannula duration of more than 48 hours, and type of infusate, electrolytes were the factors associated with PIVC failure. Hence, all patients with peripheral intravenous catheters should be screened for complications of the PIVC at least once daily as recommended by the CDC guideline [25]. It is also important to have appropriate nursing care and patient education to reduce the risk factors. An observation chart to document the development of signs of PIVC complications may be developed in hospitals. This would help detect PIVC complications much earlier.

4.1. Clinical Implication of the Study

As shown in the result section of this study and the literature reviewed, understanding the rate and factors of failed peripheral intravenous catheters is important to fill the gap and strengthen the quality of patient care. The result of the current study reflects the finding may help to guide health care workers working in institutions with facilities equal to the center in which the study was conducted.

Authors' Contributions

All the authors conceived and designed the study, analyzed and interpreted the data, wrote the manuscript, and read and approved the final version of the manuscript.

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Glossary

Abbreviations

AOR: Adjusted odds ratio

AVA: Vascular access

BPH: Benign prostate hyperplasia

CAP: Community-acquired pneumonia

CI: Confidence interval

COR: Crude odds ratio

HAP: Hospital-acquired pneumonia

INS: Infusion Nurses Society

IV: Intravenous

PCP: Pneumocystis carinii pneumonia

PIVC: Peripheral intravenous catheter

PTB: Pulmonary tuberculosis

PUD:Peptic ulcer disease

RVI:Retroviral infection

SPSS:Statistical Package for Social Sciences

TB:Tuberculosis.

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DETAILS

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Hutchinson, D., Kunasekaran, M., Stone, H., Chen, X., Quigley, A., Moa, A., & C, R. M. (2023). Healthcare workers' SARS-CoV-2 infections in four hospital outbreaks during delta variant prevalence in sydney, australia. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/1806909>

Background. Healthcare workers (HCWs) are at risk of SARS-CoV-2 infections due to occupational exposure. The use of airborne personal protective equipment (PPE) significantly reduces this risk. In June 2021, an epidemic of the Delta variant began in New South Wales (NSW), Australia. Concurrent PPE guidelines, set by the Clinical Excellence Commission (CEC), restricted the use of respirators. **Objective.** To understand the relationship of PPE guidelines with workplace-acquired HCW SARS-CoV-2 infections in different clinical settings and to examine the relationship between rates of community transmission and workplace-acquired HCW infections during the Delta outbreak in NSW. **Methods.** Total SARS-CoV-2 HCW infections between 13 June and 30 October 2021 (first four months of the Delta wave) were estimated from the government COVID-19 surveillance reports and compared with the surveillance reports of community transmission. In the absence of a detailed reporting of HCW infections, open-source data including news articles, media releases, and epidemiological surveillance reports were also collected. Data were extracted on HCW cases of SARS-CoV-2 from four hospitals, including the number of HCW cases (per NSW Health definition), clinical setting, PPE guidelines, and evidence of increasing local transmission. **Results.** SARS-CoV-2 infections in HCW identified as workplace-acquired infections ($n=177$) and those without a known transmission source ($n=532$) increased during the period of increasing community transmission ($n=75,014$) in NSW. Four hospital COVID-19 clusters affecting 20 HCWs were identified between June and October 2021. HCW clusters occurred in general wards where staff were recommended to wear surgical masks. No workplace-acquired HCW infections were reported in these hospitals from critical care wards, where respirators were recommended during the same outbreak weeks. **Conclusions.** Differences in PPE policy across different wards may leave healthcare staff at risk of SARS-CoV-2 infection. During periods of high community transmission, respirators should be provided to protect hospital staff. Formal reporting of HCW infections should occur.

Bimray, P., Chipps, J., & Ticha, V. (2023). Professional values of undergraduate students at a nursing school in south africa. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/9635033>

Background. Nursing schools play an important role in instilling nursing professional values in undergraduate nursing students and ensuring that they produce professional nurse graduates. Several studies in various countries have been conducted to describe the professional values held by nursing students, but this has not been explored in detail in South Africa. **Aim.** The purpose of this study was to describe the professional values held by undergraduate degree students at a nursing school in South Africa. **Methods.** A cross-sectional survey using a self-administered questionnaire was conducted. With a population of 1,233 undergraduate nursing students across four years in the degree programme at the nursing school, a sample of 294 was calculated as the representative (95% CI, 5% error, and 50% response distribution). The 26-item nurses professional values scale revision (NPVS-R) with five value dimensions was used to collect the data. Means, frequencies, and confidence intervals were used to describe the values and Mann-Whitney U tests and Kruskal-Wallis independent sample tests were used to compare the findings with the demographic characteristics. **Results.** A total number of 245 respondents completed the questionnaire (response rate of 83.3%). Overall, the nurse professional value score was high (113.1 ± 13.1). The values of trust (4.46 ± 0.61), justice (4.39 ± 0.57), and caring (4.38 ± 0.55) were rated significantly higher than those of professionalism (4.23 ± 0.64) and activism (4.22 ± 0.57). First- and final-year students had significantly higher professional value scores. **Conclusion.** The study results describe the professional values of undergraduate nursing students in the school and confirmed the importance of trust, justice, and caring as the key professional values in the South African setting. **Clinical Relevance.** Nursing education should embed and monitor nursing professional values in the curriculum. Instilling nursing professional values in undergraduate nurses during formal training programmes improves quality patient care and service delivery for clinical practice.

Kebope, M. K., Mofatiki, E. M., & Moloko-Phiri, S. (2023). Nurses' perceptions on how recovery-oriented mental health care can be developed and implemented. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/4504420>

Aim. This study explored how nurses working in inpatient mental health units perceived the development and implementation of a recovery-oriented mental healthcare programme (ROMHCP). **Background.** The recovery-oriented mental healthcare approach (ROMHCA) in mental health is regarded as the future of mental health services and has been implemented in different countries worldwide. However, regarding developing and implementing the recovery approach, Africa appears to have been left behind by the rest of the continents. **Design.** The study used a qualitative approach to describe how a recovery-oriented mental healthcare approach could be developed. **Methods.** Thirty nurses who worked in Botswana's four inpatient mental health facilities consented and voluntarily participated in the study. Data were collected from February to mid-March 2022 through online focus group discussions and analysed using thematic analysis. The COREQ checklist was used to report the findings. **Results.** Two main themes emerged as follows: (i) developing and implementing a recovery-oriented mental healthcare programme is possible and (ii) certain elements are required to develop and implement ROMHCP. **Conclusion.** The participants believed that people diagnosed with mental illness could recover from the illness and suggested how it could be achieved. They also contended that the programme's success would lie mainly with multisectoral support from policymakers, facilities, hospital personnel, patients, and the community. **Clinical Relevance.** ROMHCP has the potential to benefit people with mental illness in the country. In addition, it would allow nurses to improve their knowledge and skills in managing mental illnesses. **Patient or Public Contribution.** The patients and the general public did not contribute to the study's concept, design, and outcomes. However, the nurses working in mental health facilities volunteered to participate in the study.

AbuAlula, N. A., Almarwani, A. M., Daniel, M. M., Naif, S. A., Alharbi, M. R., & Ebeid, I. A. (2023). The relationship between bullying and emotional state among undergraduate nursing students: A cross-sectional correlation study. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/2397229>

Introduction. Bullying behavior by nursing students is a serious problem that has contributed to the drop in numbers in the nursing profession. **Aim.** The study investigated the relationship between bullying and the emotional state of undergraduate nursing students. **Methods.** The study used a cross-sectional correlation design with a sample of 286 undergraduate nursing students from multiple nursing colleges located in the western region of Saudi Arabia. The 21-item depression, anxiety, and stress scale (DASS-21) was used to measure the study outcomes. A revised version of the Bullying Assessment Questionnaire was used to assess bullying experiences. Statistical analyses, including a t-test, Pearson correlation coefficient, and a one-way between-subjects ANOVA, determined the significance of the relationship between study variables. **Results.** There was a high prevalence of depression, anxiety, and stress symptoms among Saudi nursing students. Most of the respondents reported mild to extremely severe symptoms of depression (58.7%), anxiety (58%), and stress (44.8%). Around 90.1% of the nursing students reported exposure to a form of bullying over the previous 12 months. The most common items reported as part of this behavior included continually being assigned tasks beyond their capacity. Family members were the most frequently reported source of bullying (29.8%), followed by nursing faculties (20.9%). Bullying behavior was positively correlated with students' scores for depression, $r(284)=0.49$, $n=286$, $p<0.01$; anxiety, $r(284)=0.54$, $p<0.01$; and stress, $r(284)=0.56$, $p<0.01$. **Conclusion.** The study's findings raise concerns and highlight the importance of decreasing the risk of depression, anxiety, and stress among undergraduate nursing students. Nurse educators must ensure that students receive psychological support to decrease these psychological outcomes. Regularly monitoring bullying behavior is essential to maintain students' psychological stability, which could eventually reduce professional dropout rates.

Köpsén, S., Lilja, M., Hellgren, M., Sandlund, J., & Sjöström, R. (2023). Midwives' and diabetes nurses' experience of screening and care of women with gestational diabetes mellitus: A qualitative interview study. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/6386581>

Background. Gestational diabetes mellitus (GDM) is increasing and is associated with adverse outcomes for both mother and child. The metabolic demands of pregnancy can reveal a predisposition for type 2 diabetes mellitus (T2DM), and women with a history of GDM are more likely to develop T2DM than women with normoglycemic pregnancies. **Aim.** The aim of this study was to explore midwives' and diabetes nurses' experience of their role in screening, care, and follow-up of women with gestational diabetes mellitus and, further, to explore their opinions and thoughts about existing routines and guidelines. **Method.** Individual interviews were performed with ten diabetes nurses and eight midwives working in primary and special care. Qualitative content analysis was done according to Graneheim and Lundman. **Results.** The analysis of the interviews resulted in the overall theme "An act of balance between normalcy and illness, working for motivation with dilemmas throughout the chain of health care." Difficulties in carrying out the important task of handling GDM while at the same time keeping the pregnancy in focus were central. Women were described as highly motivated to maintain a healthy lifestyle during pregnancy with the baby in mind, but it seemed difficult to maintain this after delivery, and compliance with long-term follow-up with the aim of reducing the risk of T2DM was low. The women came to the first follow-up but did not continue with later contact. This was at a time when the women felt healthy and were focusing on the baby and not themselves. A lack of cooperation and easy access to a dietician and physiotherapist were pointed out as well as a wish for resources such as group activities and multiprofessional teams.

Ibrahim, R., Pawestri, F., Ragil, A. S., Widianingrum, S., & Hanifah, T. (2023). Psychosocial problems among psychiatric nurses for caring patients with mental disorders during the COVID-19 pandemic. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/3689759>

COVID-19 has a negative effect on the psychological well-being of psychiatric nurses. Thus, examining the psychosocial response of nurses is important for preventing more serious mental health problems and disruption of the quality of nursing care. This study aimed to evaluate the psychosocial problems of nurses who provided nursing care to patients with mental health disorders during the COVID-19 pandemic. A quantitative study with a cross-sectional design was conducted. The 101 nurses at Central Mental Health Hospital who provide nursing care to patients with mental health disorders were recruited through consecutive sampling. The instruments used were the demographic questionnaire, the Expanded Nursing Stress Scale, Zung Self-Rating Anxiety Scale, and The Connor–Davidson Resilience Scale 25. Univariate and bivariate analyses were used to process the data. The mean score of 45.1 (± 24.3) was obtained for the ENSS; around 97% of nurses have a work stress score below the average, 4.95% have mild-moderate anxiety, and 28.7% have a low level of resilience. Work stress and contact frequency, work stress and gender, anxiety and contact frequency, as well as resilience and contact frequency all correlated significantly (p value < 0.05). The Pearson test showed a significant positive correlation between work stress and anxiety (p : 0.002, r : 0.299). However, there was no significant correlation between anxiety and resilience (p : 0.643, r : 0.47), nor between work stress and resilience (p : 0.643; r : 0.47). Psychosocial disorders that psychiatric nurses face include occupational stress, mild-moderate anxiety, and low resilience. The government can create specific infection control guidelines for the mental health setting, and hospital management or ward leaders can also provide support to psychiatric nurses to increase resilience in reducing psychosocial problems.

Soltanian, M., Payegozar, R., Paran, M., & Sharifi, N. (2023). The relationship between metacognitive beliefs with clinical belongingness and resilience among novice nurses in neonatal intensive care units. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/2949772>

Background. The neonatal intensive care unit (NICU) is a sensitive ward for nurses. However, the low nurse-to-patient ratio has led to the hiring of novice nurses into the critical areas such as NICUs. These nurses are in need of help in the clinical environment as they have no much experience caring the neonates in the real clinical setting. Therefore, it is necessary to address the individual and psychological capacities with the help of which a person can overcome the difficult situations. This study aimed to investigate the relationship between metacognitions, clinical belongingness, and resilience of novice nursing staff in NICU wards. **Method.** This study is a descriptive-analytical study, and the research samples were composed of 78 novice nursing staff of Neonatal Intensive Care Units from teaching hospitals. Samples were selected via a purposive sampling method. Research tools included demographic, Wells and Hatton metacognitive beliefs, Jones Levitt belonging, and Connor–Davidson resilience questionnaires.

SPSS 22 software was used for data analysis. Results. The mean score of metacognitive beliefs in novice nursing staff was 92.67 ± 13.69 , and it was 116.69 ± 19.11 for belongingness and 78.78 ± 14.73 for resilience. There is positive and significant relationship between metacognitive beliefs and belongingness ($p < 0.019$, $r = 0.265$). In addition, the relationship between metacognitive beliefs and resilience in novice nursing staff was positive and significant ($p < 0.001$, $r = 0.359$). Conclusion. There is a positive relationship between metacognitive beliefs with belongingness and resilience of novice nurses; nursing managers can consider educational metacognition workshops to enhance the sense of belongingness and resilience of novice nursing staff leading to improve their clinical performance in neonatal care.

Jakobsson, J. (2023). Psychometric evaluation of the postoperative recovery profile. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/3745570>

Aim. To further evaluate the postoperative recovery profile regarding its psychometric properties. **Background.** The postoperative recovery profile is an instrument for the self-assessment of general postoperative recovery that has received increased attention within nursing research. However, psychometric evaluation during development was sparse. **Design.** Psychometric evaluation was done using classical test theory. **Method.** Data quality, targeting, reliability, and scaling assumptions were measured. In addition, confirmatory factor analysis was used to evaluate construct validity. Data collection was made during 2011–2013. **Result.** Data derived from this study showed acceptable quality; however, item distribution was skewed, with ceiling effects in the majority of items. Cronbach's alpha showed high internal consistency. Item-total correlations indicated unidimensionality, whereas six items demonstrated high correlations pointing at redundancy. The confirmatory factor analysis confirmed problems related to dimensionality as the five proposed dimensions were highly correlated with each other. Furthermore, items were largely uncorrelated with the designated dimensions. **Conclusion.** This study shows that the postoperative recovery profile needs to be further developed to serve as a robust instrument within nursing as well as medical research. Arguably, values from the instrument should not be calculated at a dimensional level for the time being because of discriminant validity issues.

Bayor, S., & Korsah, A. K. (2023). Discharge against medical advice at a teaching hospital in Ghana. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/4789176>

Introduction. Discharge against medical advice is a global phenomenon where patients voluntarily terminate their consent to medical care before the medical team declares them fit for discharge. The phenomenon adversely affects the delivery of quality health care. **Methods.** A retrospective study was conducted at a Ghanaian teaching hospital involving patients who were admitted to the emergency settings within a 2 years period. Data were retrieved from the hospital records and patients discharged against medical advice were identified and studied. Data were cleaned and coded with Excel application and analyzed with SPSS version 23. **Results.** A total of 8,565 admissions were made into the ward within the period under review with 210 patients been discharged against medical advice. The prevalence rate was 2.5% with high prevalence seen in male and younger populations. Fractures and head injuries were the commonest conditions for which patients requested to be discharged against medical advice, whilst financial constraints and preference for herbal treatment were the major factors for which patients requested to be discharged against medical advice. **Conclusion.** Discharge against medical advice exists and negatively affects the delivery of quality health care in the Ghanaian health sector. Education especially towards at-risk groups such as the younger populations and patients with fractures as well as effective communication between medical team and patients and their families are some proposed measures to reducing the prevalence and negative impacts associated with discharges against medical advice.

Darvishpour, A., & Shiva, M. F. (2023). Investigation of caring behavior and caring burden and their associated factors among nurses who cared for patients with COVID-19 in East Guilan, the north of Iran. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/8567870>

Background. Nurses experience caring burdens, which can affect their caring behaviors. Caring for highly infectious patients, in particular COVID-19, is a new phenomenon and little is known about it. Considering that caring

behaviors can be influenced by various factors and cultural differences of the society, it is necessary to conduct studies about caring behaviors and caring burdens. Thus, this study aimed to determine caring behavior and caring burden and their relationship with some associated factors among nurses who cared for patients with COVID-19. **Materials and Methods.** This cross-sectional, descriptive design study was conducted by census sampling on 134 nurses working in public health centers in East Guilan, the north of Iran, in 2021. The research instruments included the Caring Behavior Inventory (CBI-24) and the Caregiver Burden Inventory (CBI). Descriptive and inferential statistics were used to analyze the data using SPSS software version 20 with a significant level of 0.05. **Results.** The mean score of caring behavior and caring burden in nurses was 126.50 (SD= 13.63) and 43.65 (SD=25.16), respectively. There was a significant relationship between caring behavior and some demographic characteristics (education, place of living, and history of COVID-19) and between caring burden and some demographic characteristics (housing status, job satisfaction, intention to change job, and history of COVID-19) ($p<0.05$). **Conclusions.** Findings showed that despite the new emergence of COVID-19, the caring burden on nurses was moderate and they had good caring behavior. Despite these results, it is necessary for the relevant managers to pay special attention to protecting health workers during a national crisis such as COVID-19 so that they experience less caring burden and improve caring behavior.

Janatolmakan, M., Abdi, A., Rezaeian, S., Nasab, N. F., & Khatony, A. (2023). Violence against emergency nurses in kermanshah-iran: Prevalence and associated factors. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/9362977>

Background. Violence against emergency nurses is a global concern with undesirable physical and psychological consequences. This study was conducted to investigate the characteristics of physical and verbal violence against emergency nurses in Iran. **Methods.** In this cross-sectional study, 150 nurses working in seven hospitals affiliated to Kermanshah University of Medical Sciences were included in the study using the stratified random sampling method. The data collection tools included a personal information form and a researcher-made questionnaire. Violence-related characteristics were assessed using descriptive statistics. Logistic regression was used to identify factors related to physical and verbal violence. **Results.** The frequency rates of physical and verbal violence during the past 12 months were equal to 62% ($n=93$) and 94.7% ($n=142$), respectively. In both types of physical violence (49.5%, $n=46$) and verbal violence (40.4%, $n=57$), the nursing station was the most common place of violence. In both physical ($n=40$, 43.0%) and verbal violence ($n=101$, 71.1%), the most common perpetrator was the patient's family. Most physical violence (57.0%, $n=53$) and verbal violence (35.2%, $n=50$) occurred in the night shifts. No statistically significant relationship was found between physical and verbal violence and gender, age, marital status, type of employment, and work experience. **Discussion.** The results indicate the seriousness of workplace violence against nurses. It is necessary to adopt a global approach along with providing sufficient manpower and psychological empowerment of nurses. Further studies with a forward-looking approach are suggested.

Roya, M. P., Darvishpour, A., Mansour-Ghanaei, R., & Leyli, E. K. (2023). The effects of education based on the nursing process on ostomy self-care knowledge and performance of elderly patients with surgical stoma. *Nursing Research and Practice*, 2023 doi:<https://doi.org/10.1155/2023/2800796>

Background. Patients with surgical stoma experience problems, which can lead to their impaired adaptation and self-efficacy. The nursing process provides a framework for planning and implementing nursing care. This study aimed to investigate the effect of education based on the nursing process on ostomy self-care knowledge and performance of elderly patients with intestinal stoma. **Materials and Methods.** In this quasi experimental study, 52 elderly patients with intestinal ostomy who were referred to Razi Hospital in Rasht and met the inclusion criteria were invited to participate in research. Sampling was done by a simple random method. The intervention group received an educational programme based on the nursing process, whereas the control group received traditional training. The research instruments included a questionnaire to assess the level of ostomy self-care knowledge and ostomy self-care performance. Data were analyzed by SPSS software version 21 using descriptive and inferential statistics at a significant level of $p<0.05$. **Results.** The mean scores of ostomy self-care knowledge and performance in both groups (intervention and control) were increased. However, the improvement in self-care knowledge and performance of the intervention group was significantly greater than that in the control group ($p<0.001$). **Conclusions.**

The educational programme based on the nursing process compared to the routine patients training caused more improvement in ostomy self-care knowledge and performance of older adult patients with surgical stoma. Therefore, an educational programme based on the nursing process can be used as an educational model for these patients.

Boateng, A. B., Opoku, D. A., Ayisi-Boateng, N., Sulemana, A., Aliyu, M., Osarfo, J., & Hogarh, J. N. (2022). Factors influencing turnover intention among nurses and midwives in Ghana. *Nursing Research and Practice*, 2022
doi:<https://doi.org/10.1155/2022/4299702>

Background. Nurse turnover intention, defined as a measure of nurses' desire to leave their positions, is a global public health issue with a grave impact on the healthcare workforce. However, literature on it is limited in sub-Saharan Africa, an at-risk region. This study aimed to determine the predictors of turnover intention among nursing staff at a tertiary hospital in Kumasi, Ghana. **Methods.** This was an institution-based cross-sectional study conducted among 226 randomly selected nurses and midwives working at a tertiary healthcare center in Kumasi, Ghana. Data were collected by using a structured questionnaire. Significant predictors of turnover intention were analyzed by using multivariate logistic regression analysis. Adjusted odds ratio (AOR) with a 95% confidence interval (CI) and p value <0.05 was used. **Results.** The prevalence of turnover intention among study participants was 87.2% (197/226). About two-thirds (61.5%, 139/226) of the participants were exposed to a high level of workplace hazards. Management support (AOR=3.09, 95% CI=1.09–8.75), salary (AOR=0.07, 95% CI=0.01–0.46), inadequate number of staff on duty per shift (AOR=3.36, 95% CI=1.08–10.47) and participants' rank (AOR=6.81, 95% CI=1.18–39.16) were significantly associated with turnover intention. **Conclusion.** Overall, the turnover intention was high. Hence, there is a need for policymakers, health administrators, and nurse managers to implement strategies such as increasing staff strength, providing adequate support, incentives, and other forms of motivation for nurses and midwives to help reduce the rate of turnover intention.

Ayana, B. T., & Tolesa, G. G. (2022). Factors associated with nursing student satisfaction with their clinical learning environment at Wolkite University in Southwest Ethiopia. *Nursing Research and Practice*, 2022
doi:<https://doi.org/10.1155/2022/3465651>

Background. The clinical learning environment has been defined as “an interactive network of strengths within the clinical environment that influence the clinical learning outcomes of students. Understanding students' level of satisfaction with their clinical learning environment is crucial to ensuring the required teaching and learning process. Therefore, this study was designed to assess the level of satisfaction with the CLE among nursing students at the Wolkite University of Ethiopia. **Methods.** A cross-sectional study was conducted at Wolkite University. This study was carried out in March 2022 on 208 student nurses selected by purposive and convenient sampling techniques. This study used the English version of the Clinical Learning Environment and Supervision + Nurse Teacher (CLES + T) evaluation scale. The collected data were cleaned, coded, and entered into Epi data 3.1, and then, statistical analyses were performed using SPSS version 26. Bivariate and multivariable logistic regression models were used to identify factors associated with the satisfaction level of nursing students towards CLE. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated, and p values <0.05 were considered to indicate statistical significance. **Results.** More than half of the study participants were females, and nearly half (50.5%) of the participants were in year three of the nursing program. The study found that 39.9% (95%CI: 32.2%, 46.6%) of students were satisfied with their CLE. Factors that had a significant association with the satisfaction level of nursing students towards CLE were gender (female students) (AOR= 16.053 (6.397, 40.286)), year of study (4th year) (AOR =6.296 (2.679, 14.796)), and the type of the hospital in which their last clinical placement was held (at a primary hospital) (AOR=2.961 (1.122, 7.815)). **Conclusion.** Effective nursing education programs need to be developed to increase satisfaction with clinical practice and to promote positive emotional regulation in nursing students. Nurse practitioners and managers should be aware of their important role in the professional development of students and their satisfaction with clinical placements.

Al Muharraq, E., H., Alallah, S. M., Alkhayrat, S. A., & Jahlan, A. G. (2022). An overview of missed nursing care and its predictors in Saudi Arabia: A cross-sectional study. *Nursing Research and Practice*, 2022
doi:<https://doi.org/10.1155/2022/4971890>

Background. Nursing care is holistic, and missing any aspect of care can be critical to patients' health. However, due to the complex and intense nature of the nursing practice, nurses have to unintentionally prioritize some activities, forcing them to omit some aspects of nursing care. **Aim.** To explore the dimensions of missed nursing care and its predictors within the Saudi Arabian healthcare system. **Methods.** Quantitative, cross-sectional study used the MISSCARE survey by utilizing nonprobability convenience sampling to collect the data of 604 staff nurses working in inpatient wards in Jazan, Saudi Arabia. **Results.** The overall mean of missed nursing care is ($m=1.37$, $SD=0.45$). Missed nursing care activities were mostly failure to attend interdisciplinary care conferences ($m=1.66$, $SD=0.96$) and patient ambulation thrice a day ($m=1.63$, $SD=0.97$). Missed nursing care was mainly caused by human resource shortage ($m=3.53$, $SD=0.88$). Missed nursing care is predicted by the turnover intention ($B=2.380$, $t=3.829$, $p<001$) and job satisfaction ($B=-0.864$, $t=-4.788$, $p<001$). **Conclusion.** Although missed nursing care is evident in Saudi Arabia, it is significantly lower than the international rates, and it is mainly caused by labor resource shortage which directly influences nurses' job satisfaction and intention to leave. Optimizing the recruitment process, resource allocation and effective nurses' retention programs are proposed solutions that may be beneficial to mitigate missed nursing care.

Gjini, E., Carestia, M., Cenko, F., Giovanni, D. D., Mehmeti, I., Moramarco, S., . . . Buonomo, E. (2022). Hesitancy toward childhood vaccinations: Preliminary results from an albanian nursing Staff's investigation. *Nursing Research and Practice*, 2022 doi:<https://doi.org/10.1155/2022/7814488>

Healthcare professionals are important models for their patients since their individual knowledge and attitudes toward vaccination can influence the patient's willingness to adhere to vaccination campaigns. After developing a structured questionnaire, it was administered to a sample of nursing staff working in public vaccination centers in Albania (December 2020-January 2021), in order to conduct a preliminary investigation aimed at describing knowledge, attitudes, beliefs, and hesitancy toward childhood vaccinations. Among the sample of nurses involved in the administration of vaccines ($n=64$, 92% females), most of them were confident about vaccines and favorable to childhood vaccinations (90%). However, when specifically investigating beliefs, nearly a quarter of the sample showed to be hesitant; 22% were unsure or partially agreed that vaccines might cause conditions such as autism and multiple sclerosis. A high risk of hesitancy was identified in the youngest staff especially when their work experience was below 10 years or when they graduated less than 10 years before (OR: 5.3, CI: 1.4–19.5; and OR: 4.2 CI: 1.2–14.6). Similarly, a low acceptance rate (54%) was detected for future childhood SARS-CoV-2 vaccines among the nurses, which is a sign of high levels of vaccine hesitancy. With regard to knowledge about childhood vaccine contraindications, none of the nurses identified all the ten correct answers, while only 13% answered at least six questions correctly. These preliminary results highlight the need of investigating more Albanian nursing staff's knowledge and attitudes toward child vaccinations, therefore investing in tailored training. Due to the ongoing Covid-19 pandemic and the roll-out of mass vaccination, the role of healthcare workers remains crucial and needs more support to manage the changing public opinion as well as quickly evolving vaccine technologies.

Alsharif, F., Shibily, F., Almutairi, W., Alsaedi, A., Alsubaie, T., Alshuaibi, B., & Turkistani, A. (2022). Fatigue and sleep disturbance among breast cancer patients during treatment in saudi arabia. *Nursing Research and Practice*, 2022 doi:<https://doi.org/10.1155/2022/1832346>

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