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EDITORIAL

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Contemporary in Nursing: issues and challenges

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The development of technology and modernization in health care is currently a demand for nursing professionals to embrace and adopt in the context of nursing as a profession and nursing education. The urgency for nursing professionals to adapt to the current situation is inevitable since nurses are part of a healthcare service that addresses the needs and demands of high-quality care from patients and families.

As a profession in the era of digitalization, nurses are expected to be able to adjust their knowledge and skills in using technology in the health services. The development of care services continues to shift from previously only involving individuals to now involving families to realize more optimal health. With the trend of high-tech treatment, nurses need to improve their skills in optimizing the use of technology in delivering care. For example, using social media to provide health information for patients and families has improved knowledge, skills, and interactions. In addition, using social media in health services provides ongoing support, and at the same time, health services reach a more comprehensive range.

On the other hand, the massive changes in how educational institutions to design learning curricula using digital technology are also challenging for nursing education institutions. The next generation of nursing is needed to have the skills of the industrial revolution involving soft skills such as the ability to interact, communicate and work with various people such as colleagues, clients, and leadership, problem-solving, and critical thinking as more a lot of work alongside robots. These skills are needed to survive in the era of disruption. To produce such a generation of nursing, it will impact the demand on how nursing education staff adapt and use technology and conduct innovative student-centered learning experiences. This situation will force nursing educational institutions to take significant steps in providing human resources and facilities that will support the process of producing high-quality nurses. However, some discernable obstacles are faced by the nursing education system, such as the limited ability of resources to keep up with technological developments; the high cost and length of nursing education will hinder the profession's development because not many prospective students are interested in entering the nursing faculty. Moreover, the level of welfare of nurses that remains to be questioned is not balanced by the high cost of education.

The trend of contemporary issues in nursing is also involving how nurses develop science through research. Research is a form of nursing development efforts to adapt to the times so that the latest concepts and technologies in nursing are found. Research cannot be separated from nursing problems that are also developing. The ability of nurses in terms of knowledge and skills to conduct multidisciplinary research is still low because the ability of nurses to conduct research independently is still lacking.

The influence of contemporary trends and issues in nursing is taunts to challenge the future. Modernization is impossible to avoid, so substantial adaptation in this disruptive era will impact the future development of nursing as a profession and education. How nurses as professionals comprise the overall developments around them will determine the future of nursing itself.

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ORIGINAL ARTICLE

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A qualitative description of nurses' problems to monitor and supervise vital signs in COVID-19 patients in isolation room

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ABSTRACT

Introduction: Changes and deterioration of the condition of Corona Virus Disease-19 (COVID-19) patients are unknown and can even lead to the death of the patient in the isolation room. This study focuses on identifying the problem of nurses monitoring and supervising the vital signs of COVID-19 patients in the isolation room.

Methods: A descriptive qualitative study was conducted in January 2022 at a private hospital in Sukoharjo, Central Java. Ten participants who met the inclusion criteria were involved through purposive sampling. The semi-structured interview guidelines were developed by the researcher, and they used them to obtain the data. Interviews were recorded using a recorder device. The data from the interviews were recorded verbatim and analyzed using inductive content analysis following Elo and Kyngas's method. The member checking and thick description were done to maintain the validity of the data.

Results: Three main themes were found from the emerging data, including 1) the comparison of nurses and patients is not ideal with patients' conditions that cannot be predicted, 2) personal protective equipment (PPE) and monitoring tools have not reached the appropriateness target, and 3) the demand for high-technology vital sign monitoring devices was not feasible.

Conclusions: The problems being faced by the nurses in monitoring and supervising the vital signs of COVID-19 patients in the isolation room need innovative tools. Therefore, it is important for policymakers and related parties to create high-technology solutions for the isolation rooms to improve nursing service effectively and ensure the safety of both the patients and the nurses.

Keywords: attitude; COVID-19 patients; isolation room; monitoring; supervision; vital signs

Introduction

Coronavirus Disease 2019 (COVID-19), which is also known as SARS-CoV-2, was reported to have emerged in December 2019 in Wuhan, China. This epidemic quickly spread outside China, causing the whole world to experience an emergency response, especially in health services (Nishiura et al., 2020). The disease transmission runs very easily through aerosols and droplets, which makes the number of cases continue to increase rapidly (Rahman et al., 2020).

Since medication for the COVID-19 virus has not yet been found, the health workers can be effective in caring for the patients by conducting continuous monitoring and identifying the deterioration of the patient's condition (Pimentel et al., 2020; Sharma et al., 2020). In accordance with the recommendation of the

Ministry of Health of Indonesia in 2020, patients with confirmed COVID-19 from moderate to severe degrees must be admitted to a hospital for isolation and periodic monitoring, including monitoring of general conditions, vital signs, and laboratory check-up (Indonesia Ministry of Health, 2020). Those monitored were pivotal to predict the patient's conditions and detect the changes in health outcomes during the isolation phase in COVID-19 patients (Connor and Pilar Camargo Plazas, 2021).

One of the things being monitored for the COVID-19 patients is their vital signs. Therefore, the nurses who work in the isolation room should catch up on how to monitor the patients and report the patients' health outcomes (Yuki and Sophia, 2020). The assessment of vital signs gives indication that the body is functioning in an acceptable condition or has health problems. Moreover, the monitoring of the vital signs also provides information to the healthcare providers in support of the objective data in the nursing process. Indeed, COVID-19 patients with severe conditions requiring advance monitoring can be seen every one to two hours (Noviestari et al., 2020; Yuki and Sophia, 2020).

Previous research conducted by Rao et al. (2021) and Joo and Liu (2021) has explored the experiences, challenges, and obstacles of various healthcare providers in treating COVID-19 patients from different treatment rooms. They found that caring for the COVID-19 patients is a challenging practice, with insufficient support, concerns about family, and emotional and psychological stress. Otherwise, they felt focusing on infection risk at the expense of high-quality care, struggling with dynamic and unfamiliar challenges, being overwhelmed and exhausted by personal protective equipment (PPE), information overload and confusion, and being overstretched by additional responsibilities at work were also issues. The healthcare facilities to take care of COVID-19 patients still lack innovation. The assessment and reporting of the data were not digitally recorded. It is evidence that finding the right solution to the problems is difficult.

The perspective of nurses who have experience caring for COVID-19 patients in the isolation room of the hospital where the study was conducted, indicated that the flow of COVID-19 patients due to this outbreak made the nursing services hectic. When the pandemic broke out, healthcare providers were not ready for health services and treatment availability. The capacity of the isolation room was for 24 patients, but the condition should be able to handle up to 29 patients. The ironic situation when the nurses are taking care of the patients is that there are only three or four nurses on duty per shift. Even with the health facilities available in the patient's room, such as oxygen central, digital blood pressure, oxygen saturation, and more, the time to monitor and supervise the patients still lacks. Due to the limited admission in the Intensive Care Unit (ICU), the isolation room was forced to care for patients with severe conditions. In addition, the transmission of the COVID-19 virus requires the nurses to take care of the patients with personal protective equipment (PPE). The flow of COVID-19 patients in the isolation room made some patients not get maximum monitoring and supervision, so that changes and deterioration of the patient's condition were difficult to detect early (Pimentel et al., 2020).

Based on the researchers' experience, monitoring, and supervision of the vital signs of COVID-19 patients in the isolation room is manual and conventionally recorded. In the setting of the hospital, we found that there were 78% of COVID-19 patients admitted to the isolation room. Some of the patients became severely ill and required advanced nursing care in the ICU. However, since in the ICU there is no bedside, those patients should be taken care of in the isolation room. Therefore, we conducted the study to identify nurses' problems in monitoring and supervising COVID-19 patients' vital signs in the isolation room.

Materials and Methods

This study is a descriptive qualitative study that describes the problems facing nurses in monitoring and supervision the vital signs of COVID-19 patients at the isolation room. This research was conducted in the COVID-19 isolation room of the private hospital in Sukoharjo, Central Java in January 2022. The researchers ensured that the health protocols were applied by wearing masks, hand sanitizers, and keeping a distance from participants during research data collection.

The sampling technique was carried out by purposive sampling (Polit and Beck, 2015). Ten nurses who work in the isolation room participated in this study. To encourage the participants, the researchers communicated with the head nurses and head team to ask for the nurses who met the inclusion criteria. Inclusion criteria in this study were: 1) nurses had work experience of at least 6 months, 2) taking care of the COVID-19 patients in isolation room for at least 2 weeks. The exclusion criterion of the study was that if the participants were not available to complete the interview process due to their duty to take care of the patients. Informed consent was explained to the participants before the interview. The interview guidelines used in this study were developed by the researcher. We constructed the interview guidelines based on the research questions and objectives as well as the research concepts and phenomena. The interview questions consist of: 1) What do you do in monitoring COVID-19 patients in the isolation room? 2) What does the manager do in supervising COVID-19 patients in the isolation room? 3) What are the obstacles faced by nurses in monitoring vital signs of COVID-19 patients in the isolation room? 4) What are the obstacles faced by nurses in supervising vital signs of COVID-19 patients in the isolation room? 5) Is there any innovation in monitoring and supervision vital signs other than manually? All the interview processes required 45-60 minutes for each participant.

Table 1 Depicts an example of the data analysis process

Participant Statement	Coding	Theme
"*The imbalance between the number of patients and the nurses' resources makes nurses not optimal in monitoring the vital signs of COVID-19 patients in the isolation room.*" (P2)	The comparison of unideal patients and nurses	The comparison of nurses and patients is not ideal with patients' conditions that cannot be predicted
"*When monitoring the vital signs, there are unexpected activities, such as a patient who suddenly experiences a deterioration in their condition. The unexpected activities often cause the patient's vital signs to not be monitored properly. Nurses must be in a hurry or not be on time to monitor the vital signs of the patients.*" (P8)	Unpredictable situations and conditions	
"*I had an experience when I was on my shift. That day, I did not assess the patient's saturation because a device was running out. I have reported it to the head nurse, but that time cannot be fixed promptly as it is a hospital regulation. We suggest the patient's family bring the oximetry to check their own saturation.*" (P6)	There is no monitoring of vital signs with high technology.	The demand for high- technology vital signs monitoring devices was not feasible Sub-theme 1. The condition of isolated patients requires personal monitoring device
"*In the patient room, there are no vital signs devices that are continuously attached to the patient, so we cannot monitor the patient's vital signs directly from the nurse station. The deterioration of the patient's condition somehow delays response.*" (P10)	The absence of monitoring patients' vital signs with high technology connected to the nurse station	Sub-theme 2. The monitor devices that are connected to the nurse station directly

The results of the interviews were recorded using a tape recorder and were verbatim. The data were then analyzed to obtain the themes according to the research objectives. Content analysis of the research data was with an inductive approach following the Elo and Kyngas method. The data analysis consisted of an open coding process, coding sheets, grouping, categorization, and abstraction (Elo and Kyngäs, 2008). An example of the data analysis process is shown in Table 1.

To ensure trustworthiness, the researchers conducted data validity by conducting a member check to know the participants' validation of the interview results. Transferability was tested by comparing the results of this study with similar studies to explain the concept of the phenomena. To verify the emergent themes from the data, the researchers consulted an external expert to justify the theoretical and methodological discussion (Korstjens and Moser, 2018).

To guarantee the ethical consideration for this study, research ethics approval from Sultan Agung Islamic Hospital with the number of Ethical Clearance 37/KEPK-RSISA/XII/2021 was required. The researchers also followed the rules of ethics for human subject guidance based on the Council for International Organizations of Medical Sciences (CIOMS) in collaboration with the World Health Organization (2016). Anonymity, beneficence, justice, and do not harm were practiced by researchers in the data gathering process. The participants could withdraw from this study at any time if they felt uncomfortable and there were no consequences.

Results

Characteristics of the Participants

The characteristics of participants include age, sex, education level, work experience, and time to take care of the COVID-19 patients in the isolation room. All participants were female nurses, with an age range of mostly 26 to 35 years old (80%). The participants' education background was 80% graduated from Diploma III and had work experience as nurses for 10 years (50%). The time spent by participants taking care of COVID-19 patients in the isolation room was within 4-6 months (50%). Table 2 shows the demographic characteristics of the participants.

This study found three main themes in nurses' problems in monitoring and supervision of COVID-19 patients' vital signs in the isolation room. They are: 1) the comparison of nurses and patients is not ideal with patients' conditions that cannot be predicted, 2) personal protective equipment (PPE) and monitoring tools have not reached the appropriateness target, and

3) the demand for high-technology vital sign monitoring devices was not feasible.

Theme 1: The comparison of nurses and patients is not ideal with patients' conditions that cannot be predicted

The participants explained that the comparison of nurses and patients was not ideal under the conditions. The worsening of the patient's condition could not be predicted because of the obstacles to monitoring the vital signs of COVID-19 patients in the isolation room. The nurse-patient ratio is not ideal due to the lack of nurses compared to the high rate of admission of COVID-19 patients and the workload of nursing care. This condition is exacerbated by unpredictable conditions such as unexpected activities or deterioration of the patient's condition. The statement was expressed by four participants as follows:

> *"The imbalance between the number of patients and the nurses' resources makes nurses not optimal in monitoring the vital signs of COVID-19 patients in the isolation room."* (P2)

> *"When monitoring the vital signs, there are unexpected activities, such as a patient who suddenly experiences a deterioration in their condition. The unexpected activities often cause the patient's vital signs to not be monitored properly. Nurses must be in a hurry or not be on time to monitor the vital signs of the patients."* (P8)

> *"Here, we (the nurses) work in the isolation room based on the managerial setting. The comparison between nurses and patients is not ideal. Sometimes we feel that what we do in monitoring the patients does not complete due to the limited sources of information between patients and nurses."* (P9)

> *"Nurses should have approximately 30 minutes in the patient room to complete the treatment for a patient. All monitoring and supervision of patients in the isolation room are done on paper. We can imagine what a load of work this is here."* (P10)

Theme 2: Personal protective equipment (PPE) and monitoring tools have not reached the appropriateness target

Participants argued that personal protective equipment (PPE) and monitoring devices had not yet reached the appropriateness target. Quality standards, such as comfort and protection, should be met by the PPE target. However, the PPE that was provided for them was still low quality, so they felt uncomfortable wearing it. In addition, the supply of the devices for vital signs monitoring was limited compared to the number of patients whose vital signs should be continuously assessed. Four participants expressed it as follows

> *"Because of the quality standard of PPE, we have problems assessing the respiratory rate of COVID-19 patients. If we use it, we feel discomfort and somehow perspire."* (P1)

> *"For monitoring the vital signs of COVID-19 patients in the isolation room, it is constrained by the equipment of vital signs devices that are still lacking."* (P3)

> *"The problem for nurses in monitoring and supervision of COVID-19 patients' vital signs in the isolation room is that the devices provided are still lacking. We use the old instruments that the hospital provided. In the reality of this situation, we need innovation and technology-based monitoring to monitor the patients."* (P9)

> *"The use of PPE makes it difficult for nurses to feel the pulse and see the patient's breathing. This is due to the use of gloves that must be doubled and google glass often condenses, thus limiting nurses in monitoring the vital signs of COVID-19 patients."* (P10)

Table 2. Participant characteristics (n = 10)

Demographic Characteristic	n	%
Sex		
Female	10	100
Age (Year)		
17-25	2	20
26-35	8	80
Education background		
D3 Nursing Program	8	80
Certified Nurse Profession	2	20
Work Experience (Year)		
1-5	5	50
6-10	5	50
Time to take care of COVID-19 patients in the isolation room (months)		
1-3	3	30
4-6	5	50
10-12	2	20

Theme 3: The demand for high-technology vital signs monitoring devices was not feasible

The need for high-technology devices to monitor vital signs is not feasible yet in this setting. Two sub-themes emerge from the data, namely, that isolated patients require personal monitoring devices, and those monitoring devices are connected directly to the nurse station

Sub-theme 1. The condition of isolated patients requires a personal monitoring device

Monitoring of the vital signs of COVID-19 patients in the isolation room should follow the regulation of one device per patient. However, the situation might not be accomplished because the devices were often in error, such as running out of battery and out of service. One of the factors that cause frequent battery runout and device errors is the sterilization process and too frequent use, considering that these devices must be used alternately for all patients. Digital blood pressure, thermometer, and oximetry instruments, for example, must be calibrated to ensure the feasibility and accuracy of the data measured. The statement was expressed by three participants as follows:

> *"For example, we (the nurse) should check the digital thermometer and the oximetry before using it. The devices are out of service due to a low battery charge and high utilization for all patients. Therefore, we need to check two or three times before and after assessing the patient's vital signs to record the right data."* (P2)

> *"I had an experience when I was on my shift. That day, I did not assess the patient's saturation because a device was running out. I have reported it to the head nurse, but that time cannot be fixed promptly as it is a hospital regulation. We suggest the patient's family bring the oximetry to check their own saturation."* (P6)

> *"A digital sphygmomanometer actually needs calibration to ensure actual data recorded is accurate. Nevertheless, the calibration devices are undone."* (P9)

Sub-theme 2. The monitoring devices that are connected to the nurse station directly

While caring for COVID-19 patients in the isolation room, there is no monitor that can be connected to the nurse station. It is evident that the nurses find it difficult to do monitoring and supervision if they enter the patient's bedside. The nurse imagines what would happen if the monitoring and supervision of the patients' vital signs were synchronized in a good system, so the vital signs data would remain objective and accurate. Closed-circuit television (CCTV) is not a basis to check a patient's condition to date. The patient's room even has no CCTV; thus, some patients are not monitored optimally and there are even delays in knowing the deterioration of the patient's condition. Four participants said the following:

> *"The patient's bedside is not equipped with CCTV, so the nurses cannot control the patient's mobility around. Thus, we should enter the room and check the patients."* (P1)

> *"Because there is no integrating monitor installed on the patient's bedside continuously, the vital signs of the patients somehow failed to be recorded on time and to date."* (P3)

> "*The difficulty for nurses in monitoring the vital signs of COVID-19 patients in this isolation room is that there are no vital sign devices that are continuously installed on the patient and connected to the nurse station's monitor.*" (P8)

> *"In the patient room, there are no vital signs devices that are continuously attached to the patient, so we cannot monitor the patient's vital signs directly from the nurse station. The deterioration of the patient's condition somehow delays the response."* (P10)

Discussions

This study aims to identify nurses' problems in monitoring and supervising the vital signs of COVID-19 patients in the isolation room. The results of the study indicate three main themes that indicate the problems underpinning nursing services in the hospital. The need for technology-based to measure the vital signs and record them was also present in this study's results. Therefore, the development of the tools of digital or technology-based care for COVID-19 patients cannot be delayed.

The theme of the comparison of nurses and patients' radio in conditions that cannot be predicted confirmed that the high ratio of nurses to patients meant there was not the ideal situation of one nurse to one patient. They can't provide more responsibilities when monitoring COVID-19 patients who are being treated in the isolation room (González-Gil et al., 2020; Kang and Shin, 2020; Maben and Bridges, 2020). A shortage of nurse resources and an overflow number of patients result in an inability to perform regular and timely monitoring and reduce the quality of care (Tan MN, RN et al., 2020).

The unpredictable situation is also felt to be a problem for nurses in monitoring and supervising the vital signs of COVID-19 patients in the isolation room. This is due to unexpected responsibilities and the ratio between the nurses and the patients was not ideal. For example, if one of the patients experiences a critical condition, the hectic situation becomes more chaotic. Patients with COVID-19 have a higher risk of deterioration and severity than sufferers of other viruses, so many patients experience a sudden deterioration. This increases the nurses' workload in monitoring and supervising COVID-19 patients in the isolation room (Pimentel et al., 2020). The nurses' workload resulted in physiological and psychological responses such as anxiety, stress, and difficulty sleeping (Ismail, Ridlo and Rochana, 2021). Joo and Liu (2021) argued that unexpected tasks when caring for COVID-19 patients are the obstacles for nurses in monitoring COVID-19 patients in the isolation room. Nurses must do other work and even complete the duties of other health team members (Lee and Lee, 2020; Schroeder et al., 2020). Moreover, this pandemic has made the care of COVID-19 patients increase in direct care time, missed treatment time, and waiting time for nurses' duties by 27%, 311%, and 44%, respectively (Qureshi et al., 2021).

The results of the study also stated that PPE and monitoring devices had not reached the appropriateness target. The result of the study was in line with Tallulembang, Widaniand Bandur's (2020) finding that the limited supply of PPE, care devices, or facilities were the obstacles for nurses in implementing nursing care. Atay and Cura (2020) also agreed that one of the barriers for nurses in monitoring COVID-19 patients was the use of PPE. As the PPE and monitoring devices were necessary in assessing the vital signs of COVID-19 patients, it was necessary for the manager to provide good quality PPE and supply the vital signs tools appropriately (BoSkoski et al., 2020).

The participants explained that the monitoring of vital signs in COVID-19 patients was still done manually by nurses. It is because there were no vital signs monitoring device connected to the nurse's station. These results are in line with previous research which stated that technology-based monitoring of vital signs for the COVID-19 in the isolation room cannot be provided automatically and remotely. Nurses must remain present with patients if they wish to monitor the patients' vital signs (Giménez-Espert, Prado-Gascó and Soto-Rubio, 2020; Lee and Lee, 2020). Based on the results of the study, it is important to provide high technology to monitor vital signs in the isolation room. The technology based on monitoring and supervision of the patient's condition can influence the quality of nursing care. It is better for the healthcare division to develop high-tech medical devices that can be the right solution in caring for COVID-19 patients (Sera et al., 2020).

This research has several strengths, including: 1) the data taken are from the nurses who were taking care of COVID-19 patients directly, so that they can deliver the real information through monitoring and supervision of the vital signs of those kinds of patients; 2) this study focuses on describing the nurses' problems in monitoring and supervision of the COVID-19 patients' vital signs in the isolation room. Meanwhile, the weakness of this study was noted as this is a descriptive qualitative approach, which means the phenomena, or the problem might not have been explored deeply enough yet. The sample took 10 nurses and was conducted in one hospital where the equipment needs more new stock. Moreover, the obstacles faced during the research were those of the interview Thus, the situation was not clear to hear. To limit the barriers of communication, we did clarification after the interview process, which we explained in trustworthiness

Conclusions

COVID-19 patients are challenging for nurses now, particularly to monitor and supervise their vital signs while patients are in the isolation room. The findings of this study have illustrated the problems and what the impact on the entire patient's health outcomes is. The health outcomes of COVID-19 patients are to improve their quality of life. The improvement of the quality of life of the patients should be based on the quality of nursing care that is provided by the nursing team and healthcare providers. The nurses should know how to solve the problems by doing continuous monitoring and supervision in caring for the COVID-19 patients, and the nursing manager should be aware of the nurses' work thoroughly.

This study highlights that there exist problems for nurses in monitoring and supervising vital signs of COVID-19 patients in isolation rooms, and that the problems might remain the same with other nurses outside the setting. These problems are related to time, devices, and resources. Therefore, it is necessary to develop a high-technology-based vital signs monitoring device to monitor and supervise the vital signs of COVID-19 patients in the isolation room. Moreover, the monitoring can be completed automatically, and the data recorded in real time. There is definitely no paper-based method to support a green economy and green digitalization.

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ORIGINAL ARTICLE

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Effect of caring behaviour approach to improve nurses' caring character in medical-surgical wards

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ABSTRACT

Introduction: Nurses are the leading line of professional healthcare. Many studies of caring include factors that are influential or related, but there has been no intervention to improve the caring character of nurses. The purpose was to prove the effect of the caring behaviour approach on the improvement of nurses' caring character.

Methods: This study used a quasi-experimental design. The sample size of 100 nurses working in medical-surgical wards of four hospitals in Gresik City was separated into 50 nurses in intervention group and 50 nurses control group by cluster sampling. The caring behaviour approach was given to nurses in the intervention group and nurses in the control group performed their usual care as regulation in nursing care of each hospital. Caring behaviour approach was modification of education and mentoring about Islamic caring and caring behaviour nurses to patients and family. Data collection of nurses' caring character variable used Caring Behaviour Inventory, consisting of: deference to others, assurance of human presence, positive connectedness, professional knowledge-skills, and attentiveness to others' experience. Data analysis used paired t-test and independent t-test at significant level $\alpha \leq 0.05$.

Results: Nurses between intervention group and control group had similar demographical data in gender and nursing education. Caring behaviour approach had significant influence to improve the nurses' caring character. There were significant differences of nurses' caring character between the two groups.

Conclusions: Nurses' caring character should be supervised regularly to assess the performance of nurses, to improve also maintain good caring behaviour.

Keywords: approach; behaviour; caring; character; medical surgical nursing

Introduction

The World Health Organization on Global Patient Safety Action Plan 2021-2030 stated that the purpose of the action plan is to provide strategic direction for all stakeholder for eliminating avoidable harm in healthcare and improving patient safety in different practice domains through policy actions on safety and quality of health services, as well as for implementation of recommendations at the point of care (WHO, 2021). Now, community users of healthcare services are more critical of the problems that occur. Hospital accreditation 2012 version of KARS (Hospital Accreditation Committee) puts patients and families as a service centre with the motto "Patient-Centred Care". Assessment is of the accreditation of the hospital where the most important is nursing service. The Caring theory was introduced long ago by Jean Watson in 1985 (Watson, 2008).

People are more aware of their rights, obligations and demand the best professional nursing services (Qomariah & Rahmawati, 2018). The complicated health problems in Indonesia have an impact on the demands and needs of people/community on health services including nursing services. Based on previous research conducted from four hospitals in Gresik city, caring is something that is missing in nurses. Patients and families often complain that nurses are less caring, and pay less attention to fulfilling the needs of patients and families. The data survey showed that nurses often work according to daily routine; nurses have less concern for the needs of patients/ families and the environment (Qomariah & Rahmawati, 2018).

The caring theory, which is the body of nursing knowledge, is only a theory and has not been applied properly in the order of nursing (Kilic & Oztunq, 2015). The number of nurses that work in a hospital is about 60% of the total staff throughout the hospital, which means the nurses must contribute to improving the quality of care (Qomariah & Rahmawati, 2018). Caring behaviour will allow for harmonious interpersonal relationships between nurse-clients who assist in meeting client needs, which ultimately provides a sense of comfort to the client (Bakar, 2018).

The caring theory was introduced in 1985 by Jean Watson, who mentioned carative factors as the core guide to nursing (Tomey & Alligood, 2014). The ten (10) elements of the carative factors are: humanistic-altruistic, honesty and hope value systems, sensitivity to one's personal and others' needs, sense of help, mutual trust between peers, expressing positive and negative feelings, creative, transpersonal teaching and learning process, a supportive, protective and corrective physical-social-spiritual-mental environment, help in meeting human needs, and spiritual and existential powers (Mariyanti et al., 2015)

Research on caring has found among others: 1) Caring behaviour of nurse got a high score on every inpatient room and highest value in the second classroom (Ramadhan et al., 2019). There was a difference of perspective and caring scale by nurses and patients (Thomas et al., 2019). By Presenting Disability Creation Process (DCP) pertaining to a caring approach in rehabilitation, a strongly linked perspective was revealed, which contributes to patient safety (Amalina, 2020). There was a significant relationship between caring nurses' with patient satisfaction on nursing services and behaviour. Caring of nurses is also affected by medical diagnosis and surgical procedures (Rafii et al., 2008).

Caring behaviour approach is a modification between Islamic Caring (Bakar, 2017) and Caring Behaviour Nurses (Rafii et al., 2008). Nurses are the frontline of professional healthcare. Many studies of caring include factors that are influential or related, but there are few study which investigated the intervention to improve the caring character of nurses. This research aim was to improve caring character of nurses using caring behaviour approach.

Materials and Methods

Study Design

Quasi-experimental with two groups pre-test and post-test design was conducted in four (4) hospitals in Gresik city, East Java, Indonesia in July-August 2017.

Participant

Sampling technique used non-probability type of cluster sampling of each hospital and the inclusion criteria were: nurses who work in medical surgical wards and implement caring to the patients. The sample size of this research was 100 nurses (50 intervention group and 50 control group). Participant nurses recruited by head of nursing manager of each hospital were separated into control/ intervention groups. To minimise selection bias in one hospital, researchers and head of nursing manager applied the same criteria to every group from gender, age, education of nurses, and length of work as nurses.

Variables

Dependent variable was nurses' caring character with subvariables deference to others, assurance of human presence, positive connectedness, professional knowledge-skills, and attentiveness to others' experience (Rafii et al., 2008).

Instruments

Nurses' caring character was measured by the head of nursing manager to minimise bias. Instruments to measure nurses' caring character used Caring Behaviour Inventory questionnaire (Rafii et al., 2008). Caring Behaviour Inventory (CBI) questionnaire consisting of 42 items question with five subscales: respectful deference to others (12 items), assurance of human presence (12 items), positive connectedness (9 items), professional knowledge and skills (5 items), and attentiveness to others' experience (4 items). The assessment uses a four points Likert scale to elicit responses (1=never; 2=occasionally; 3=usually; 4=always). Nurses' caring character is described as the total points from every item question, the score ranged from 42 to 168. Cronbach's alpha reliability test results = 0.904. This shows a reliable caring behaviour questionnaire (CBI). The result of validity test using Pearson correlation obtained the significance of all items of questions <0.05 which means that the caring behaviour inventory questionnaire is valid.

Intervention given to the nurses in the intervention group was caring behaviour approach. Caring behaviour approach was a modification between Islamic Caring (Bakar, 2017) and Caring Behaviour Nurses (Rafii et al., 2008). Nurses in the control group performed their usual care as nursing competencies standard or regulation in nursing care in each hospital.

Data collection

Data collection began with informed consent to all nurses and pre-test using Caring Behaviour Inventory questionnaire. Nurses in the intervention group were given a caring behaviour approach, a modified method of education about Islamic caring and caring behaviour in nurses, and also mentoring performing of caring behaviour to patients and family. It was implemented over four weeks. Focus group discussions were held to educate about Islamic caring and caring behaviour for two hours. The discussions presented caring behaviour approach consisting of background of the problem, the history of caring theory, the factors that influence implementation of caring behaviour from the previous research results compared with the theory, and the spiritual caring (Bakar, 2017). Then, nurses in the intervention group were given training and mentoring to apply the caring behaviour approach to the patients and family for two weeks, accompanied by a nurse supervisor and researchers. They were given the module of caring behaviour approach consisting of all five caring character sub-items: respect for individual differences, nurse attendance, positive relationships, knowledge and skills, and other caring behaviours. Nurses met researchers and expert senior professional nurses as head of nursing manager at each hospital to evaluate progress and report about their caring character every three days for 30-60 minutes. After the intervention, all of respondents had post-test using Caring Behaviour Inventory questionnaire three days later.

Data analysis

Pre-test and post-test with ratio and the data homogeneity and normal distribution of the two groups were analysed by paired t-test statistic with significance level $\alpha \leq 0.05$. Meanwhile, the effectiveness of caring behaviour approach was explained by comparing the nurses' caring character between the control group and intervention group then analysed used independent t-test statistics with significance level $\alpha \leq 0.05$.

Table 1 Characteristics of nurses in Gresik City Hospital (N =100)

Characteristics	Intervention Group (1) n (%)	Intervention Group (2) n (%)
Gender		
Male	7 (14)	15 (30)
Female	43 (86)	35 (70)
Nursing Education		
Bachelor	21 (42)	16 (38)
Academy	29 (58)	34 (62)
Length of Work		
5-10 years	34 (68)	10 (20)
11-15 years	10 (20)	8 (16)
16-20 years	4 (8)	17 (34)
≥ 21 years	2 (4)	15 (30)
Age (M ± SD)	31.29 ± 6.3	41.57 ± 3.9

Ethical consideration

Ethical permission Number 071/336/437.76.21 by the year 2017 was obtained from the Ethical Review Board Committee of government hospital in Gresik city, Indonesia. At the beginning of this study, participants fulfilled informed consent and demographic data. The researchers kept data of each participant secret by using a code.

Results

Participants between intervention group and control group had a similar characteristic in gender and nursing education, which is most of the nurses were female and most had the academy of nursing education. The average age intervention group and control group was adult and productive age. Characteristics of nurses in the control group and intervention group showed similar average length of work more than 10 years (Table 1).

Table 2 shows the effect of Caring Behaviour training on increasing nurse caring characters. Before the Caring Behaviour training showed the lowest caring behaviour value = 120, the value of caring behaviour that often appeared = 131, and the maximum value of caring behaviour = 165. The average value of caring behaviour was 141.16 with a standard deviation of 14.11. After the Caring Behaviour training, it showed the lowest caring behaviour value = 125, the value of caring behaviour that often appears and the maximum value shows the same result of 168. The average value of caring behaviour is 156.60 with a standard deviation of 15.97. The results of the paired t-test statistical test obtainedρ-value= 0.000, which means that there was a significant influence on the education and training of the Caring

Table 2 Influence of caring behaviour approach to caring character intervention group (N=100)

Nurse's Caring Character	Pre-test	Post-test
M ± SD	141.16 ± 14.11	156.60 ± 15.97
Mo (Q1; Q3)	131 (130.25; 156.50)	168 (147.25; 168)
Min-max	120-165	125-168
ρ-value	0.000	

Table 3 Differences of caring character between intervention group and control group (N=100)

Nurse's Caring Character	Control Group	Intervention Group
M ± SD	106.76 ± 8.21	156.60 ± 15.97
Mo (Q1; Q3)	114 (100.75; 113.25)	168 (147.25; 168)
Min-max	84-114	125-168
ρ-value	0.000	

Behaviour in nurses on increasing nurses' caring behaviour in Gresik City Regional Hospital.

The control group that did not carry out Caring Behaviour training obtained a mean value = 10.76, the value that often appeared = 114, the minimum value = 84, and the maximum value of nurse caring behaviour = 114. The results of the independent t-test obtained ρ = 0.000 which means that there is a significant difference in the character of caring nurses between the control group and the treatment group. The group given the Caring Behaviour training showed higher scores compared to the group that did not do the intervention (Table 3).

Discussions

This study showed that most of the nurses had sufficient caring character and a few showed good caring character before intervention. Caring nurse behaviour is sufficient because nurses don't have adequate ability and skills about caring nurses. The nurse does the daily routine, is an extension of the doctor's instruction, and is not yet caring. In addition, researchers argue that most nurses are educated in Academic Nursing, who only rely on skills without understanding and applying existing nursing science. This finding is different with previous study in that students in the first year are already able to perform expressive caring and show highest caring behaviour level in the second and third years (Rafii et al., 2008). A similar finding showed that caring behaviour was lower among nurses working in Jimma University specialised hospital; factors associated lower caring behaviour were job satisfaction, working environment and improving conducive management (Oluma & Abadiga, 2020).

Various nursing theories and philosophy exist as a foundation for the formation of the body of knowledge for nursing. Nursing as a complement to the healthcare team as well as the healthcare team itself requires the contribution of nursing (Kilic & Oztunq, 2015). There were 12 nurses who showed good caring behaviour before intervention. It can be explained by the researchers that the research result of the previous stage of the caring behaviour of the nurse was influenced by factors such as intrinsic motivation, extrinsic motivation, personality, age, length of work, and income. While the factors of ability, skill, gender, level of education, headroom leadership style, room material resources, and model of professional nursing care do not directly affect the caring behaviour of nurses (Qomariah & Rahmawati, 2018). The factor of how someone behaves / what is done consists of the following variables: deference to others, assurance of human presence, positive connectedness, professional knowledge-skills, and attentiveness to others' experience (Rafii et al., 2008). There are several caring characters that were often not applied by nurses: providing guidance, teaching, health education to patients. According to the 2012 KARS Hospital Accreditation, the patient has the right to be given information and health services. Now, patients and their family tend to be more critical, want to know about the disease and their treatment so they will be happy and satisfied if they are given an explanation from nurses (Thomas et al., 2019).

After the intervention caring behaviour approach, it showed significant improvement in caring character, most nurses showed good caring behaviour (66%, 33 people in the intervention group) and a small number of sufficient caring nurses. However, there were some nurses who showed the value of caring character was still not sufficient as many as 10 nurses. Some caring characteristics that didn't apply were spending time with clients, and helping clients meet their basic needs (Permana & Hilmi, 2021). Some nurses answered the caring character questionnaire assuming that if nurses spend time with client then they will never rest during work hours. Each hospital has a regulation of working hours and hours of rest, respectively, so the nurses should spend their work time to work, helping patients professionally. In addition, there is a caring behaviour that shows a low value of monitoring patient condition. Monitoring, in this case, re-evaluates the patient's condition at the end of the shift after the patient has been performed nursing actions, whether independent or interdependent.

In accordance with the concept there were at least, inpatient wards which performed three times observation vital signs: tension, pulse, temperature, and respiration. Patients with certain conditions require more frequent observation. Some patients and families state that monitoring is only done once a day. It is especially experienced in hospitalised patients with class III wards. This is consistent with the results of previous studies showing the class of care related to the caring behaviour of nurses (Faramawy & Kader, 2022). Other studies mention the demographics of the wards class does not affect the caring behaviour of the nurse. The caring behaviour of nurses shows good results in all patients (Abu Sharour, 2021). Caring nurse behaviour should not discriminate tribe, religion, race, and class of wards. Each patient should get the same nursing service right for all, the only thing that distinguishes is the facility gained according to the ward's class.

Independent t-test statistical results obtained p-value= 0.000. This shows the caring character of the nurses among the group conducted by caring behaviour approach is very different/ higher than the control group. Therefore, the results of this study proved to be effective, and can be applied in the hospital to improve the nurse's caring character. Caring is the basic body knowledge of nurses. Nurses can improve knowledge of caring by seeking information either through formal or informal education and apply caring behaviour as a whole and continuously in every activity of daily health services.

Limitations of this research were: 1) the intervention of caring behaviour approach based on nurse religion were only Muslims, so that there is need of a modified caring behaviour approach to apply in all religions; 2) it did not discuss the subvariables of nurses' caring character; 3) the control group only took post data and did not evaluate nurses' caring character in the control group.

Conclusions

Caring behaviour approach is not only about Caring Theory, it has a significant effect on the caring character of nurses. Caring character of nurses in each hospital can be improved by implementing training and accompaniment of caring behaviour approach considering factors that influence the formation of caring character in order to get maximum results. Limitation of the research was not involving the factor of nurses' character. The results of this research can be considered for implementation and for more in-depth research

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ORIGINAL ARTICLE

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The effect of online learning on student satisfaction in nursing education during the COVID-19 pandemic

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ABSTRACT

Introduction: Online learning is a global trend in higher education in the era of the COVID-19 pandemic. Online learning becomes one of the approaches available to most students and educators, as opposed to face-to-face learning. The aim of this research is to find out the correlation of online learning and satisfaction among nursing students during the COVID-19 pandemic.

Methods: This study was a cross-sectional approach involving 177 second-year nursing students randomly selected resulting in 121 students. Students filled out an online learning questionnaire consisting of 14 items and a satisfaction questionnaire consisting of 21 items from Google Forms. Data were analysed using logistic regression with level of significance (p=0.000).

Results: The online learning indicator that had the highest average value was relevance (3.12), while the highest average value of student satisfaction indicator was content (3.05). Logistic regression showed that the online learning indicator that greatly affected student satisfaction was attractiveness. Fair attractiveness for online learning increased satisfaction by 7.516 times compared to poor attractiveness (p = 0.000) and good attractiveness for online learning increased satisfaction by 55.538 times compared to poor attractiveness (p = 0.000).

Conclusions: Student satisfaction depends heavily on student attractiveness to the online learning process. Lecturers can increase the attractiveness of students toward online learning, whether through the utilized media, learning methods, or the technology of delivering lecture materials.

Keywords: COVID-19; nursing student; online learning; satisfaction

Introduction

The Coronavirus Disease (COVID-19) pandemic is disrupting education around the world and has led to a shift from face-to-face learning to online learning. Online learning is a very important new learning domain (Ghadrdoost et al., 2021) and is becoming a global trend in higher education in the era of the COVID-19 pandemic. Online learning is one of the best approaches compared to traditional or mixed learning (Eltaybani et al., 2021); however, it must be refined and developed to replace or complement traditional education (Chakraborty et al., 2021). Online learning is expected to be a way for students to achieve learning outcomes. Nursing students, as professional graduates, are expected to take quick professional decisions that should be based on scientific concepts (Das et al., 2021). In fact, a previous study has shown that students are unable to learn well in online teaching compared to classroom teaching (Khobragade et al., 2021).

Every educational institution desires to explore innovative online learning strategies with the aim of increasing satisfaction and engagement in learning. This is in accordance with Circular Number three and four of 2020 of the Indonesian Ministry of Education and

Culture concerning the prevention of the COVID-19 and the implementation of education policies in the emergency period of the spread of the COVID-19. The Indonesian Ministry of Education and Culture noted that 94.73% universities in Indonesia conducted online learning which involved face-to-face interactions through online learning media such as WebEx, Zoom, or webinars (20.11%) and non-face-to-face interactions with social media (34.70%) (Aji et al., 2020). In fact, various problems arose in the implementation of online learning. A survey by UNICEF found that 66% of students from different levels of education in 34 provinces showed that they were uncomfortable studying at home during the COVID-19 pandemic. Another evaluation by Directorate General of Higher Education of Indonesian Ministry of Education and Culture (DIKTI) showed that only 51% of lecturers and students had effective internet access to do online learning. Assessments on online learning have shown that as many as 92% of participants were hindered during the learning process.

Factors related to the effectiveness of online learning or distance learning include satisfaction, learning process, self-efficacy, use of technology, skills and experience, resources, interaction between educators and learners, and learning environments (hardware infrastructure, software, and networking) (Eltaybani & Abdelhalim, 2021). Online learning using interactive videos is most often used during learning. However, the process of interaction between lecturers and students is very rare. Communication is only carried out one way by the lecturer, so that the learning outcome is not achieved optimally. The findings of previous studies have suggested that high levels of interactivity in online education environments lead to greater levels of student satisfaction (Khobragade et al., 2021). The satisfaction of students toward the course can be influenced by many factors, including teaching characteristics and student experience (Lengetti et al., 2021). Online learning satisfaction will mediate the relationship between learning flow and learning outcomes during the COVID-19 pandemic (Eltaybani et al., 2021). Online learning provides easy access, is not limited by time and place, and can be used for more varied learning. However, in its implementation, not all students follow the learning well, for example, not listening to lecture materials, not being active during the lecture process, and so on. This learning process will affect student satisfaction. Student satisfaction and the factors that influence it during online learning have not been explained. The aim of this research was to find out the correlation between online learning and study satisfaction among nursing students during the COVID-19 pandemic.

Materials and Methods

This study was cross-sectional and conducted at one private university in Lamongan City from February to March 2021. Samples were taken with proportional random sampling. Students who met the inclusion criteria were willing to be research respondents and were second level nursing students in 2021 having experience following offline learning for 1 year, and online learning for 1 year. These students have undergone a phase of change from offline to online learning, so researchers get a clearer picture of student satisfaction variables than students who only get online learning. The sample was calculated based on the number of students who met the inclusion criteria and obtained 121 students. Researchers wrote the names of the students of each class, then drew lots until the number reached the proportion of the previously calculated classes A, B, and C. Students received an email invitation to an online self-assigned questionnaire. This research has been declared ethically based on No. 115/EC/KEPK-S2/02/2021 by The Ethical Committee Medical Research, University of Muhammadiyah Lamongan.

Demographic data consisting of age and gender were entered in the first part of the form. In the second part, questionnaires to measure online learning (14 items) and satisfaction (21 items) were adopted from the Prasetya and Harjanto (2020). The terms of the

Table 1 Descriptive statistics of the online learning and students' satisfaction

Scale	Subscale	Number of items	Mean ±SD	Minimum	Maximum
Online learning	Relevance	2	3.12±0.43	2	4
	Attractiveness	3	2.64±0.55	1	4
	Effectivity	3	2.39±0.57	1	4
	Efficiency	2	2.62±0.62	1	4
	Productivity	4	2.88±0.47	1.25	4
Student satisfaction	Content	3	3.05±0.43	2.33	4
	Accuracy	3	2.91±0.51	1.33	4
	Form	4	2.82±0.36	1.25	4
	Easy to use	8	2.69±0.39	1.55	4
	Consistency	3	2.94±0.31	2	4

Table 2 Chi-Square analysis the online learning and students' satisfaction

Online Learning	Satisfaction		∑	P
	Dissatisfied	Satisfied		
Relevance				0.000
Poor	4	0	4	
Fair	62	30	92	
Good	2	23	25	
Attractiveness				0.000
Poor	19	1	20	
Fair	36	14	50	
Good	13	38	51	
Effectivity				0.130
Poor	10	6	16	
Fair	32	17	49	
Good	26	30	56	
Efficiency				0.012
Poor	11	1	12	
Fair	25	16	41	
Good	32	36	68	
Productivity				0.005
Poor	9	1	10	
Fair	19	7	26	
Good	40	45	85	

questionnaire assessment utilized the Likert scale: 4=Strongly Agree, 3=Agree, 2=Disagree, 1=Strongly Disagree. Online learning variable data were analyzed using a total score on each indicator, which included indicators of relevance, attractiveness, effectiveness, efficiency, and productivity. Each indicator was categorized into poor, fair, and good. The student satisfaction questionnaire was also declared valid on all items with r > 0.3494. The satisfaction questionnaire was also found to have high reliability (Cronbach's alpha 0.758). Descriptive analysis of satisfaction variable used total score on each indicator, which included indicators of content, accuracy, form, ease of use, and consistency. Each indicator was categorized into poor, fair, and good. In inferential analysis, the total scores of all indicators are categorized into two, satisfied and dissatisfied. All items on the online learning questionnaire had an r value > 0.349 and thus it was declared valid. The online learning questionnaire was found to have high reliability (Cronbach's alpha 0.758). The data were analyzed using several stages. Univariate analysis uses mean values and standard deviations to find out the indicators of the two most dominant variables. After that, the data were analyzed using chi square, to filter out some indicators that had no correlation with learning satisfaction. Several indicators that had a correlation were then subject to multivariate tests, including logistic regression, to find out the indicators that have the most influence on learning satisfaction.

Results

Univariate Analysis

Of the 121 respondents, 79% were female, while 54% were students of 20-21 years of age, with the rest were 18-19 years old. Table 1 shows that of the five online learning indicators, the indicator of relevance had the highest average value (3.05±0.43). Relevance means the implementation of online learning has learning conformity and is related to the science and needs of the student environment. The indicator that had the lowest average was effectivity (2.39±0.57). Online learning is considered poor on the indicator of effectivity; the interpretation is that the learning can only be understood and kept in mind by students for a short time. Satisfaction with the content indicator means that syllabuses, materials, assignment announcements, and assessments were in accordance with the needs of students.

Bivariate Analysis

The chi square test was utilized to select the variables that were to be included in multivariate analysis. Table 2 shows that the variables of relevance (p = 0.000), attractiveness (p = 0.000), affectivity (p = 0.130), efficiency (p = 0.010), and productivity (p = 0.005) met the requirements for a logistic regression test (p < 0.250).

Multivariate Analysis

A logistic regression test was performed on the five online learning indicators to find out the ones that most affect the satisfaction variable. Logistic regression was used the enter method. Indicators with p>0.1 were gradually removed from the largest value. In the first model, the relevance indicator was removed from the model to make the model fit. Then the indicators of productivity, efficiency, and effectiveness were removed gradually based on the largest P value.

The results of the logistic regression test showed that only the attractiveness indicator could fit into the model. The OR interpretation in Table 3 shows that fair attractiveness for online learning increased satisfaction by 7.516 times compared to poor attractiveness (p = 0.000). Good attractiveness for online learning increased satisfaction by 55.538 times compared to poor attractiveness (p = 0.000).

The model also shows that the variation in satisfaction can be explained by the attractiveness

Table 3 Regression logistic analysis of predictor of students' satisfaction

Subscale	B(SE)	OR	95% CI of OR	Significance
Attractiveness				
Poor				0.000
Fair	2.017(0.450)	7.516	3.112-18.155	0.000
Good	4.017(1.075)	55.538	6.752-456.807	0.000

indicator, by 38.3%. The accuracy of the satisfaction model above is 76.9%.

Discussions

The relevance of online learning is the aspect of online learning that is considered the best by students. High relevance shows that online learning is in accordance with the science and needs of students. The learning material must be delivered in a clear, well-organized, and easily accessible manner to the student, wherever the student may be (Kuo, 2010). The learning process is carried out with a focus on learning achievement and periodic evaluations in the learning process to maintain good quality learning even through online learning (not face-to-face). Self-evaluation and peer evaluation can be a way to receive student feedback as well as a reflection of learning success (Ghaljeh et al., 2021). In addition, learning evaluation can also be done by conducting final exams or student skill exams both individually and in groups (Chan et al., 2021). The online learning process must be able to achieve learning outcomes. The material submitted must be organized in accordance with the existing curriculum and a clear evaluation process, so that the implementation of online learning does not reduce the quality of graduates.

The productivity indicator also had a high mean value compared to the other indicators. This means that online learning is considered good in productivity and able to encourage students for a more active role than offline learning. Previous research explains that increasing the active participation of students can be done using collaborative learning methods and case approaches because there will be interaction between facilitators and between students (Khan et al., 2017). An active learning environment with a high level of interactivity between students and their environment (peers, instructors, and content) not only motivates students, but also improves overall learning achievement and satisfaction (Croxton, 2014). Good interaction between lecturers and students during learning can also increase satisfaction (Eltaybani et al., 2021). Lack of communication between students and lecturers, as well as low motivation, can be obstacles to online learning. Good interaction between lecturers and students during the learning process will increase student participation in the learning process from beginning to end, so that learning materials can be delivered properly.

The content indicator had the highest average value for the satisfaction variable. Content has significance in the learning materials and during the learning process. Learning is carried out in accordance with the syllabus that has been composed. In learning about nursing, students are trained to develop critical thinking to solve problems of patients and take decisions for nursing interventions in the middle of collaborative learning (Nasirzadeh et al., 2021). The abilities of facilitators and rapid response when students have learning difficulties can also affect student satisfaction (Qowi et al., 2016). Interaction with students, preparation of learning resources, and passion for teaching are significant factors with online learning. The utilized learning methods are also one of the triggers of a good learning process. The online learning process has a good impact for faculty to develop lecturers' skills and self-efficacy in online learning (Li et al., 2021). The suitability of the material with the syllabus is very helpful for students to find learning materials during online learning (Culp-Roche et al., 2021). The use of varied learning methods and media can also make it easier for students to receive the material delivered. Learning media based on online simulation can facilitate the accessibility of learning materials, as well as increase the knowledge and skills of nursing students (Kim & Park, 2021) and increase student involvement during lectures (Chan et al., 2021). Collaborative learning can be implemented through PowerPoint presentation activities, short videos, quizzes, and provision of feedback in each assignment (Joseph et al., 2021).

Regression test results showed that the attractiveness indicator most affected student satisfaction in online learning. Students will be satisfied during courses that are perceived as interesting. Based on previous studies, online learning has a good relationship with student satisfaction levels (Baherimoghadam et al., 2021). The learning process can be made to be more interesting with multimedia technology, including mobile technology, in order that learners can more actively participate in the educational process. The online learning process is also more effective when the syllabus is structured clearly, with usage of audio-visual media such as videos, images, posters, and so on (Turrise et al., 2020). Learning media that create interest, as well as collaborative learning methods, can reduce student frustration (Khobragade et al., 2021). An interesting and fun learning process will increase students' interest in participating in online learning. Students will be excited because the learning process is not monotonous.

A fun learning process will make students attracted to listen to every process in learning. Students of Generation Z who are often exposed to technology can easily adapt to changes related to technology (Baghchegh 2021). Usage of mobile technology during the learning process is also the choice of students in following the learning process. The usage of mobile technology in learning (applications about diseases, physical examinations, drugs, video and audio in medical simulations, and various games), can facilitate the learning process in health students (Huwaidi et al., 2021). Online learning provides a challenge for lecturers to update the latest technology in learning. Lecturers must understand varied learning media such as using puzzles, quizzes, animated videos that students prefer compared to listening to courses.

Online learning is facilitated through several common platforms such as Zoom Meetings, Google Meet, Edmodo, Google Classroom, and applications developed by universities, which can be a fun learning medium for students. WhatsApp application is the online learning platform that students are most interested in. Microsoft Teams, Zoom, and Google Classroom also provide technology features as an online learning medium (Eltaybani et al., 2021). Research related to learning media and learning methods that can attract students to follow the learning process can be conducted in the future (Almaiah et al., 2020). However, inadequate lecturer skills during the online learning process, time constraints, and inadequate infrastructure can be obstacles during online learning (Khobragade et al., 2021). An obstacle that often occurs is internal constraints. Technology and media, including the Internet, have a broad role in education and health education (Huwaidi et al., 2021). The constraints of unstable Internet networks are experienced by facilitators and learners. Learning methods and mediaare utilized to increase student interest in following learning. However, there are several matters that need to be considered in order that students can achieve competency standards in the online learning process, such as readiness in technology, material readiness, and positive attitude during online learning (Chakraborty et al., 2021). Barriers to the implementation of online learning, such as changes in management problems, technical problems with online learning systems, and financial problems, must also be minimized so that the learning process runs optimally (Hunt, 2018). The institutions also must provide facilities that support online learning. The obstacles that occur during online learning will reduce motivation, both for lecturers and students, in carrying out online learning itself. The limitation of this study is that the research is carried out with a sample from one institution only, so it cannot be generalized in all nursing educational institutions.

Conclusions

Based on the results of this study, it was revealed that attractiveness is a very important factor in online learning. Attractive learning can increase students' active participation during the learning process, and in the long term can have a positive impact on learning outcomes. Various efforts to increase student interest in learning are by modifying learning media, learning methods, and improving the skills of lecturers in conducting online learning. Future research can be carried out related to the media and methods used during online learning and their correlation with student motivation and satisfaction.

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ORIGINAL ARTICLE

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Nurses' perspectives of families 'needs of the maternal critically ill cases in woman health hospital: an educational program

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ABSTRACT

Introduction: Meeting the family needs of patients in intensive care units is challenging for healthcare providers. The critical illness of one family member affects the wellbeing of other family members, causing changes in the life of the whole family. This study aimed to assess nurses' perspectives of the family needs of the critically ill maternal patient and to provide an educational program to nurses about these family needs.

Methods: A pre post-test design was used. The study was conducted in the obstetric intensive care unit at Women's Health Hospital at Assiut University Hospital, Egypt. A convenient sample of 28 was recruited from the total 35 female nurses of the Women's Health Hospital's ICU.

Results: There was a significant relationship between the sociodemographic items and family needs at p=0.00. There was also a statistically significant relationship between support needs, working hours, and years of experience at p=0.03 and p=0.01, respectively. There was a significant difference in the pre-post application of an educational program in all family needs items (p=0.00).

Conclusions: The educational program improved nurses' perspectives and awareness toward family needs. A regular educational program should be conducted in all intensive care units to improve the understanding and management of patients' needs, especially in an African context.

Keywords: family; educational program; perspectives; maternal critically ill patient

Introduction

The family is one of the basic units of society and has a significant influence on its members. The critical illness of one family member affects the wellbeing of other family members, causing changes in the life of the whole family. The critical illness usually occurs suddenly, and the patient's family members do not have enough time to comprehend and deal with this situation. Consequently, the family members will experience many needs regarding the patient's condition, and, to meet family member's needs, critical care unit nurses must be able to identify their needs accurately (Ghabeesh et al., 2014; Iranmanesh et al., 2014). Therefore, the patient's family needs in ICUs are challenging roles for healthcare providers, particularly nurses, as families of critical patients depend on the healthcare providers to obtain data about their family member's disorders and status of the disease progress (Hashim and Hussin, 2012).

Many critically ill patients are incapable of communicating with healthcare providers regarding ICU care procedures due to the severity of their disease or condition (Mitchell et al., 2009). Accordingly, healthcare providers are increasingly seeking for family members to communicate with them and clarifying the care and support provided to the patient from their family (Al-

Mutair et al., 2013). It is essential to involve the patient's family in the ICU stage of care to empower the health with complete person-centered care (Paul and Finney, 2015). However, some studies have reflected the importance of meeting the family needs to avoid the negative effect on family satisfaction due to insistent unmet family needs (Khalaila, 2013). Therefore, the quality of ICU care should involve the families' needs perspective regarding their patient care process outcome and evaluation of this care to improve their psychological health and safety (Flaatten, 2012).

Obringer, Hilgenberg, and Booker (2012) confirmed that the least important needs of family members were those related to the aspect of support. The core responsibilities of nurses in the ICUs are to meet patients and their family members' needs. These priority needs of family members of ICU patients differ according to sociocultural contexts (Bandari et al., 2015). In Saudi Arabia, Alsharari (2019) displayed that the family members of patients admitted to ICU have higher levels of needs toward the assurance, proximity, and information aspects (Alsharari, 2019). Furthermore, the family members had the lowest level of needs in the comfort and support aspects. However, other needs varied according to the sociodemographic characteristics of the participants. Therefore, recognizing the aspects of the family members' different needs is essential for the progress of effective communication and good collaboration toward the best care and support to ICU patients and their families. In Egypt, the intensive care unit is a highly stressful environment for patients' families due to the high critical and sophisticated care. Nursing care is mostly directed to critically ill patients' management without significant attention to their families. Due to the shortage of nurses, they lack information and training on how to meet this issue. On the other hand, meeting the patient's family needs is one of the holistic healthcare components among critically ill patients (Abdel-Aziz, Ahmed and Younis, 2017). Critical care nurses are in the first line to provide the family members with their needs to accommodate stressful situations. Therefore, the accurate assessment and reacting to critically ill obstetric patients' family needs is noteworthy in decreasing the negative impact of that stress, increasing family awareness about the care, and promoting trust. Consequently, inadequate attention to family needs can result in inappropriate care, family hostility, and the development of confrontational relationships between family members and care providers (Buckley and Andrews, 2011). In Egypt, the ICUs policies do not have specific regulations or rules regarding critically ill patients' families in care. Therefore, the critical care nurses do not have a clear rule about the best practices of family engagement in their critically ill patients. Thus, ICU nurses' perception toward family engagement in patients' care is critical (Abd El Wareth and Elcokany, 2019).

Although the Women’s Health Hospital is the first hospital in Upper Egypt to include a maternal ICU, the families of critical maternal cases have limited contact with their patients, and they are always seeking to meet their needs. So, the nurses need to recognize how this part is essential for both nursing care and family needs satisfaction. Hence, all previous studies done in Egypt focused on ICUs patients but not specifically toward critically ill maternity-related patients (Abdel-Aziz, Ahmed and Younis, 2017; Abd El Wareth and Elcokany, 2019). Our study aimed to assess the nurses’ perspectives toward family needs of the maternal critically ill cases and to provide an educational program about family needs of maternal ICU cases at the Women’s Health Hospital.

Materials and Methods

Study Design

A pre-posttest design was used to determine nurses' perspectives on the needs of family members of critically ill maternal patients before and after an educational program. The study was conducted in the intensive care unit at the Women’s Health Hospital at Assiut University Hospital. It is the largest teaching hospital in Upper Egypt and a tertiary referral center with all maternity services inclusive of a 12-bed obstetric ICU for cases of severe condition related to pregnancy, delivery, and postpartum conditions such as severe postpartum hemorrhage, severe preeclampsia, eclampsia, sepsis and ruptured uterus, or any system failure depending on certain clinical criteria and laboratory markers.

Respondent

The population included all obstetric critical care nurses at the hospital. The inclusion criteria included obstetric critical care nurses who worked in the current ICU for at least six months and who nursed critically ill maternal patients. In addition, nurses who withdrew from the study whilst it was ongoing were excluded, as well as nurses with less than six months of experience and did not work with critically ill maternal patients. There was a total of 35 obstetric critical care nurses employed at the hospital during the time of the study. The total number of nurses in the ICU was 35. The study conveniently recruited 28 nurses. Five nurses were included in the pilot study and excluded from the final data collection. Two nurses did not participate due to maternity leave and sick leave due to the Coronavirus pandemic.

Instrument

The tool used was The Critical Care Family Needs Inventory (CCFNI) which includes two parts: The first part was the sociodemographic data of participants and the second consisted of the items of the CCNI (Molter & JS, 1995). There were forty-five (45) items related to family needs arranged in categories, namely support (items 1 to 14), proximity (items 15 to 23), proximity or closeness (items 24 to 32), assurance (items 33 to 39), and comfort (items 40 to 45). The responses are noted on a 4-point Likert scale, and the scoring is coded as not important (1), slightly important (2), necessary (3), and very important (4). The original English version was translated into Arabic by a qualified English to Arabic translator.

Table 1 Sociodemographic relationship to nurses' perspectives of family needs

	Support needs Mean (SD)	**F**	**p-value**
Education			
Bachelor	2.42(0.50)		
High Diploma	2.80(0.70)	0.96	0.39
Secondary Diploma	2.52(0.70)		
Working hours	2.64(0.65)	2.78	0.03*
Years working in ICU	2.64(0.65)	3.25	0.01*
	Information needs Mean (SD)		
Education	2.68 (0.31)		
	2.93 (0.44)	0.89	0.42
	2.80 (0.53)		
Years of working	2.83(0.42)	0.59	0.82
Years of working in ICU	2.83(0.42)	1.00	0.48
Education	Proximity Mean (SD)		
Bachelor	2.42(0.64)		
High Diploma	2.82(0.42)	1.325	0.284
Secondary Diploma	2.74(0.79)		
Years of working	2.69(057)	1.123	0.214
Years of working in ICU	2.69(057)	1.536	0.420
Education Bachelor	Assurance Mean (SD)		
High Diploma	2.51(0.45)	0.919	0.412
Secondary Diploma	2.76(0.40)		
	2.67(0.45)		
Years of working	2.67(0.42)	0.565	0.849
Years of working in ICU	2.67(0.42)	0.928	0.545
Education	Comfort Mean (SD)		
Bachelor	2.56(0.90)	2.085	0.145
High Diploma	3.16(0.67)		
Secondary Diploma	2.50(1.06)		
Years of working	2.87(0.84)	0.80	0.653
Years of working in ICU	2.87(0.84)	0.84	0.61

*p<0.05

Data Collection

The investigator applied the education program based on the pre-test of the nurses' perspectives toward the family needs from May 1st to July 28th, 2020. After explaining the study aim, the investigator submitted the questionnaire to all available maternal critical care nurses in all shifts under high control of infection during COVID-19. Instead of regular face-to-face interviews, the investigator interviewed by cellphone and collected their answers regarding the family needs (support, information, proximity or closeness, assurance, and comfort items). This process continued for four weeks and each week the researcher interviewed approximately seven nurses in their free hours, not during work hours. Once the investigator got the confirmation from the head of nurses, all ICU nurses were accepted other than those on maternity and sick leave. In the fifth week, the investigator held four online sessions according to nurses' availability to attend these sessions to give them an instructional lecture presentation to clarify how are the family needs very important for triangle care, "the patient, family, and the nurses," to improve the nursing care and patient outcomes. Through the presentation, the investigator discussed the concept of the family needs and the history of this concept and the evidence of research regarding this issue. Also, all items were explained to verify the importance of these concepts in a low-middle income country. After each session, the investigator submitted the online post-test questionnaire to check how the nurses perceived family needs after the lecture. The answers were submitted promptly online through the investigator's email.

Data Analysis and Ethical Consideration

SPSS 0.20 version (IBM Corporation Armonk, NY, and the USA) was used to analyze the data in the form of descriptive statistics (frequency and percentage, mean, and standard deviation) and analytical statistics (independent t-Test) were used to analyze the data between nurses' perspectives before and after the application educational program instructions regarding family needs. The study obtained the approval of the ethics committee of Women Health Hospital's ICU authorities, and the nursing ethical committee and research committee (No. 017 dated April 28th, 2020). The researcher also obtained informed consent from every obstetric critical care nurse after explaining the

Table 2 Comparison of the Total mean of family needs items before and after applying for the educational program

	t-test	Mean (SD)	P value
Support needs (Before)	21.31	2.64(0.65)	0.00
Support needs (After)	40.86	3.10(0.40)	
Information needs (Before)	35.37	2.83(0.42)	0.00*
Information needs (After)	40.61	3.29 (0.42)	
Proximity needs (Before)	24.97	2.69(0.57)	0.00*
Proximity needs (After)	33.17	3.02(0.48)	
Assurance needs (Before)	33.21	2.67(0.42)	0.00*
Assurance needs (After)	38.24	3.03(0.41)	
Comfort needs (Before)	26.46	3.09(0.87)	0.00*
Comfort needs (After)	28.22	3.37(0.63)	

* p-value = 0 significant

study's aim the privacy and confidentiality of responses considered during data collection. Finally, the participants had the right to withdraw from the study at any time without a negative impact on them.

Results

The distribution of sociodemographic characteristics of the 28 critical care nurses reflects their ages range 22 to 42 years old, 50% of the respondents aged 22 to 26 years old, 32.1% aged 27 to 31 years old, while 17.7% were aged from 32to 42 years old. Those who graduated from a high nursing diploma accounted for 53/5%, while bachelor was 28.6%, and 17.9% from secondary diploma. The work experience reflects that two-thirds have up to five years' experience, 17.8% up to 10 years, and 17.9% up to 19 years. However, 75%, 10.7%, and 14.3% have up to six, 12, and 19-years' experience in the critical care nursing field, respectively. The relationship between the sociodemographic items and family needs revealed a statically significant relationship between support needs and working hours and, years of ICU experiences (P<0.03 and P<0.01), respectively. However, the other items of family needs did not show any significant relationship (Table 1).

Appendix 1 shows the nurses' perspectives toward family support needs. It reflects a significant difference before and after receiving the educational program (P=0.00). There is dramatic improvement in the support items before and after application of the educational program. The improvements occurring in very important items from the nurses' perspectives are to know the expected outcomes (32.1% to 67.9%); to have explanations of the environment (10.7% to 67.9%); to talk to the doctor every day (25.0% to 50.0%); to have visiting hours changed for special conditions (14.3% to 60.7%); to have directions as to what to do at bedside (25.0% to 64.3%); and to visit at any time (7.1% to 53.6%). However, there are three items (5, 7, 11) which showed significance (P=0.000) in the opposite direction in which the correct answers decreased instead of increased.

The nurses' perspectives toward family information needs (Appendix 2) reflect a significant difference (P=0.00). It showed great improvement in the information items to be very important in the following: To know about the types of staff members taking care of the patient, to know how the patient is being treated medically, to have a place to be alone while in the hospital, and to have someone to help with financial problems. Before the educational program, the score was 17.9%, 21.4% and 21.4%, and after receiving of the educational program the posttest the score was 57.1%, 60.7%, and 53.6%, respectively.

The proximity/closeness needs of the family needs include nine items, as shown in Appendix 3. The item considered important is "To have another person with you when visiting the critical care unit," and very important items are "To be assured it is all right to leave the hospital for a while," "To talk to the same nurse every day," and "To be told about other people that could help with problems." The pretest scores were 32.1%, 10.7%, 3.6%, and 28.6% and after posttest the scores were 46.4%, 39.3%, 25.0%, and 39.3%, respectively. There was a statistically significant difference (P=0.000) except in four items (1, 3, 6, 9), but the before training test was better than after. Family assurance needs include seven items and showed improvement after applying for the program regarding important and very important. The pretest score for the items "To be told about transfer plans while they are being made," "To be told about someone to help with family problems," "To have explanations given that are understandable," "To have visiting hours start on time," "To be told about chaplain services," "To help with patient's physical care," and "To be called at home about changes in the patient's condition" were 35.7%, 14.3%, 35.7%, 3.6%, 14.3%, 3.6% and 3.6%, respectively, while the posttest scores were 46.4%, 42.9%, 50.0%, 53.6%, 35.7%, 35.7% and 39.3%. It showed a statistically significant difference (P=0).

The family comfort needs include seven items and showed improvement after applying the educational program. In these items perceived as important and very important were: "To receive information about the patient at least once a day," "To feel that the hospital personnel care about the patient," "To know specific facts concerning the patient's progress," "To see the patient frequently," "To have comfortable furniture in the waiting room," and "To have a waiting room near the patients." The scores before intervention were 35.7%, 32.1%, 32.1%, 28.6%, and 25.0%, and after intervention were 60.8%, 75.0%, 75.0%, 67.9%, and 50.0%, respectively. There was a statistically significant difference (P=0). The family needs items' total means include support, information, proximity, assurance, and comfort. All items showed a statistically significant difference after the application of the educational program (Table 2).

Discussions

Half of the nurses who participated in this study were aged 22-26 years old. Similarly, the Egyptian study by Abdel-Aziz, Ahmed and Younis (2017) showed most nurses aged 20-30 (Abdel-Aziz, Ahmed and Younis, 2017). However, the education level and experience of work were more than our participants. The difference may be related to the variety of participant ICUs as the authors collected the sample from neurological and anesthesia and medical ICUs. Our participants were younger due to the innovation establishment of the women's health ICU. Moreover, in the same age category, most nurses were aged up to 30 years, bachelor's degree, and years of experience up to five years (Abd El-Aziz Basal, 2017).

There was a dramatic improvement in the nurses' perception of family support needs after applying the educational program. The most significant statements perceived by the nurses were: "To know the expected outcomes," which changed after the training program from one-third to two-thirds; "To have explanations of the environment before going into critical care unit for first time" which changed from only 10% to more than two-thirds; "To have directions as to what to do at bedside" from one-fourth to more than two-thirds; and "To talk to the doctor every day" from one-fourth to half.

Correspondingly, Abdel-Aziz, Ahmed and Younis (2017) reported the important perceived support needs were "to know how the patient was being treated" and "to talk to the doctor every day." Moreover, Shorofi et al. (2016) confirmed the important statement was "to have directions regarding what to do at the bedside." The mentioned studies reported the perceived needs based on a survey that reflected nurses' primary perceived needs while our study improved the perceived needs based on the educational program (Shorofi et al., 2016).

Regarding the family information needs, our study revealed that the nurses' perspectives showed a remarkable improvement toward family information needs with a statistically significant difference after receiving of the educational program. However, before the training program, one-fifth of nurses perceived that the statement "to know how the patient is being treated medically" is very important, while, after training, the perception changed to two-thirds of nurses acknowledged this statement as very important. The perceived information after training matches previous studies by Naderi et al. (2013) and Abdel-Aziz, Ahmed and Younis (2017), which reported that getting information about a patient's state is one of the very important family's needs (Naderi et al., 2013; Abdel-Aziz, Ahmed and Younis, 2017). In the same line, Gundo et al. (2014) and Gaeeni et al. (2015) reported that most nurses perceived the need for "knowledge about the patients' treatment" as the utmost important needs of family members (Gundo et al., 2014; Gaeeni et al., 2015). In the same line, Scott, Thomson, and Shepherd (2019) confirmed regarding the importance toward ICU patients' family needs, especially the need for more information and reassurance (Scott, Thomson and Shepherd, 2019). However, the healthcare providers' perceived needs almost did not meet and, consequently, will negatively affect those families. Whereas there is some evidence that procedures established on the providing of proper information in ICU could effectively reduce worry and increase satisfaction. Therefore, our study assessed the nurses' perspectives toward the family needs of the maternal critically ill cases and provided an educational program, as well as the family needs of maternal ICU cases.

The findings of the current study regarding the proximity (closeness) and assurance needs of the family showed a statistically significant difference, reflecting an improvement of the nurses' perspectives after receiving the educational program. The important statements were: "To have another person with you when visiting the critical care unit" which changed from almost one-third to almost 50%; "To be assured it is all right to leave the hospital for a while" changed from two-fifths to half; and "To talk to the same nurse every day" changed from one-fifth to one-third. However, the very important statement was "To be told about other people that could help with problems," which changed from more than one-fourth to almost two-fifth. On the other hand, two statements stayed in the same perception level as very important and important without any change, "To have a bathroom near the waiting area" and "To be alone at any time," respectively. However, according to nurses' perspectives, the assurance needs revealed a statistically significant difference after applying the educational program (P=0.000). These items were: “To be told about transfer plans while they are being made;” “To be told about someone to help with family problems;” “To have explanations given that are understandable;” “To have visiting hours start on time;” “To be told about chaplain services;” “To help with patient's physical care;” and “To be called at home about changes in the patient's condition,” which reflected that our study objectives achieved through the dramatic change of nurses' perspective to be more favorable toward family needs. Compared to similar studies reported by Gaeeni et al. (2015) and Abdel-Aziz, Ahmed and Younis (2017), it reflected similar findings of nurses’ perspectives that the important family proximity and assurance needs were focused on changes in the patient's condition, visiting hours and honest answers to questions, the transfer plans, and called at home regarding patient's condition. This similarity interpreted that the family members need to be updated regarding their patient’s conditions.

The findings of comfort needs showed a statistically significant difference in all comfort items about “receiving information about the patient daily, feeling that the hospital cares about the patient, facts concerning the patient's progress, frequently seeing the patient, availability of comfortable furniture in the waiting room, and to have a waiting room near the patient”, which reflected a dramatic change after the application of the educational program. Contradictory, the findings of previous studies by Shorofi et al. (2016) and Abdel-Aziz et al. (2017) reported that the minority of nurses confirmed that “to feel accepted by the hospital staff” and “to have visiting hours changed for specific conditions” were important needs. This minor percentage was interpreted by the author by inadequate preparation or education and nurses' experience to manage the family needs in emergencies, which supports our study's objectives that the nurses need an educational program to increase their awareness regarding family needs. However, conclusively the family needs of support, information, proximity, assurance, and comfort showed a statistically significance difference after applying the educational program. Correspondingly, the other literature scope studies highlighted that the highest everyday important family needs were information and assurance, followed by proximity, comfort, and support, respectively (Al-Mutair et al., 2013; Scott, Thomson and Shepherd, 2019). In the end, the findings of the current study presented all the items of the family needs from nurses’ perspectives that family members need reliable and accurate information and availability of proximity regarding the ICUs' patient. Also, the needs of support, assurance, and comfort from the health care providers, especially nurses, which were supported by a previous study conducted by (Davidson, 2009). Limitations of the research regarding the research design did not involve a control group so that the change in nurses' perspectives and awareness toward family needs was solely based on the educational program being held through the study.

The COVID-19 crisis appeared during the data collection and affected the number of participants from nurses and increased obstacles to collect data from other ICUs occupied by patients with Coronavirus.

Conclusions

The study concludes that the educational program achieved the objective of dramatically improving nurses' perspectives toward family needs. On the other side, the educational program increased nurses' awareness regarding that issue, which was not one of our objectives. The nurse’s awareness was confirmed orally when they acknowledged that our program was useful for them. In addition, the educational background and work experiences in ICUs were positive factors to improve nurses' perspectives within a short time.

The regular educational program application in all ICU types will enhance nurses' ability to understand the family needs and consider these needs to facilitate the relationship between healthcare providers and family members. Also, it will help to enhance the services introduced in the ICUs. However, this study was done in a female ICU, so the concern of family needs focused on one side. Therefore, the study needs to expand to include the other nurses' perspectives who care for male patients and their family members, most of the time by males.

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Appendix I. Family support needs from nurses' perspectives before and after receiving the training program

Family needs items (Items 1 to 14) Support needs	**not important n (%)**	**slightly important n (%)**	**important n (%)**	**very important n (%)**
To know the expected outcomes				
Before	2 (7.1)	5 (17.9)	12 (42.9)	9 (32.1)
After	0 (0)	0 (0)	9 (32.1)	19 (67.9)
P value			0.000	
To have explanations of the environment before going into the critical care unit for the first time				
Before	5 (17.9)	15 (53.6)	5 (17.9)	3 (10.7)
After	0 (0)	0 (0)	9 (32.1)	19 (67.9)
P value			0.000	
To talk to the doctor every day				
Before	6 (21.4)	8 (28.6)	7 (25.0)	7 (25.0)
After	0 (0)	1 (3.6)	13 (46.4)	14 (50.0)
P value			0.000	
To have a specific person to call at the hospital when unable to visit				
Before	9 (32.1)	4 (14.3)	6 (21.4)	9 (32.1)
After	2 (7.1)	7 (25.0)	11 (39.3)	8 (28.6)
P value			0.000	
To have questions answered honesty				
Before	1 (3.6)	2 (7.1)	14 (50.0)	11 (39.3)
After	2 (7.1)	11 (39.3)	12 (42.9)	3 (10.7)
P value			0.000	
To have visiting hours changed for special conditions				
Before	13 (46.4)	5 (17.9)	6 (21.4)	4 (14.3)
After	0 (0)	1 (3.6)	10 (35.7)	17 (60.7)
P value			0.000	
To have talked about feelings about what happened				
Before	5 (17.9)	9 (32.1)	11 (39.3)	3 (10.7)
After	9 (32.1)	8 (28.6)	9 (32.1)	2 (7.1)
P value			0.000	
To have good food available in the hospital happen				
Before	3 (10.7)	8 (28.6)	8 (28.6)	9 (32.1)
After	0 (0)	5 (17.9)	20 (71.4)	3 (10.7)
P value			0.000	
To have directions as to what to do at the bedside				
Before	6 (21.4)	8 (28.6)	7 (25.0) 10	7 (25.0)
After	0 (0)	0 (0)	(35.7)	18 (64.3)
P value			0.000	
To visit at any time				
Before	14 (50.0)	8 (28.6)	4 (14.3)	2 (7.1)
After	1 (3.6)	2 (7.1)	10 (35.7)	15 (53.6)
P value			0.000	
To know which staff members could give what type of information time				
Before	4 (14.3)	8 (28.6)	14 (50.0)	2 (7.1)
After	9 (32.1)	10 (35.7)	5 (17.9)	4 (14.3)
P value			0.000	
To have friends nearby for support				
Before	9 (32.1)	10 (35.7)	5 (17.9)	4 (14.3)
After	2 (7.1)	4 (14.3)	14 (50.0)	8 (28.6)
P value			0.000	
To know why things were done for the patient				
Before	2 (7.1)	6 (21.4)	14 (50.0)	6 (21.4)
After	0 (0)	5 (17.1)	16 (57.1)	7 (25.6)
P value			0.000	
To feel there is hope				
Before	1 (3.6)	0 (0)	10 (35.7)	17 (60.7)
After	0 (0)	5 (17.1)	5 (17.1)	18 (64.3)
P value			0.000	

Appendix II Family information needs from nurses' perspectives before and after receiving the training program

Family needs items (Items 15 to 23) information needs	**not important n (%)**	**slightly important n (%)**	**important n (%)**	**very important n (%)**
To know about the types of staff members taking care of the patient				
Before	2 (7.1)	10 (35.7)	11 (39.3)	5 (17.9)
After	0 (0)	1 (3.6)	11 (39.3)	16 (57.1)
P value	0.000			
To know how the patient is being treated medically				
Before	2 (7.1)	6 (21.4)	14 (50.0)	6 (21.4)
After	0 (0)	5 (17.9)	6 (21.4)	17 (60.7)
P value	0.000			
To be assured that the best care possible is being given to the patient				
Before	1 (3.6)	0 (0)	11 (39.3)	16 (57.1)
After	0 (0)	2 (7.1)	11 (39.3)	15 (53.6)
P value	0.000			
To have a place to be alone while in the hospital				
Before	11 (39.3)	11 (39.3)	4 (14.3)	2 (7.1)
After	0 (0)	0 (0)	9 (32.1)	19 (67.9)
P value	0.000			
To know precisely what is being done for the patient				
Before	3 (10.7)	10 (35.7)	7 (25.0)	8 (28.6)
After	3 (10.7)	8 (28.6)	11 (39.3)	6 (21.4)
P value	0.000			
To feel accepted by the hospital staff				
Before	1 (3.6)	5 (17.9)	10 (35.7)	12 (42.9)
After	1 (3.6)	4 (14.3)	8 (28.6)	15 (53.6)
P value	0.000			
To have someone to help with financial problems				
Before	0 (0)	11 (39.3)	11 (39.3)	6 (21.4)
After	0 (0)	1 (3.6)	12 (42.9)	15 (53.6)
P value	0.000			
To have a telephone near the waiting room				
Before	6 (21.4)	5 (17.9)	13 (46.4)	4 (14.3)
After	0 (0)	5 (17.9)	13 (46.4)	10 (35.7)
P value	0.000			
To have a pastor visit				
Before	14 (50.0)	7 (25.0)	3 (10.7)	4 (14.3)
After	2 (7.1)	4 (14.3)	12 (42.9)	10 (35.7)
P value	0.000			

Appendix III Family proximity and assurance needs from nurses' perspectives before and after receiving the training program

Family needs items (Items 24 to 32) proximity or closeness	**not important n (%)**	**slightly important n (%)**	**Important n (%)**	**very important n (%)**
To talk about the possibility of the patient's death				
Before	3 (10.7)	3 (10.7)	15 (53.6)	7 (25.0)
After	3 (10.7)	8 (28.6)	11 (39.3)	6 (21.4)
P value	0.000			
To have another person with you when visiting the critical care unit				
Before	10 (35.7)	6 (21.4)	9 (32.1)	3 (10.7)
After	0 (0)	9 (32.1)	13 (46.4)	6 (21.4)
P value	0.000			
To have someone concerned with patient health				
Before	2 (7.1)	1 (3.6)	10 (35.7)	15 (53.6)
After	5 (17.9)	10 (35.7)	7 (25.0)	6 (21.4)
P value	0.000			
To be assured it is all right to leave the hospital for a while				
Before	8 (28.6)	5 (17.9)	12 (42.9)	3 (10.7)
After	0 (0)	3 (10.7)	14 (50.0)	11 (39.3)
P value	0.000			
To talk to the same nurse every day				
Before	14 (50.0)	7 (25.0)	6 (21.4)	1 (3.6)
After	3 (10.7)	8 (28.6)	10 (35.7)	7 (25.0)
P value	0.000			
To feel it is all right to cry				
Before	5 (17.9)	9 (32.1)	9 (32.1)	5 (17.9)
After	10 (35.7)	12 (42.9)	4 (14.3)	2 (7.1)
P value	0.000			
To be told about other people that could help with problems				
Before	1 (3.6)	6 (21.4)	13 (46.4)	8 (28.6)
After	0 (0)	7 (25.0)	10 (35.7)	11 (39.3)
P value	0.000			
To have a bathroom near the waiting area				
Before	1 (3.6)	4 (14.3)	15 (53.6)	8 (28.6)
After	2 (7.1)	1 (3.6)	17 (60.7)	8 (28.6)
P value	0.000			
To be alone at any time				
Before	9 (32.1)	10 (35.7)	8 (28.6)	27 (96.4)
After	0 (0)	2 (7.1)	8 (28.6)	18 (64.3)
P value	0.000			
Family assurance needs items (items 33 to 39)				
To be told about transfer plans while they are being made				
Before	7 (25.0)	6 (21.4)	10 (35.7)	5 (17.9)
After	6 (21.4)	5 (17.9)	13 (46.4)	4 (14.3)
P value	0.000			
To be told about someone to help with family problems				
Before	15 (53.6)	6 (21.4)	4 (14.3)	3 (10.7)
After	4 (14.3)	5 (17.9)	12 (42.9)	7 (25.0)
P value	0.000			
To have explanations given that is understandable				
Before	1 (3.6)	3 (10.7)	14 (50.0)	10 (35.7)
After	0 (0)	3 (10.7)	11 (39.3)	14 (50.0)
P value	0.000			
To have visiting hours start on time				
Before	3 (10.7)	10 (35.7)	14 (50.0)	1 (3.6)
After	0 (0)	1 (3.6)	12 (42.9)	15 (53.6)
P value	0.000			
To be told about chaplain services				
Before	3 (10.7)	8 (28.6)	3 (10.7)	4 (14.3)
After	3 (10.7)	8 (28.6)	7 (25.0)	10 (35.7)
P value	0.000			
To help with patient's physical care				
Before	6 (21.4)	9 (32.1)	12 (42.9)	1 (3.6)
After	0 (0)	3 (10.7)	15 (53.6)	10 (35.7)
P value	0.000			

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ORIGINAL ARTICLE

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Analysis of the causes of low-birth-weight infants in terms of nutritional status and maternal health history

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ABSTRACT

Introduction: The incidence of low-birth-weight infants is still high and requires serious attention to prevent infant mortality. This study aimed to analyze the causes of low-birth-weight infants' nutritional status and maternal health history.

Methods: This cross-sectional study was conducted in May to July 2021 at two hospitals in Surabaya. The study involved 498 mothers who had newborns within three years from 2019 and were recruited using simple random sampling. The inferential test was conducted using logistics regression with a significance level of 0.05.

Results: According to the adjusted model, variables that were significantly associated with the incidence of low-birth-weight infants were the husband's job as private worker (OR=0.021; 95% CI = 0.023-0.123), child number as one (OR=0.214; 95% CI = 0.114-3.428), parity as prime (OR=0.749; 95% CI = 0.197-3.652) and history of low-birth-weight infants in previous births (OR=0.015; 95% CI = 0.004-0.006).

Conclusions: Individual and family factors remand an essential variable in low-birth-weight prevalence. Nurses are responsible for providing socialization to mothers and fathers who are having and planning to have children. Cultural factors in the family and community where the mother lives also need to be carried out in further research.

Keywords: low birth weight infants; nutrition; history of illness; pregnancy

Introduction

Child development begins after conception or early pregnancy. Since then, mothers need to take care of their physical and psychological conditions so that the fetus they contain can grow and develop optimally (Evenson et al., 2014). Maternal nutrition is very influential on fetal growth and development. Undernourished mothers, before or during pregnancy, more often give birth to low birth weight (LBW) infants or are born with health problems (Stephenson et al., 2018). LBW is an Infant whose birth weight is less than 2500 grams. The incidence of LBW contributes to the neonatal mortality rate because of the various problems it causes. Infants with LBW are more at risk of experiencing health problems than term infants, so efforts are needed to prevent the occurrence of LBW (Dencker et al., 2016; Gilbert et al., 2019).

Since the fetus is in the womb until age 18, the government has carried out child health efforts with integrated antenatal care (ANC) programs, neonatal visits, immunizations, detection of growth and development, etc. This effort aims to prepare healthy, intelligent, and quality future generations and to reduce child mortality (Marangoni et al., 2016; Rogozinska et al., 2016). Child health efforts have shown good results, as seen in the child mortality rate from year to year, which shows a decline. The results of the Indonesia Demographic and Health Survey (IDHS) in 2017 showed a Neonatal Mortality Rate (NMR) of 15 per 1,000 live births, Infant Mortality Rate (IMR) of 24 per 1,000 live births, and Under-five Mortality Rate (U5MR) 32 per

1,000 live births. The Child Mortality Rate (CMR) has reached the 2030 Sustainable Development Goals (SDGs), which is 25/1,000 live births, and it is hoped that NMR can also reach the target of 12/1,000 live births (Schmidt et al., 2016).

IMR and Maternal Mortality Rate (MMR) are important indicators to determine the health status of the community. Indonesia is expected to reduce MMR and IMR to support the achievement of Sustainable Development Goals (SDGs), namely ending preventable maternal, infant, and under-five mortality, which is targeted for a Maternal Mortality Rate of 70 per 100,000 live births. For infants, 12 per 1000 live births and the under-five mortality rate is 25 per 1000 live births (Rauh et al., 2014). There is a tendency to decrease the proportion of birth weight to less than 2500 grams. In 2013, the proportion of LBW was 5.7, in 2018 it was 6.2. The National Mid-Term Development Plan (NMTDP) target in 2019 is 8%, but the 2016 National Health Indicator Survey (NHIS) results in the proportion being around 6.9%, while the percentage of LBW in Surabaya in 2018 was around 1.96 (Kennelly et al., 2016).

Based on the health profile of the Surabaya City Health Office, the IMR per 1,000 live births in Surabaya in 2018 was 6.43 per 1,000 live births. The percentage of LBW in Surabaya in 2018 was around 1.96 (Surabaya Health Office, 2019). From research on risk factors for LBW, the results show that the dominant factors that cause preterm labour include occupational factors at 0.385 times greater risk, pregnancy complications factors at 7.813 times greater risk, and antepartum bleeding factors at 26.886 times greater risk of preterm birth (Naja et al., 2016; van Dijk et al., 2017). Detection of LBW is also related to maternal education, which affects maternal health and the health of infants in the womb (Salsabiila et al., 2021). Knowledge of pregnant women is at risk of maternal anemia because pregnant women do not know nutritious foods to consume. Anemia in the mother also causes LBW (Figueiredo et al., 2018).

One of the risk factors for the occurrence of LBW infants is a history of high-risk maternal pregnancies. Estimates of pregnant women at high risk or complications in Surabaya in 2016 amounted to 9,496 people. The coverage of high-risk pregnant women or complications treated in health facilities is 90.24% (Naja et al., 2016). In addition to giving birth to LBW infants, pregnant women are at high risk, leading to uneven delivery/stuck, dead fetuses in the womb, pregnant women/maternal deaths, and so on.

The government has made various efforts to prevent the incidence of LBW, including integrated ANC during pregnancy and giving supplementary food to pregnant women with a Lack of Chronic Energy (LCE). Another effort that can be done is to detect pregnant women at risk of giving birth to LBW infants by collaborating with primary healthcare (Jones et al., 2014; Stang & Huffman, 2016). Unfortunately, there are still barriers that make the government's efforts still ineffective in preventing LBW. One of these barriers comes from internal factors of pregnant women. Thus, this study aimed to identify the factors that cause low birth weight in terms of nutritional status and maternal disease history.

Materials and Methods

Research Design

This type of research was included in the category of quantitative research with a cross-sectional approach. The study was conducted in May – July 2021 at Haji Hospital and Soewandi Hospital, Surabaya, on mothers who had newborns within three years from 2019. The study was conducted by analyzing the factors that cause low-birth-weight infants seen from nutritional status and maternal history during pregnancy.

Respondent

The population in this study were all newborns born at Soewandi Hospital and Haji Hospital Surabaya in the last three years, consisting of two groups, namely newborns weighing <2,500 grams and infants born weighing 2,500 grams or more. A total of 498 mothers with infants born were recruited using simple random sampling.

Research Variables

The variables of this study were factors that were reviewed from the mother's nutritional status, namely body mass index, upper arm circumference, hemoglobin levels, and consumption of supplements. While in terms of disease history, factors are parity, previous history of low birth weight, comorbidities, birth interval, history of smoking, and alcohol consumption. The dependent variable in this study was the incidence of low-birth-weight infants.

Data Collection and Research Instrument

Data collection was done by looking at the data through the mother's medical record during hospitalization and identifying according to the required category. Measurement of socio-demographic data was using a questionnaire consisting of age, education, occupation, income, husband's occupation, gestational age, and the number of children. Body mass index and upper arm circumference were measured using the midline by measuring weight and height to calculate maternal body categories, which were classified into underweight <18.5 kg/m^2, Normal 18.5 – 25.9 kg/m^2, overweight 25 – 29.9 kg /m^2 and obesity > 30 kg/m^2. While the size of the upper arm circumference <23.5 cm was in the category of malnutrition. Hemoglobin levels were seen based on blood laboratory results with a high-risk category if <11 grams/dL, and supplement consumption was measured based on interviews with mothers. History of parity, previous LBW, comorbidities, pregnancy gap, history of smoking and alcohol consumption seen through the patient's medical record while in hospital.

Data Analysis

The data obtained were then carried out in descriptive data processing, with the frequency distribution of each variable studied and displayed based on percentages. The inferential test was carried out using the SPSS program for Windows version 22 and tested using Logistics Regression with a significance value of 0.05.

Ethical Consideration

Compliance with ethical guidelines. This research was first tested ethically and declared to have passed ethics at the Ethics Commission of Soewandi Hospital and Haji Hospital Surabaya with ethical worthy certificate numbers 003/KE/KEPK/2021 and 073/13/KOM.ETIK/2021.

Results

Sociodemographic Factors of Respondents

According to Table 1, the socio-demographic of respondents, namely mothers who gave birth at Haji Hospital and Soewandi Hospital, Surabaya with the most characteristic age 20-35 years, was as many as 361 respondents (72.5%). Educational history at the high school level as many as 254 respondents (51.0%). Most pregnant women do not work, as many as 460 respondents (92.4%), with the most income below the regional minimum wage, as many as 448 respondents (90.0%). A total of 460 respondents (92.4%) has a husband working in the private sector, and the maximum number of children is two children (57.6%).

Mother Nutrition Status

According to Table 1, nutritional status in mothers was measured by body mass index, upper arm circumference, hemoglobin level and consumption of supplements such as milk, blood-enhancing tablets, vitamins, and calcium in mothers during pregnancy. The body mass index of pregnant women was mostly in the normal category, total 268 respondents (53.8%), while women with abnormal conditions were underweight. A total 60 respondents (12.0%), overweight a total 108 respondents (21.7%), and obesity a total 62 respondents (12.4%). The arm circumferences of pregnant women who were less than normal (<23.5 cm) was 60 respondents (12.0%) and ≥ 23.5 cm are 438 respondents (88.0%), and the hemoglobin levels of pregnant women who were in anemic condition were 192 respondents (38.6%). Despite the abnormal nutritional status, there were still mothers who did not take pregnancy supplements, as many as 192 respondents (38.6%).

Maternal health history during pregnancy also contributes to the incidence of low-birth-weight infants, which includes a history of previous low-birth-weight

Table 1 Socio-demographic factors and mother health status (n=498)

Socio-demographic	Frequency (n)	Percentage (%)
Age		
Under 20 years	127	25.5
20 – 35 years	361	72.5
More than 35 years	10	2.0
Education		
Basic school	161	32.3
High school	254	51.0
University	83	16.7
Job		
Employed	38	7.6
Unemployed	460	92.4
Income		
Under and same as minimum regional income	448	90.0
Above minimum regional income	50	10.0
Husband's job		
Private Sectors	460	92.4
Civil Sectors	38	7.6
Child amount		
One child	194	40.0
Two children	287	57.6
Three or more children	17	3.4
Body Mass Index		
Underweight	60	12.0
Normal	268	53.8
Overweight	108	21.7
Obesity	62	12.4
Upper arm circumference		
< 23.5 cm	60	12.0
≥ 23.5 cm	438	88.0
Hemoglobin level		
Anemia	192	38.6
Normal	306	61.4
Supplement consumption		
No	192	38.6
Yes	306	61.4
Low-birth-weight infant history	170	34.1
Yes	195	39.2
No	133	26.7
Never gave birth		
Comorbid of illness		
Yes	263	52.8
No	235	47.2
Child Born alive		
Yes	240	48.2
No	258	51.8

infants and comorbidities. Most mothers were in a multi-parity condition with a history of low-birth-weight infants, as much as 34.1%. Mothers who had comorbidities were 52.8% consisting of gestational diabetes, hypertension, obesity, and asthma. Incidence of low-birthweight infants at Haji and Soewandi Hospitals Surabaya over the previous three years still showed poor results. As many as 48.2% of low-birth-weight infants were born alive from a vaginal birth or Sectio Caesarea. Unfortunately, 51.8% of low-birth-weight infants did not survive.

Cross-Tabulation of Socio-Demographic and Mother with Low-Birth-Weight Infant

The results of cross-tabulation of socio-demographic factors, nutritional status and history of maternal disease with the incidence of low-birth-weight infants showed that at risky ages, namely under 20 years and above 35 years, 70 respondents (14.1%) gave birth to low-birth-weight infants. Mothers with basic education, namely elementary school and junior high school, showed the most births of infants with low-birth weight, a total 108 respondents (21.3%). The highest number of children showed the incidence of low-birth-weight infants as much as 46.8% on nutritional factors, the incidence of mothers giving birth to children with low infant weight is almost balanced, both in normal and less than normal conditions. Deficiency of hemoglobin level (anemia) also contributed to the risk of 48.2%. Mothers who did not take supplements during pregnancy had a 15.5% incidence. Mothers with a history of giving birth to low-birth-weight infants had an incidence of 28.7%, and mothers with comorbidities had an incidence rate of 28.1%. In contrast, in mothers with a history of smoking and drinking alcohol, the incidence of low-birth-weight infants is 50% (from two mothers who smoke and drink alcohol). One mother drinking alcohol gave birth to a low-birth-weight infant (Table 2).

Low-birth-weight Infants based on Nutritional Status and Maternal Disease History

Based on Table 3 concerning to the results of the logistic regression analysis of factors for low-birth-weight infants in terms of nutrition in terms of

Table 2. Cross-tabulation of socio-demographic and mother with low-birth-weight infant

Factors Variable	**Low-birth-weight infant**		**p-value**
	No	**Yes**	
Age			
Under 20 years	61 (12.2%)	66 (13.3%)	0.557
20 – 35 years	191 (38.4%)	170 (34.1%)	
More than 35 years	6 (1.2%)	4 (0.8%)	
Educational background			
Basic school	52 (10.5%)	108 (21.7%)	0.000*
High school	150 (30.2%)	24 (4.8%)	
University	56 (11.3%)	27 (3.4%)	
Number of children			
One child	77 (15.5%)	117 (23.5%)	0.000*
Two children	171 (34.3%)	116 (23.3%)	
Three children or more	10 (2%)	7 (1.4%)	
Body mass index			
Underweight	29 (5.8%)	31 (6.2%)	0.091**
Normal	142 (28.5%)	126 (25.3%)	
Overweight	62 (12.4%)	46 (9.2%)	
Obesity	25 (5.0%)	37 (7.4%)	
Upper arm circumference			
< 23.5 cm	29 (5.8%)	31 (6.2%)	0.566
≥ 23.5 cm	229 (46.0%)	209 (42.0%)	
Hemoglobin level			
Anemia	115 (23.1%)	77 (15.5%)	0.004*
Normal	143 (28.7%)	163 (32.7%)	
Supplement consumption			
No	115 (23.1%)	77 (15.5%)	0.004*
Yes	143 (28.7%)	163 (32.7%)	
Parity			
Prime parity	77 (15.5%)	117 (23.5%)	0.000*
Multi parity	181 (35.4%)	123 (24.7%)	
Low-birth-weight infant history			
Yes	27 (5.4%)	143 (28.7%)	0.000*
No	168 (33.7%)	27 (5.4%)	
Never giving birth	63 (12.7%)	70 (14.1%)	
Comorbid of illness			
Yes	123 (24.7%)	140 (28.1%)	0.017*
No	135 (27.1%)	100 (20.1%)	
Pregnancy gap			
Under 2 years	18 (6.1%)	11 (3.7%)	0.860
≥ 2 years	160 (54.4%)	105 (35.7%)	

* P = <0.05
** P = <0.1

nutritional status, and maternal disease history. Out of twenty-one variables only four variables are associated with low birth weight, those variables consist of the husband's job, the number of children, parity, and history of low-birth-weight, each of that variable calculation are explained as follow according to the adjusted model above, each of these variables associated with the incidence of low-birth-weight babies is the husband's job which consists of the private sector (OR = 0.021, 95% CI = 0.023 – 0.123). Number of children that include one child (OR = 0.214, 95% CI = 0.114 – 3.428) and two children (OR = 0.309, 95% CI = 0.156 – 2.431), parity that consisted of prime parity (OR = 0.749. 95% CI = 0.197 – 3.652), history of low-birth-weight babies in previous birth consisted of experience low-birth-weight (OR = 0.015, 95% CI = 1.006 – 1.073).

Discussions

Low-birth-weight infants often occur at birth at any time if the mother's condition and factors that cause high risk are not immediately addressed. One of the main causes that often occur is due to maternal factors, especially problems related to pregnancy and nutritional status. Based on the study's results, it was found that the factors that are more likely to influence the incidence of low birth weight are the husband's job, the number of children, the incidence of parity, and low birth weight history.

A husband's job is closely associated with the incidence of low birth weight (Husanah & Machdalena, 2019). Husbands who do not earn or have insufficient income cannot meet the needs of their pregnant wives, such as the need for additional nutrition and vitamins for

Table 3. The results of the logistic regression analysis of factors for low-birth-weight infants in terms of nutritional status and maternal disease history (N=498)

Factors Contributed	Odds Ratio	95% CI Lower	95% CI Upper	p-value
Age				
Under 20 years (ref)	1			
20 – 35 years	1.270	0.512	0.178	0.334
35 years and above	1.560	0.786	4.899	0.456
Educational background				
Basic school (ref)	1			
High school	1.670	0.782	4.112	0.925
University	0.998	0.332	5.543	0.772
Husband's job				
Civil sectors	1			
Private sectors	0.021	0.023	0.123	0.020*
Number of children				
One child	0.214			
Two children	0.309	0.114	3.428	0.021*
Three or more children	1	0.156	2.431	0.011*
Body mass index				
Underweight	1			
Normal	1.321	0.436	3.212	0.123
Overweight	1.742	0.055	2.412	0.228
Obesity	1.002	0.321	3.781	0.451
Upper arm circumference				
< 23.5 cm	1			
≥ 23.5 cm	1.379	0.386	6.312	0.410
Hemoglobin level				
Anemia	1			
Normal	1.901	0.903	2.114	0.432
Supplement consumption				
No	1			
Yes	1.650	0.907	1.219	0.690
Parity				
Multi parity	1			
Prime parity	0.749	0.197	3.652	0.040*
History of Low-birth-weight infant				
Yes	0.015	0.006	1.073	0.010*
No	0.005	0.004	0.006	0.441
Never	1			
Comorbid of illness				
Yes	1			
No	1.131	0.112	4.460	0.790
Pregnancy gap				
Under 2 years	1			
≥ 2 years	0.450	0.997	2.901	0.145

* P = <0.05

pregnant women (Elaabsi et al., 2022; Merklinger-Gruchala et al., 2019). Another thing that causes the husband's job to be at risk for making LBW is the limited cost of conducting routine pregnancy check-ups (ANC) (Rm et al., 2020). This burden increases if the spouse of the jobless father already has dependent children from previous births (Hinkle et al., 2014; Merklinger-Gruchala et al., 2019). Husband's jobs whose salary cannot meet their daily needs will also make pregnant women stressed. The level of stress will affect the mother's health problems; the hormone cortisol, which is produced as a chemical mediator in the body, makes the sympathetic and parasympathetic nerves work more, accordingly, it will also have an impact on the fetus in the womb (Rauh et al., 2014; Schmidt et al., 2016).

The number of children and the incidence of parity cause the birth of low-birth-weight infants as much as six times more than other factors. The number of children and the number of parities that pose a high risk of having an infant are mothers with more children or who have given birth for the first time. The risk of mothers with too many children, especially at such a close distance between pregnancy and child-birth, makes the condition of the mother's uterus not fully ready for implantation of the fertilized fetus (Razeeni et al., 2021). The mother's uterus takes about two years to prepare to receive new implantation to be more fertile in maintaining the fetus to stay healthy because a properly regenerated uterus will make the placenta stick firmly so that the circulation of air, blood, and nutrients from mother to child is not disturbed (Jelsma et al., 2016; Zhang et al., 2014).

Previous low birth weight history in the mother is also more likely to have been associated with the incident of low birth weight. This condition is closely related to the mother's nutritional status during pregnancy (Desta et al., 2020). Mothers who experience CED will risk giving birth to children with low birth weight. CED in pregnant women can not only cause severe nausea and vomiting, weakness, and fatigue but is also dangerous for the fetus because of the risk of miscarriage, low birth weight, premature birth, stunting, also giving birth to infants who also experience chronic energy deficiency later (Aisy & Kurniasari, 2022; Girma et al., 2019). Therefore, chronic energy deficiency in pregnant women needs to be detected and treated early so that the fetus born later can be healthier. This CED can have many possible triggers, including stress, viral infections, weak immunity, and hormonal balance disorders (Deriba & Jemal, 2021; Diani et al., 2020).

If a pregnant woman with CED gets pregnant again and her CED has not been handled properly, then there is a great risk that she will experience problems with the fetus again, as mentioned above. Therefore, before planning another pregnancy, pregnant women with a history of CED are advised to consult with their obstetrician and nutritionist to handle their condition optimally. That way, she can contain a healthier fetus in her next pregnancy.

Conclusions

Generally, the results of this study highlight the need to improve the level of knowledge and increase the trust in the COVID-19 vaccines to expedite their uptake in the older adult population. Educating them on the benefits of the COVID-19 vaccine is an essential milestone in preventing further morbidity and mortality cases of the COVID-19 disease, considering their high-risk category. Moreover, the local government should intensify its public awareness campaigns to reach everyone in the community. Providing rewards or incentives can also be a strategy to improve the level of vaccine uptake.

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ORIGINAL ARTICLE

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The incidence and factors predicting survival among preterm infants with respiratory distress syndrome admitted to neonatal intensive care unit

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ABSTRACT

Introduction: Respiratory distress syndrome (RDS) or hyaline membrane disease (HMD) is the most common cause of neonatal morbidity and mortality in preterm infants. The aims of the study were to determine the incidence of RDS in preterm infants in Thailand and to identify factors predicting survival of preterm infants with RDS.

Methods: A retrospective cohort study was conducted with 820 preterm infants from January 2016 to December 2019 in the Neonatal Intensive Care Units (NICUs) of a tertiary hospital located in the north of Thailand. Data were collected from hospital medical records. The incidence of RDS was analyzed. Binary logistic regression was used to predict factors related to survival of preterm infants with RDS.

Results: The incidence of RDS in infants born at <37 weeks' gestation was 44.15% of all preterm infants. This study showed that birth weight and length of stay could significantly predict survival of preterm infants with RDS ($p<0.05$).

Conclusions: The current study found that the incidence remains a problem, while birth weight and length of stay predicted survival of preterm infants with RDS. These findings provide nurses and other healthcare providers with information to anticipate care required in the NICU to improve survival of preterm infants. This information can be used to plan care for the infant and to educate and support parents.

Keywords: incidence, survival, preterm infant, respiratory distress syndrome

Introduction

A primary concern of preterm infants remains a challenge as approximately 15 million are born preterm per year (WHO, 2018). Prematurity can lead to many physical health issues that contribute to morbidity and mortality in preterm infants (WHO, 2017). Around 1 million preterm infants die each year from complications such as pneumonia, sepsis, necrotizing enterocolitis, and respiratory distress syndrome (Liu et al., 2016; WHO, 2017). RDS is the most common cause of morbidity and mortality in preterm infants (Reuter, Moser and Baack, 2014; Fraser, 2015). Moreover, RDS is the most common cause for preterm infants to be hospitalized in neonatal intensive care units for invasive or non-invasive respiratory support (Moya et al., 2019). Evidence indicates that RDS occurs in approximately 5% of near-term infants, 30% of infants less than 30 weeks of gestational age, and 60% of premature infants less than 28 weeks of gestational age (Pramanik, Rangaswamy and Gates, 2015). In Thailand, evidence indicates that the incidence of RDS occurs in approximately 50 % of preterm infants (Sangpanit et al., 2020).

Respiratory distress syndrome (RDS), also known as hyaline membrane disease (HMD), is the most common

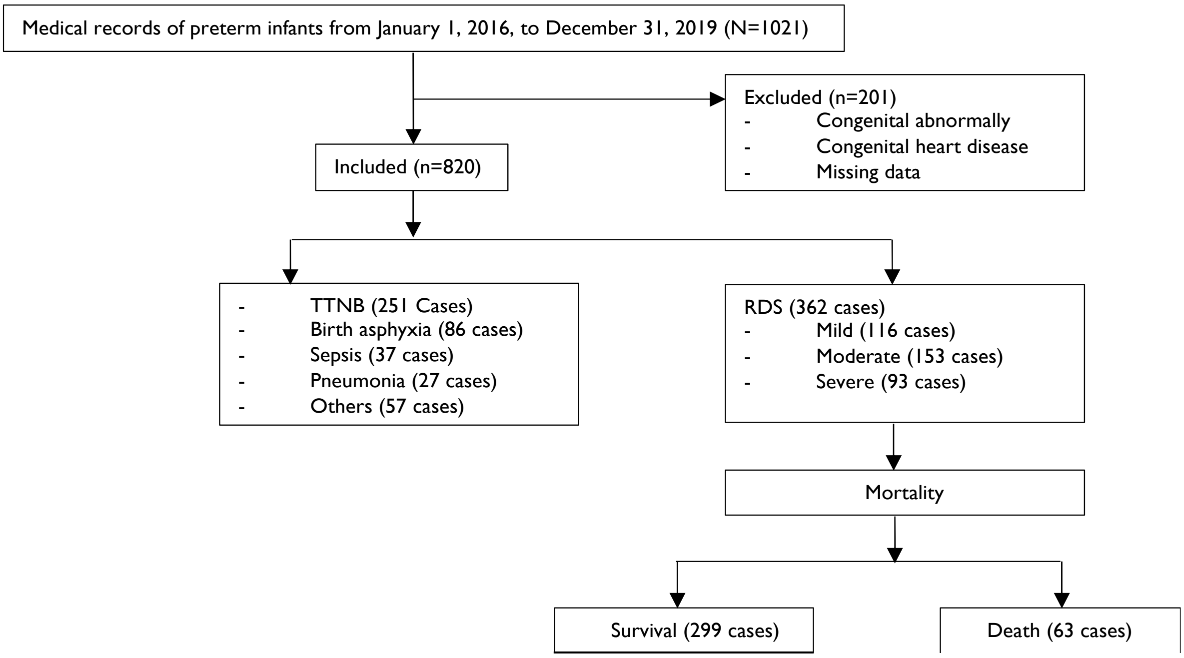

Figure 1. The flow diagram of the study

respiratory disorder in infants (Fraser, 2015). It is caused by a deficiency of alveolar surfactants, which cover the alveolar surface, leading to atelectasis (Warren and Anderson, 2010), ventilation-perfusion inequality, and hypoventilation (Pramanik, Rangaswamy and Gates, 2015). RDS is divided into three levels; mild, moderate, and severe RDS (Qari et al., 2018). The clinical features of RDS, including dyspnea, tachypnea, nasal flaring, inspiratory stridor, grunting, and cyanosis, appear immediately after birth or within 48-72 hours (Qari et al., 2018). The administration of surfactant, a natural lipoprotein, into the alveoli may relieve an infant's respiratory distress syndrome (Donn and Sinha, 2006; Bahadue and Soll, 2012). Although this treatment improves pulmonary function, a lack of alveolar growth from immaturity can reduce the surface area for gas exchange and lead to mortality (Bahadue and Soll, 2012). According to a literature review, previous studies examined that factors of gestational age (GA), birth weight, mother's age, route of delivery (Mekasha et al., 2020), RDS level, surfactant and length of stay (Saboute et al., 2015), were associated with survival rates of preterm infants with RDS.

Although there are studies regarding prematurity and RDS from other countries, information about infants born in Thailand is scarce. Therefore, the purpose of this study was to: 1) determine the incidence of RDS in preterm infants and 2) examine factors that predict survival of preterm infants with RDS in Thailand.

Materials and Methods

This study was a retrospective cohort study of preterm infants hospitalized in the NICUs of a tertiary hospital located in the north of Thailand because there is the highest rate of preterm births in Thailand. The study was conducted in a tertiary care center which serves as a referral center for hospitals from the seven provinces located in the northern region of Thailand.

Data were collected from electronic health records. The sample consisted of preterm infants < 37 weeks gestational age, both being diagnosed as RDS and not diagnosed as RDS, who were admitted to the NICUs of the tertiary hospital for at least one day from January 1, 2016 to December 31, 2019. Preterm infants who had congenital abnormalities, congenital heart disease, and incomplete data were excluded. For preterm infants who were diagnosed with RDS, they were divided into three groups: mild, moderate, and severe

Table 1 Diagnoses of all participants (N=820)

Disease	**Numbers**	**Percent**
RDS	362	44.15
Mild RDS	116	14.15
Moderate RDS	153	18.65
Severe RDS	93	11.35
TTNB	251	30.61
Birth Asphyxia (BA)	86	10.49
Sepsis	37	4.51
Pneumonia	27	3.29
Others	57	6.95
Total	820	100.00

Table 2 Correlations between factors and survival of preterm infants with RDS

Independent Variables	Survival group	Non-survival group	p - value
	Number (299)	Number (63)	
GA at birth (weeks)	(Mean=30.29, SD=2.70)	(Mean=26.28, SD=3.06)	<0.001
Less than 28	44	42	
28 - <32	149	16	
32- < 37	106	5	
Mother's age (years)	(Mean=28.15, SD=7.89)	(Mean=26.75, SD=8.33)	0.087
<20	101	29	
20 – 35	131	23	
>35	67	11	
Route of delivery			0.160
Vaginal delivery	167	40	
Cesarean section	132	23	
Birth weight (grams)	(Mean=1447.80, SD=521.03)	(Mean=867.06 , SD=291.70)	<0.001
<1,000	48	48	
1,000-1,499	142	13	
≥1,500	109	2	
RDS level			<0.001
Mild RDS	113	3	
Moderate RDS	123	30	
Severe RDS	63	30	
Surfactant dose			<0.001
1 dose	268	46	
≥2 doses	31	17	
Length of stay (days)	(Mean=46.76, SD=38.22)	(Mean=20.24, SD=37.71)	<0.001
1-15	58	45	
16-30	52	8	
31-60	111	5	
>60	78	5	

RDS. RDS severity was determined by the neonatal physicians at the target hospital. Mild RDS is defined as partial pressure of oxygen (PO_2) of 50-80 mmHg and fraction of inspired oxygen (FiO_2) of less than 0.3, while moderate RDS is defined as PO_2 of 50-80 mmHg and FiO_2 of 0.4-0.6 and requires Continuous positive airway pressure (CPAP) (Luerti et al., 1987). Severe RDS is defined as PO_2 less than 50 mmHg or PCO_2 higher than 60 mmHg with FiO2 at 0.4-1.0 and ventilation (Luerti et al., 1987). Data as predicting factors of this study were collected and recorded from electronic health records (EHR), including survival, gestational age (GA), mother's age, route of delivery, birth weight (BW), RDS level, surfactant dose, and length of hospital stays (LOS) of preterm infants with RDS.

The software package SPSS version 24 was used to perform the statistical analysis. The incidence of RDS in this study was calculated as the number of preterm infants with RDS divided by the total number of admitted preterm infants during the study period. Chi-square test was used to examine correlation between predicting factors and survival of preterm infants with RDS. In addition, probability of factors affecting survival of preterm infants with RDS were analyzed using multivariate logistic regression analyses. P-value less than 0.05 was considered statistically significant.

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the university (Project No.068/2563) and the hospital (Project No.229/63). After ethical approvals were obtained, a researcher contacted the staff at the HER department of the hospital who were responsible for keeping EHRs in order to explain the objectives, and the procedure for the study, and to seek assistance with obtaining the data. The EHRs of every preterm infant who were admitted to the NICUs of the tertiary hospital for at least one day from January 1, 2016 to December 31, 2019 were reviewed by the researchers. The preterm infants' data, including the demographic data and data related to RDS, were reviewed for study variables. The preterm infants whose EHR were incomplete on study variables and had congenital abnormalities or congenital heart disease were excluded. The researchers recorded the data of all qualifying preterm infants in a specific data collection sheet in Excel program that the researchers developed and rechecked again before analyzing via SPSS program.

Results

Incidence of RDS among preterm infants

For the study, 1,021 preterm infants' charts were reviewed. Of these, 201 preterm infants were excluded from the study due to congenital heart disease, congenital anomalies, and missing data (Figure 1). Therefore, 820 preterm infant charts were included (Figure 1). Of these, 56.3% were male, 51.46% were moderate to late preterm infants (GA 32 to less than 37 weeks) and 41.22% were born with birth weight greater than 1,500 grams. For the mothers, 62.3% were between the ages of 20 and 35 years old, and 53.90% delivered vaginally.

As many as 362 out of 820 (44.15%) preterm infants were diagnosed with RDS. Other common causes of admission were transient tachypnea of the newborn (TTNB), birth asphyxia, sepsis, apnea and pneumonia (Table 1). Moreover, the results revealed that 45.58% of preterm infants with RDS were very preterm (GA 28-32 weeks), 42.82% had birth weight at 1,000-1500 grams. 86.7% received one dose of surfactant and 32.04% were admitted to the hospital between 31-60 days.

Factors predicting survival of preterm infants with RDS

For total number of preterm infants with RDS were 362; 299 cases (82.60%) survived, and 63 cases (17.4%)

did not. The study identified significant correlation between seven factors, including GA at birth, mother's age, route of delivery, birth weight, RDS level, surfactant dose, and length of hospital stay, and survival of preterm infants with RDS. The results showed that GA at birth, birth weight, RDS level, surfactant dose, and length of stay statistically significantly related to survival of preterm infants with RDS between the groups in terms of ($p<0.05$).

Discussions

In the current study, we have reviewed the incidence of RDS in preterm infants admitted to NICUs in the northern region of Thailand. The results of this study found that 44.15% of the overall preterm infants suffered from RDS, which is quite similar to a study by Caner et al. (2015) who reported an incidence rate of 40.6%. However, the incidence of RDS in this study is lower than some previous studies. Saboute et al. (2015) presented the incidence of RDS to 65.5% of preterm infants while Zhang et al. (2015) reported the incidence of RDS in 50%. Most preterm infants of the current study (45.58%) were very preterm infants (GA 28-32 weeks), which is similar to Saboute et al., (2015) and Zhang et al. (2015). In Saboute et al.'s (2015) study, 52.1% of participants were very preterm (28-32 weeks) while Zhang et al. (2015) reported the incidence of RDS in preterm infants with GA less than 30 weeks at 50%. Prematurity is a major cause of RDS. Infants whose GA is less than 37 weeks have immature lungs and surfactant deficiency, which can lead to RDS (Fraser, 2015). Premature infants who have lower GA have higher rate of RDS than ones who have higher GA (Margoushy, 2017). The findings of this study confirm that RDS can occur in preterm infants, especially those with a lower GA. Therefore, preventing preterm birth is the most important for healthcare providers and necessary approach to prevent RDS in infants.

In addition, this study found that birth weight and length of hospital stay could statistically significantly predict the survival of preterm infants with RDS from Thailand ($p<0.001$) (Table 3). For birth weight, preterm infants with RDS and low birth weight tend to be 20 times more likely to not survive than preterm infants with RDS and higher weight. This result is similar to a study by Intayote et al. (2019) which indicated that preterm infants with RDS who had low birth weight had a lower survival rate than those who have normal weight. The present research study is also consistent with studies by Wang et al. (2017) and Rojsanga (2018) which reported that birth weight positively affected an infant's survival. Previous studies indicated that survival of infants was very low in infants less than 1000 grams (Vilanova et al., 2019; West, 2021). The findings of the present study found that the majority of the survival group (47.5%) had birth weight at 1,000-1,499 grams whereas those of the non-survival group (76.2%) had birth weight less than 1,000 grams (Table 2). This result confirms that birth weight affects survival of preterm infants. This might be possible because low birth weight preterm infants have low growth and immature organ development. This can increase complications and death (Belay et al., 2022). Therefore, birth weight of preterm infants with RDS could predict survival of preterm infants with RDS.

Table 3 Multivariate logistic regression of factors for survival of preterm infants with RDS

Predicting factors	Odds ratios	95%CI	p-value
Gestational age at birth	0.080	0.807-1.333	0.788
Birth weight	20.404	1.003-1.007	<0.001
Surfactant	0.182	0.379-1.864	0.669
Mild RDS	3.839	0.268-1.925	0.147
Moderate RDS	3.219	0.051-1.140	0.073
Severe RDS	3.733	0.033-1.025	0.053
Length of stay	35.516	1.031-1.061	<0.001

In addition, the findings of this study suggested that the length of stay could be 35 times more likely to significantly predict survival of preterm infants with RDS ($p<0.001$). The result is different from a previous study which illustrated that there was no significant relationship between LOS and survival among preterm infants with RDS (Saboute et al., 2015), but it is consistent with a study by Karunarathna (2018). The finding demonstrates that prolonged LOS can influence increased survival of preterm infants with RDS. This is likely to due to the fact that most of the non-survival group of this study died early. The data of the present study (Table 2) demonstrated that most of the non-survival group had shorter length of stays (1-15 days) and more severe RDS than the survival group whereas the majority of the survival group had longer length of stays (31-60 days) and milder and more moderate RDS than the non-survival group. Severe RDS can cause death in preterm infants at an earlier stage, especially within the first two to three weeks of birth (Patel et al., 2017; van Beek et al., 2021). This can influence short length of hospital of non-survival preterm infants. Another reason might be that the survival group might receive appropriate and timely interventions, such as surfactant therapy and continuous respiratory support. Therefore, the length of stay could be a predictor of survival of preterm infants with RDS. However, we do not have detailed data for an in-depth explanation of this result. Further studies about length of stay and survival of preterm infants with RDS need to be conducted to clearly confirm this relationship.

This study has some limitations. Firstly, it was conducted in a single tertiary hospital. This might limit the generalization of the findings. Therefore, further studies should be conducted in multiple settings with a prospective study. In addition, there might be other factors that affect survival of preterm infants with RDS, such as prenatal factors, that are not considered in this study. Therefore, future research studies should consider these factors.

Conclusions

The results of this study have shown that RDS is frequent in preterm infants and incidence was inversely associated with gestational age. Moreover, factors predicting survival of preterm infants with RDS were birth weight and length of stay. Birth weight and length of stay can increase probability of survival of preterm infants with RDS. The findings of this study about incidence and factors predicting RDS in preterm infants may be important data for healthcare professionals in increasing awareness of RDS in preterm infant and searching appropriate care to prevent RDS in preterm infants or improve survival in preterm infants with RDS. Prevention of preterm birth is a crucial role of maternity nurses by screening, educating, and counselling pregnant women throughout pregnancy. In addition, helping preterm infants with RDS increase body weight and length of stay are roles that nurses in NICUs should consider.

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Conflict of Interest

No conflict of interest has been declared by the authors.

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Correlation of spiritual health and depression among young adults in a state university in Southern Philippines

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ABSTRACT

Introduction: Depression is a leading cause of disability in the Philippines. According to data from the World Health Organization, the overall prevalence of depression in the Philippines is 3.3 percent, implying that over 3.3 million Filipinos are suffering from symptoms of depression. Depression thus affects a majority of Filipinos. Meanwhile, previous studies have shown a link between spirituality and mental health.

Methods: The overall objective of this study is to assess the respondents' demographic characteristics, their spiritual health, their level of depression and to find a significant relationship, if any, among the variables.

Results: The data indicated that respondents' average religious well-being score was 55.28, indicating a favorable sense of one's relationship with God. The existential well-being score had a mean of 44.56, indicating a moderate level of life fulfillment and meaning. Furthermore, the total score for all depressed symptoms was 23.32, indicating that people who took part in the survey during the pandemic suffered moderate to severe depression. Correlation analysis found a negative correlation between spiritual health and the level of depression (r=-0.458, p=0.001) which means that as respondents' spiritual health grows, their level of depression lowers.

Conclusion: The study concluded that spiritual health, as expressed through existential well-being and religious well-being, is a separate component that lends explanatory power to mental well-being prediction. The study advises heads of health sectors in various institutions to intensify their fight against depression. Additional research is also strongly encouraged.

Keywords: depression; existential well-being; mental health; quantitative research; religious well-being; spiritual health

Introduction

Although the Philippines consistently ranks in the top five of a global optimism index, the National Center for Mental Health (NCMH) has discovered a significant increase in monthly depression hotline calls, with numbers rising from 80 prior to the lockdown to around 400 (WHO, 2020). According to the World Health Organization (2020), young adults aged 15 to 29 are the most vulnerable to depression. Mental health-related deaths are the second leading cause of death in this age group.

Depression is the most widely recognized mental health disorder affecting over 264 million people of all ages worldwide (Reddy, 2010). Furthermore, depression is the leading cause of disability worldwide and a significant contributor to the overall global disease burden (WHO, 2020). These figures demonstrate the need for more action in this area. Depression is also a significant contributor to disability in low-income countries such as the Philippines (Flores et al., 2018).

Because depression is most prevalent in people between the ages of 15 and 25, it is likely that the difficulties associated with depression and its consequences are significantly severe in the young adult Filipino population (Hedden et al., 2015; Statistics Canada, Health Statistics Division, 2014). Most Filipino young adults may not feel comfortable revealing their psychological condition for fear of isolation or discrimination since there are many who dismiss depression. Some people might label a person suffering from depression as unreligious or having a sporadic amount of spirituality, which may be seen negatively since Filipinos are known to be religiously minded (Bonelli et al., 2012). Many psychologists are fascinated by the connection between mental health and spirituality and numerous studies have shown that spiritual health has a substantial influence on mental health (Akbari & Hossaini, 2018). According to their findings, spiritual intelligence fosters the development of emotional intelligence and helps individuals achieve better emotional intelligence and, as a consequence, live a happier life with excellent physical, mental, and spiritual health and no stress (Sahebalzamani et al., 2013).

Given the relevance of spiritual health as a connected structure associated with mental health and the necessity of emotion regulation, there has been a paucity of research undertaken in the Philippines related to determining the relationship between spiritual health and depression. There has been no research completed in the study's target area and especially among young people aged 18 to 25. Thus, the purpose of this research was to examine the relationship between spiritual well-being and depression among undergraduate students enrolled for the Academic Year 2020 - 2021 to promote awareness among them about their spiritual and mental well-being. This may also be used as a reference for future and further study on the subject.

Materials and Methods

Design of the Study

This study assessed the respondents' demographic characteristics, their spiritual health as measured by the Spiritual Well-being Scale (SWBS), and their level of depression as measured by the Beck Depression Inventory (BDI).

A quantitative approach using cross-sectional descriptive-correlation design was used to carry out a study on a sample of 200 undergraduate students aged 18-25 years old. The cross-sectional methodology was selected because it allowed for the simultaneous gathering of quantitative data on many variables (Bushnik, 2020), in this instance, young adults' spiritual health and depressive symptoms.

Additionally, a descriptive-correlational study approach was employed to ascertain the magnitude of the association between young adults' spiritual health and depressive symptoms. This type of research design seeks and interprets relationships between and among a collection of information. This form of study identifies trends and patterns in data, but does not go so far as to establish the reasons of observed patterns. This form of observational study is devoid of causal relationships. Only the data, relationships, and distributions of variables were examined. Rather than manipulating variables, they are recognized and investigated in their natural state (Creswell, 2008).

Sample and Setting

In this research, the eligibility of the participants were based on the following criteria: (1) they must be young adults between the ages of 18 and 25; (2) they must be officially enrolled at Mindanao State University, Main Campus during the second semester of Academic Year 2020-2021; and (3) they must have agreed to participate in the study. Convenience sampling was used to narrow down the sample.

A total of two hundred and forty-eight (248) students responded to the survey questionnaires that were sent to their intuitional email addresses. After using purposive sampling, forty-eight (48) questionnaires were excluded from the sample because of insufficient information on age, gender, or any of the responses to survey questionnaire items, resulting in a final sample of 200 respondents..

Instrument

Data were gathered from the students using self-reported questionnaires. The questionnaires were divided into three sections: The first section was author-developed and focused on the respondents' demographic profile and which included items such as age, sex, college/department, year level, religion, and ethnicity. The second section consisted of scales to measure spiritual health and, lastly, the third section consisted of scales to measure self-reported depressive symptoms experienced by the students.

To measure the spiritual health of the respondents, the Spiritual Well-Being Scale (SWBS) developed by Poulotizan and Ellison in 1982 was utilized. The SWBS provides an overall measure of the perceived spiritual quality of life, as understood in two senses - religious well-being and existential well-being. Religious well-being items include the term "God" and assess how one sees and reports the well-being of one's spiritual life in connection to God. Items measuring existential well-

Table 1 Socio-demographic characteristic of the respondents

Character	Number	Percentage
Gender		
Male	39	19.5
Female	161	81
Age		
19	12	6
20	22	19
21	81	40.50
22	44	22
23	16	8
24	3	1.50
25	6	3
Religion		
Catholic	19	9
Islam	170	85
Others	11	6

being include basic remarks about life direction and happiness, as well as measures of how well an individual sees and assesses his or her adjustment to self, community, and environment (Paloutzian et al., 2021).

To measure the level of depression, the long form of the Beck Depression Inventory (BDI) developed by Aaron T. Beck (1961) was used. The BDI is a 21-item self-report rating inventory that assesses depression-related attitudes and symptoms (Cotton et al., 2006). Items 1 to 13 assess symptoms that are psychological in nature, while items 14 to 21 assess more physical symptoms. Each item in the BDI has four possible responses. Each response is assigned a score ranging from 0 to 3, indicating the severity of the symptom. The total score may vary from 0 to 63. The highest possible score that can be obtained by the respondent is 63 and the lowest possible score is 0. No depression is indicated by a score of 5 to 9, mild to moderate depression by a score of 10 to 18, moderate to severe depression by a score of 19 to 29, and severe depression by a score of 30 to 63. Because it is lower than average scores for normal people, a score of less than 5 may suggest denial of depression (Cotton et al., 2006).

Validity and Reliability of the Instrument

In terms of reliability, The RWBS, EWBS, and SWBS are all very reliable. Test-retest reliability coefficients for the RWBS are 0.96, 0.99, 0.96, and 0.88 across four investigations with testing intervals of 1-10 weeks. The coefficients for the EWBS are 0.86, 0.98, 0.98, and 0.73 while the coefficients for total SWBS are 0.93, 0.99, 0.99, and 0.82. Internal consistency, as measured by the coefficient alpha, also demonstrates a high degree of dependability. Internal consistency coefficients varied from 0.82 to 0.94 (RWB), 0.78 to 0.86 (EWB), and 0.89 to 0.94 (SWB) among seven samples (Malinakova et al., 2017).

The BDI test is well-known and has been validated in terms of content, concurrent, and construct validity. The BDI has a high concurrent validity rating; a 0.77 correlation rating was calculated when compared with inventory and psychiatric ratings. The BDI has also shown high construct validity with the medical symptoms it measures. Beck's study reported a coefficient alpha rating of 0.92 for outpatients and 0.93 for college student samples. The BDI-II had a positive correlation with the Hamilton Depression with Rating Scale, r=0.71, had a one-week test-retest reliability of r=0.93 and an internal consistency α = 0.91 (Wang & Gorenstein, 2013).

Data Collection

The survey questionnaire was administered by the researcher using Google Forms, created and hosted by Google. An informed consent form, which had all the pertinent information about the study, was included in the questionnaire. The respondents were provided assurances that their responses and their identities would remain confidential.

When the total number of responses was attained, the Google Form link was closed two weeks after the surveys were sent out through email. The responses to the surveys were collected over the course of two weeks. Two hundred and forty-eight students replied to the survey; however, only 200 completed questionnaires were found to be suitable for analysis.

Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) software package version 28.0. A descriptive analysis of the data and the assessment of the response rates were carried out on the basis of the frequencies of the replies. First, the respondents' profiles, spiritual health, and depression symptoms were computed using frequencies and percentages to characterize the respondents. Secondly, the Pearson's r correlation coefficient was utilized to assess whether there is a link between respondents' spiritual health and the depression symptoms they have experienced. To undertake an in-depth statistical analysis of the data, the following statistical approaches were used: Frequency Count and Percent. Frequency distributions can show either the number of observations falling into each range or the percentage of observations falling into each range. This was used to determine the profile variable as well as the number of respondents who share the same level of spirituality and depression symptoms.

Table 2 Respondents' extent of spiritual health

Dimensions	Mean Score	SD	Interpretation
Religious Well-Being (RWB)	55.28	6.72	Positive view of one's relationship with God
Existential Well-Being	44.56	7.24	Moderate level of life satisfaction and purpose
Total Score Spiritual Well-Being	99.84	12.07	Moderate spiritual well-being

Ethical Consideration

To adhere to ethical standards while conducting research, all respondents were required to sign an informed permission form that was linked to the questionnaire. While it is customary to get written agreement, Silverman (2009) asserts that excessively structured methods of obtaining consent should be avoided in favor of developing relationships characterized by a continuous ethical care for participants. Consent was regarded adequate in this research when the completed questionnaire was returned via email.

Throughout the course of this research study, research ethics were primarily observed and upheld. The research ethics committee of Mindanao State University's College of Health Sciences checked, verified, and approved the questionnaire tools used in this study before data collection began.

Results

Respondents Characteristics

The findings of the respondents' socio-demographic characteristics are shown in the following figures. It contains information such as age, gender, and religion. The tables were sorted according to their frequency, and the totals were calculated according to the percentage on which the conclusion and interpretation were based.

As shown in Table 1, the students' ages varied from 19 to 25, with a median age of 22, which means that half of the student population was younger than 22 years old. Nearly half of the students who replied to the survey (40.5%) were 21 years old, followed by students aged 22 years old (22%), 20 years old (19%), 23 years old (8%), 19 years old (6%), 25 years old (3%), and 24 years old (1.5%). The data suggest that females made up an overwhelming majority of the respondents (80.5%), with just 19.5 percent of male respondents.

In terms of religion, Table 1 reveals that Islam represents an overwhelming majority of respondents' religion, accounting for 85 percent of all respondents' religions. Catholicism accounts for 9.5 percent of all respondents' religions and the remaining 5.5 percent are classified as belonging to other types of religion, with eleven respondents falling into this category

Respondents' Spiritual Health

Spiritual health is used in this research to refer to young adults' overall spiritual well-being, which covers both their religious and existential well-being.

The Spiritual Well-Being Scale (SWBS) assesses spiritual health by separating it into two related but independent dimensions: religious and existential well-being. Religious Well-Being (RWB) is a vertical dimension that emphasizes one's connection with God, while Existential Well-Being (EWB) is a horizontal dimension that emphasizes a feeling of life purpose and fulfillment (Paloutzian et al., 2021).

In the context of the vertical component of spiritual health, which focuses on one's connection with a higher being or God, the data demonstrate that, for the negatively phased statements, the majority of respondents not only disagree, but strongly disagree with item 1, *"I do not find much satisfaction in private prayer with God"* at 79 percent. This is also true for item 5, "*I believe God is impersonal and not interested in my daily situations*," with 78 percent strongly disagreeing, and item 9, "*I do not get much personal strength and support from my God*" at 71 percent. Item 13, "*I do not have a personally satisfying relationship with God*," yields a similar result, with 71 percent strongly disagreeing.

This is congruent with the responses to positively framed statements such as item 3, "*I believe that God loves and cares about me*," with the majority of respondents with 90.5 percent of the respondents strongly agreeing. Sixty percent of respondents strongly agree with the statement "*I have a personal meaningful relationship with God*" in item number seven. A total of 82 percent strongly agree with the statement in item 11, "*I believe that God is concerned about my problems*," and a total of 69.5 percent strongly agree with the statement in item 15, "*my relationship with God helps me not to feel lonely*." Finally, the majority of respondents strongly agreed with the statements "*I feel most fulfilled when I am in close communication with God* " (76%) and "*my relation with God contributes to my sense of well-being*" (72.5%) on items seventeen and nineteen, respectively.

When viewed in the context of the horizontal dimension of spiritual health, which focuses on one's relationship with oneself and others, the results show that, for the negatively-worded statements - item 2, "*I do not know who I am, where I came from, or where I'm going*;" item 6, *"I feel unsettled about my future*;" and item 12, "*I do not enjoy about life*;" as well as item 16, "*I feel that life is full of conflict and unhappiness,*"- the respondents' responses were almost evenly distributed in the agreement-disagreement continuum, which means that they had different opinions about the statements.

On the other hand, the respondents' responses to the positively-worded statements, such as in item 4, "*I feel that life is a positive experience;*" item 8, "*I feel very fulfilled and satisfied with life;*" item 10, "*I have sense of well-being about the direction of my life;*" and item 14, "*I feel good about my future,*" revealed that they had differing opinions about them, though their responses were pulled toward the agreement end of a continuum ranging from agreement to disagreement. According to the findings, young individuals who were college students had a more optimistic attitude on life, despite the hardships and adversities that they were experiencing at the time. In line with this, the majority of respondents strongly agreed on item 20, *"I believe there is some real purpose for my life,*" with 78 percent of the total number of respondents strongly agreeing.

Spiritual health refers to the component of an individual's well-being that organizes his or her values, relationships, and hence the meaning and purpose of their existence (Seidl, 1993). The Spiritual Well-Being Scale (SWBS) was used to assess the respondents' spiritual health. The SWBS is a composite index of perceived spiritual quality of life in two dimensions: religious well-being and existential well-being and has three basic scores: Religious Well-Being, Existential Well-Being, and overall Spiritual Well-Being.

Religious well-being items include the term "God" and assess how one sees and reports the well-being of one's spiritual life in connection to God. The Religious Well-Being Score is a reflection of an individual's perspective on their connection with God. A score between 10 and 20 indicates an inadequate connection with God. A score between 21 to 49 indicates a moderate level of religious well-being. A score between 50 and 60 indicates a favorable assessment of one's connection with God (Paloutzian et al., 2021).

The Existential Well-Being scale includes basic remarks about life direction and happiness, as well as measures of how well an individual sees and assesses his or her adjustment to self, community, and environment. A score between 10 and 20 indicates a low level of contentment with one's life and a likely lack of clarity about one's life purpose, a score between 21 to 49 indicates a moderate degree of life fulfillment and meaning and a score of 50–60 indicates a high degree of life satisfaction and a strong feeling of purpose (Paloutzian et al., 2021).

In terms of overall spiritual well-being, a score between 20 and 40 indicates a poor feeling of total spiritual well-being, a score between 41 to 99 indicates a modest feeling of spiritual well-being and a score between 100 and 120 indicates a high level of spiritual well-being (Paloutzian et al., 2021).

The Religious Well-Being Scale (RWBS) and the Existential Well-Being Scale (EWBS) both have a maximum score of 60. As a result, the maximum possible score on the full scale Spiritual Well-Being (SWBS) is 120. The findings in Table 2 indicate that the mean score on the RWBS for the participants was 55.28 with a standard deviation of 6.72, corresponding to a positive view of one's relationship with God. The mean score on the EWBS was 44.56, with a standard deviation of 7.24, suggesting a moderate level of life satisfaction and purpose. The mean score for the full scale SWBS was 99.84, with a standard deviation of 12.07, suggesting an overall moderate spiritual well-being.

The overall score obtained by the respondents in the Spiritual Well-Being Scale (SWBS) indicate that Muslim college students in their early adulthood had an overall moderate or average level of spiritual well-being, with a mean of 99.84 in the current study.

Respondents' Symptoms of Depression

Depression appears in a variety of forms and to varying degrees and includes feelings of sadness, pessimism, past failure, guilt, punishment, self-dislike, self-criticism, suicidal thoughts or wishes, crying, agitation, loss of interest, indecisiveness, worthlessness, loss of energy, changes in sleeping pattern, irritability, changes in appetite, concentration difficulty, and tiredness or fatigue. This study examined the most commonly reported symptoms of depression among young people studying at one institution in the Philippines.

Most of the respondents "feel sad much of the time" at 66.5 percent, 10 percent were "sad all the time" while another 8.5 percent felt "so sad or unhappy that I cannot stand it." On the other hand, only 15 percent reported not feeling sad. Based on the aggregated data, the respondents felt "a little" sadness with mean of 1.12 (SD=.76) in the past two weeks prior to the collection of data.

Nearly half of the respondents did not exhibit pessimism when they said they were not discouraged about their future (49%), but more than a quarter said they were more discouraged than they used to be (33.5%), and a significant number said they did not expect things to work out for them (11%), and some even said they were hopeless about their future (6.5%). According to aggregated data, the respondents reported feeling “a little” pessimistic in the two weeks before data collection, with a mean of .75 (SD=.89).

With a mean of 1.17 (SD=.97), the respondents reported feeling "a little" bit like a failure in the past; 32.5 percent of the respondents confirmed this by saying they perceive a lot of failures when they look back on their lives, 27 percent said they failed more than they should have, and a very significant 8.5 percent reported that they felt like a complete failure as a person.

The respondents reported experiencing "a little" decrease of enjoyment (pleasure) on a mean of 1.02 (SD=.92). This is confirmed by 33.5 percent of respondents who claimed that they no longer enjoy things as much as they used to and 24.5 percent who reported receiving very little pleasure from the things they used to like, while others reported receiving no pleasure at all (6.5%). Only 35.5 percent of those who answered the survey said they were experiencing as much enjoyment from their favorite activity as they had in the past.

With a mean of 1.21 (SD=.70), the respondents reported feeling a little level of guilt on average among all respondents. The majority of those who answered the survey felt guilty about a variety of things they had done or should have done (64.5%). In addition, another 19.5 percent of people feel somewhat guilty most of the time, and six percent feel very guilty all of the time. In fact, just 10 percent of the respondents do not feel particularly guilty or remorse for the things they might have done.

Regarding punishment sentiments, respondents reported experiencing a little punishment, with a mean of 1.22 (SD=1.0) per respondent. Similar to the results of guilty feelings, the vast majority of respondents felt sentiments of being punished in varying degrees, which was consistent with the findings regarding guilty feelings: 39.5 percent believe they will be punished for actual or imagined wrongs they have committed, 19 percent believe they will be punished in the future, and 15 percent believe they are now suffering the consequences of their actions by being punished.

Collectively, the respondents reported disliking themselves a little with a mean of 1.00 (SD=.81): 45 percent of the respondents answered "I have lost confidence in myself,” 22.5 percent stated that they were disappointed in themselves and 3.5 percent stated that they disliked themselves Only 29 percent felt the same about themselves as ever.

Table 3 Respondents’ level of depression scale

Dimension	Mean Score	SD	Interpretation
1. Sadness	1.12	0.76	
2. Pessimism	0.75	0.89	
3. Past Failure	1.17	0.97	
4. Loss of Pleasure	1.02	0.92	
5. Guilty Feelings	1.21	0.70	
6. Punishment Feelings	1.22	1.00	
7. Self-Dislike	1.00	0.81	
8. Self-Criticalness	1.30	1.02	
9. Suicidal Thoughts or Wishes	0.42	0.65	
10. Crying	1.50	1.15	
11. Agitation	1.21	1.03	
12. Loss of Interest	1.19	0.92	
13. Indecisiveness	1.20	0.99	
14. Worthlessness	0.83	0.94	
15. Loss of Energy	1.28	0.86	
16. Changes in Sleeping Pattern	1.42	0.86	
17. Irritability	1.01	0.94	
18. Changes in Appetite	1.32	0.98	
19. Concentration Difficulty	1.42	0.96	
20. Tiredness or Fatigue	1.40	0.96	
21. Changes of Interest in Sex	0.28	0.67	
Total Score	**23.32**	**.90**	**Moderate to severe depression**

Scoring:
05-09 No depression
10-18 Mild to moderate depression
19-29 Moderate ro severe depression
30-63 Severe depression

The percentage of respondents who showed a little self-criticism was measured with a mean of 1.20 (SD=1.02). Those who answered "I criticize myself for all of my faults" was 29.5 percent, closely followed by the percentage of respondents who said "I am more critical of myself than I used to be," which was 29.0 percent. "I don't criticize or blame myself more than usual," said 27.5 percent of those polled, while the remaining 14.0 percent stated that "I blame myself for everything bad that happens."

On average, the respondents have only a passing thought (a little) about suicide, with a mean of .42 (SD=.65). Although the majority of respondents (64.5%) do not have suicidal thoughts, a significant number do have suicidal ideation to varying degrees; 31.5 percent of people have considered suicide but have no plans to do so, 1.5 percent said they wanted to kill themselves, and 2.5 percent said they would kill themselves if they had the chance.

The prevalence of crying among respondents was about evenly divided among the four response options, with a mean of 1.50 (SD=1.15) equating to ‘a little.’ with 27.5 percent indicating that they no longer cry as much as they once did. Twenty-five percent of respondents stated that they cry more than they used to, 26.0 percent stated that they cry at insignificant things, while another 26.0 percent stated that they are incapable of crying even when they feel like it.

In terms of agitation, 36.5 percent said "I feel more restless or wound up than usual," 29 percent said "I don't feel any more restless or wound up than usual," 18.5 percent said "I am so restless or agitated, it's hard to stay still," and 16 percent said "I am so restless or agitated, I have to keep moving or doing something."

For loss of interest, 45 percent of respondents stated that they were less interested in other people or things than they were previously, 23.5 percent stated that they had not lost interest in other people or activities, 20 percent stated that they had lost their interest in other people or things, and 11.5 percent stated that it was difficult to become interested in anything.

In the category of indecisiveness, 42 percent responded "I find it more difficult to make decisions than usual," 26.5 percent responded "I make decisions about as well as I have in the past," 16.5 percent responded "I have much greater difficulty in making decisions than I used to," and 15 percent responded "I have difficulty making any decisions."

In the category of worthlessness, 50 percent responded "I do not feel I am worthless," 24 percent responded "I feel more worthless when compared to others," 21.5 percent responded "I don't consider myself as worthwhile and useful as I used to" and 4.5 percent responded "I feel utterly worthless."

When asked about energy loss, 53.5 percent said they had "less energy than I used to have," 19.5 percent said they “do not have enough energy to do too much,” 15 percent said they had "as much energy as I always had," and 12 percent said they “do not have enough energy to complete any work.” This loss of energy, which can leave a student feeling exhausted most of the time, if not all of the time, can hamper their ability to carry out their daily activities.

With regard to sleep pattern changes, 48 percent said they slept slightly more/less than usual, 27 percent said they slept a lot more/less than usual, 13.5 percent said they slept most of the day/wake up 1-2 hours early and can't get back to sleep, and 11.5 percent said they had not noticed any change in their sleep pattern. Sleep disturbances are experienced by up to 90 percent of those who suffer from clinical depression.

In irritability, 42 percent responded "I am more irritable than usual," 33 percent responded "I am more irritable than usual," 14.5 percent responded "I am considerably more irritable than usual," 10 percent responded "I am constantly irritable," and 0.5 percent did not respond.

In terms of appetite changes, 40.5 percent responded that their appetite was slightly greater or less than usual, 22% responded that their appetite was significantly greater or less than before, 21.5 percent responded they had not noticed any change in their appetite, and 16 percent responded that they had no appetite at all or craved food constantly.

In terms of concentration difficulty, 35 percent responded "I can't concentrate as well as usual," 34 percent responded "it's difficult to keep my mind on anything for an extended period of time," 18 percent responded "I can concentrate as well as ever," and 13 percent responded "I find I can't concentrate on anything." Depression is characterized by difficulty with concentration and decision-making. Individuals suffering from depression may understand this in themselves, or others may notice their inability to think properly.

When it came to tiredness or fatigue, 50.5 percent said they get more tired or fatigued more easily than usual, 23 percent said they were too tired or fatigued to do a lot of the things they used to do, 14.5 percent said they were too tired or fatigued to do most of the things they used to do, and 12 percent said they were no more tired or fatigued than usual.

As indicated in Table 3, the total score for all depressive symptoms was 23.32, indicating that the level of depression experienced by those who participated in the survey during the pandemic was between "moderate to severe depression," with a standard deviation of 0.90.

In this study, crying (M=1.50, SD=1.15) was shown to be the most common symptom of depression, followed by changes in sleeping patterns and concentration difficulty, both of which had mean scores of 1.42 and standard deviations of 0.86 and 0.96, respectively. Another symptom that many experience is tiredness or fatigue (M=140, SD =0.96). For the remaining depressive symptoms, mean scores ranged from 1.30 to 0.28, with standard deviations ranging from 1.15 to.67. It is worth mentioning that the mean score for suicidal thoughts or wishes is 0.42 (SD=0.65). Although relatively small, this result is quite concerning because suicidal ideation can develop into successful suicide if not immediately addressed. Additionally, young adults who are depressed and having moderate to severe symptoms are more prone to ponder suicide.

Respondents' Spiritual Health

Table 4 shows the data required to test the null hypothesis which states that spiritual health is significantly correlated with the level of depression experienced by young adults aged 18-25 years old who were also college students. With a Pearson's correlation coefficient of -0.458 and a p-value of 0.001, both of which are less than the 0.01 alpha threshold of significance, it can be concluded that spiritual health is moderately correlated with the respondents' level of depression. Correlation is statistically significant at the 0.01 level (2-tailed). The negative correlation between these two variables implies an inverse link, which means that as respondents' spiritual health grows, their level of depression lowers. Inversely, it could also suggest that as respondents' spiritual health falls, their level of depression increases. The findings suggest that a lack of spiritual health has a detrimental effect on respondents' levels of depression.

Discussion

OSS The results in this study were analogous to the findings of Menodza et al. (2020), who discovered that 53 percent of university students suffer from depression. Crying was shown to be the most prevalent depressive symptom, followed by changes in sleeping habits and attention difficulties. Tiredness or weariness is another symptom that many respondents encounter. Furthermore, the total score for all depressed symptoms was 23.32, indicating that people who took part in the survey during the pandemic suffered moderate to severe depression. Finally, the data show that spiritual health is inversely connected to the level of depression experienced by young adults between the ages of 18 and 25, who are also college students. At the 0.01 level, the association is statistically significant. The inverse relationship between these two variables is implied by the negative correlation between these two variables, which signifies that as respondents' spiritual health improves, their level of depression decreases. On the other hand, it is possible that, when respondents' spiritual health declines, their depression level rises. According to the findings, a lack of spiritual well-being has a negative impact on respondents' degrees of depression.

In the current study, young adults who were predominantly Muslim college students and had a higher level of spiritual participation, beliefs, and religiosity were more likely to have a higher level of spiritual, existential, and religious well-being. Previous research has found a significant positive correlation between spiritual well-being and spiritual involvement and beliefs (Musa, 2015; Rubin et al., 2009) and religiosity (Musa, 2015; Musa & Pevalin, 2012; Williamson & Sandage, 2009) in various Arab Muslim and Western samples. According to the findings in this study, Meranao Muslim college students use religious and spiritual beliefs and practices as coping techniques to create a feeling of calm, comfort, and spiritual well-being. Other research has suggested that religious and spiritual beliefs and practices influence an individual's well-being by promoting meaning, purpose, connectedness, and hope (Koenig, 2008), encouraging transcendental experiences (Nelson, 2009), and promoting religious meaning and forgiveness (Koenig, 2008).

The findings in Table 4 are consistent with findings in the study conducted by Doolittle and Farrell (2004) which discovered that high spirituality scores on items in the domain of intrinsic beliefs, such as belief in a higher power (p<. 01), the importance of prayer (religious well-being) (p<. 0001), and finding meaning in times of adversity (existential well-being) (p<. 05), were associated inversely with depression. The study concluded that appropriate encouragement of a patient's spirituality may be a helpful adjunct to treating depression.

The findings are also consistent with those of another study which showed that a high level of spiritual well-being (SWB) is associated with a low level of stress and depression. The current study's findings are also consistent with Neuman's theory, which holds that the independent variable, spiritual well-being, can influence or explain the dependent variable, psychological well-being (depression), because, according to Neuman's theory, the spirituality variable pervades all other system variables and can increase the effectiveness of the flexible line of defense by protecting against stressors. The spirit guides the mind, and the mind guides the body, whether consciously or unconsciously. Using spirituality as a source of energy may generate optimism and help a person heal from a psychological disease (Neuman, 1989).

The implication that can be drawn from the findings is that young adults should engage in activities that promote spiritual health, such as religious seminars and self-reflective programs that assist them in discovering their purpose of existence, faith, and self-love. These activities can contribute to a young adult's spiritual health and hence serve as a preventative measure against depression. In general, the findings suggest that an approach for lowering distress and suicide ideation among college students may entail exploring processes that build a sense of meaning in life for those who do not identify with organized religion.

Conclusion

Spirituality is a notion that defies easy categorization, classification, or measurement, yet it has an impact on our social, emotional, psychological, and intellectual life. The evidence linking spirituality and religious expression to many elements of mental health, and in particular, various symptoms of depression, has been evaluated in this study. The evidence is mixed; some forms of spirituality can be beneficial in certain situations. These are usually spiritual expressions that promote personal empowerment, affirm and welcome diversity, and emphasize the value of emotions like hope, forgiveness, and purpose. Other components of spirituality appear to have little influence on mental health or, in certain situations, can lead to emotions of guilt, humiliation, or powerlessness, all of which can be detrimental to one's mental health. In general, however, the data appear to support a cautious optimism about the role spirituality can play in establishing and maintaining excellent mental health. In conclusion, the high mean levels of spiritual involvement and beliefs, religiosity, spiritual well-being, religious well-being, and existential well-being demonstrate the importance of religion and spirituality in the lives of young adults, with implications for practice, education, and research.

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ORIGINAL ARTICLE OPEN ACCESS

Effectiveness of symptom management training on caregiving preparedness and burden of family caregivers in-home palliative care: a quasi-experimental study

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ABSTRACT

Introduction: Family caregiving preparedness remains a problem, particularly for those who live in rural areas. Such conditions can cause a high burden for the family caregivers. The purpose of this study was to determine the effectiveness of providing home-based palliative care training for family caregivers (HBPC-FC) on caregiving preparedness and burden.

Methods: This was a quasi-experimental study using a pre-post-test with the control group. There were 50 family caregivers (n=25 in the intervention group, n=25 in the control group) involved. The preparedness for caregiving was measured using the Caregiving Inventory (CGI) and the burden was measured using Caregiving Burden Scale questionnaires.

Results: After four weeks of the HBPC-FC program, caregiving preparedness improved significantly in the intervention group. Statistically significant differences in caregiving burden were also found between-group where caregiving burden in the intervention group decreased significantly ($p < 0.05$). The HBPC-FC program had positive outcomes for family caregivers.

Conclusions: Home-based palliative care training on symptom management could be utilized as a form to improve family caregivers' readiness in providing care for patients at home.

Keywords: caregiving preparedness; caregiving burden; family caregiver; symptom management; training program

Introduction

Providing care to patients with palliative care is a complex process involving not just one family member but the whole family. Therefore, in palliative care, a family-oriented approach is an integral part, as demonstrated by the WHO definition of palliative care (WHO, 2010). The family has an important role in the palliative care setting. Family caregivers are individuals who provide physical, psychological, and psychosocial support as well as support related to health management (Hudson et al., 2012). The family caregivers can have direct kinship or friendship. In general, family caregivers could be the spouse, child, or parents of the patients (Committee on Family Caregiving for Older Adults; Board on Health Care Services; Health and Medicine Division; National Academies of Sciences, 2016).

The majority of patients with palliative care needs prefer to care at home throughout their illness trajectory (Wu, Huang, & Tsao, 2020). Most patients with palliative care needs suffer from more than one physical symptom such as pain, fatigue, and dyspnea (Pidgeon et al., 2016; Rojas-Concha, Hansen, Petersen, & Groenvold, 2020). In addition to physical symptoms, the patients also often experience psychological and spiritual problems that require more support from their immediate family caregivers in addition to physical symptoms. Such situations may create anxiety, challenges, and burden for family caregivers and Kristanti, Effendy, Utarini, Vernooij-Dassen, and Engels (2019) authors found that family members of patients with life-limiting illnesses such as cancer and dementia stated that they feel confused about how to manage patients' symptoms and their anxiety related to the quality of their care. Grant et al. (2013) stated that the burden experienced by family members who care for patients at home is defined as a problem, difficulty, or detrimental impact. Such a situation will affect the quality of the family's life to carry out its activities so interventions such as education in the family are needed (Grant et al., 2013).

Caring for a sick family member at home can be a challenge for families as most do not have a health education background. Caregivers' preparedness is important to minimize the impact of caregiving (Williams, 2018). Inadequate training across illness trajectory, particularly cancer, is associated with lower self-efficacy and a higher burden in caregiving (Gutierrez-Baena & Romero-Grimaldi, 2022; Havyer, van Ryn, Wilson, & Griffin, 2017). Family caregivers, particularly in rural areas, reported unmet support needs, particularly informational (Brazil, Kaasalainen, Williams, & Dumont, 2014).

Indonesia is a developing country, with 45.3% of the population living in rural areas (Central Bureau of Statistics (BPS), 2020). Caring for a sick family member is seen as an obligation in Indonesian culture (Effendy et al., 2014; Rochmawati, Wiechula, & Cameron, 2016). Study identifies that caregiver preparedness, particularly in rural areas, is still lacking (Rochmawati & Pawitasari, 2021). While there is a national program for patients with chronic illness particularly hypertension and diabetes mellitus. Primary Health Care does not have a specific program to improve family readiness in providing home care for people with a life-limiting illness. In addition, a literature search related to training for families caring for patients with palliative care needs only found two studies. The one identified the need for families who care for HIV / AIDS patients to get an education at home (Ibrahim, Haroen, & Pinxten, 2011) while the other focused more on providing training for caregivers in addressing patients' basic needs (Kristanti et al., 2017). Further, study found that the provision of training improved caregivers' quality of life (Kristanti et al., 2017). From the available literature, it is not clear whether there is an HBP C-FC program to improve readiness in caregiving among family caregivers in rural areas in Indonesia.

This study was guided by the framework of family involvement in palliative care that was developed by Andershed and Ternestedt (2001). The framework considers the family as the unit of care. This conceptualizes five assumptions in terms of relatives' involvement in palliative care. First, the concept is ‘to know,’ a crucial part of involvement as it is considered to be both a part of the prerequisite for involvement and also a part of family involvement. In this concept, the family caregivers get ‘to know’ by either being informed or actively seeking any information by themselves. Family caregivers who had adequate resources would have confidence.

Second, the involvement was affected by the length of the illness. Andershed and Ternestedt (2001) argued that family caregivers’ involvement could be promoted; adequate resources and a humanistic attitude of healthcare professionals could promote involvement and make meaningful involvement. The third assumption focused on negative factors that could affect the involvement. Several factors such as inadequate resources, lack of communication, and a negative attitude could reduce family caregivers’ confidence in their daily lives.

The fourth assumption indicated the importance of healthcare professionals’ attitudes in addition to respect in relative involvement. Support from healthcare professionals could help the relatives get ‘to know’ and attain information so that the caring situation becomes more manageable. Fifth, a ‘partnership' is the highest level of involvement. This should improve healthcare professionals’ chances to support relatives in the way they choose. In our study, the assumption of ‘to know’ is defined as training to be given to the family caregivers to improve their readiness and could also lead to reducing their burden in caregiving.

In the study, we followed the caregiving preparedness framework from Andershed and Ternestedt (2001) which encompasses three concepts of knowing, being, and doing. We applied an educational approach that could increase caregivers’ knowledge (knowing), on knowing, ability in providing care (doing), and managing stressors of caregiving (being). Teaching areas to enhance family caregivers' skills included self-care, basic needs, pain, and symptom management, and spiritual support. This is based on a previous study conducted in a rural area in Canada that identified the most prevalent needs were caring for the patient's pain,

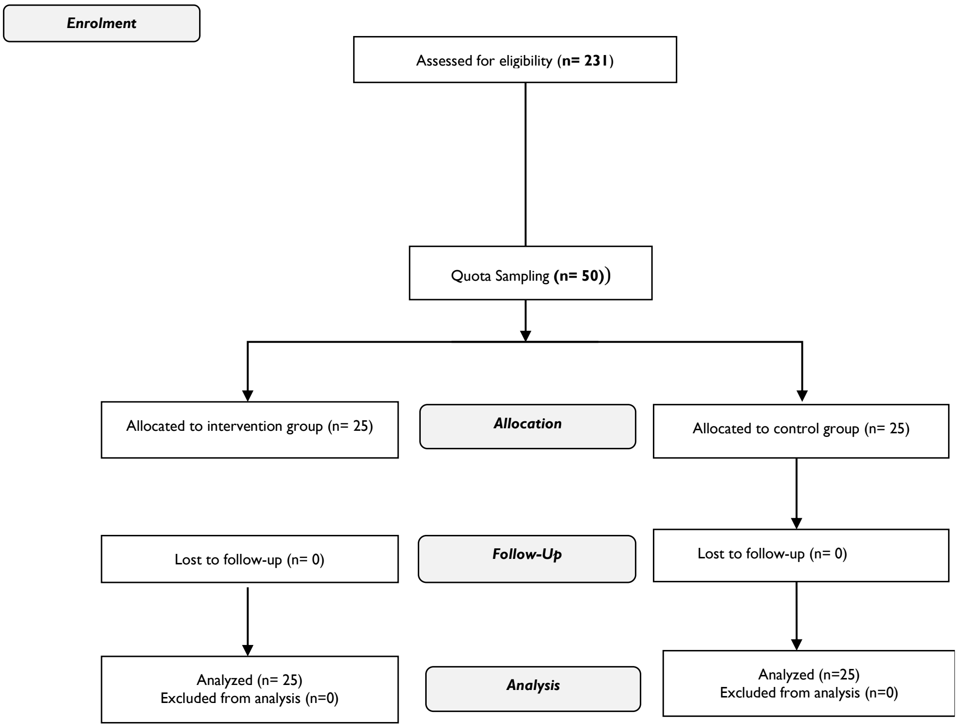

Figure 1 The flow diagram of the study

fatigue, body, and nourishment, and caregivers' personal needs (Robinson, et al., 2012).

The existing literature emphasizes the importance of educational preparation for family members (Borneman et al., 2011; Ibrahim et al., 2011). In addition, a framework developed by Andershed and Ternestedt (2001) proposes that interventions should focus on promoting preparedness. The provision of training or education is suggested for families because of its benefit in strengthening their capacity, particularly for managing symptoms at home (Putranto & Rochmawati, 2020). Support programs and increasing caregiver preparedness are priorities for intervention studies in caregiving (Harrop, Byrne, & Nelson, 2014; Lambert et al., 2019). Support programs include home care, practical training, and caregiver coaching. Home-based education for caregivers of patients with a life-limiting illness is important and suggested in a limited-resource setting (Kizza & Muliira, 2019; Williams, 2018). Therefore, the current study aimed to investigate the effect of providing HBPC-FC training for family caregivers in rural areas on their preparedness and burden of caregiving with the following hypotheses:

1. Mean scores of caregiving readiness in the intervention group would be significantly higher than that of the control group measured at week 4 of the intervention program and would be significantly higher than pre-intervention.
2. Mean scores of the caregiving burden in the intervention group would be significantly lower than that of the control group measured at week 4 of the intervention program and would be significantly lower than pre-intervention

Materials and Methods

A quasi-experimental with data collection at baseline and immediately after training was employed for the study. We reported using the Consolidated Standards of Reporting Trials (CONSORT) guideline.

Sample and Setting

The sample was relatives who were the primary caregivers of patients with a life-limiting illness. The sample size was calculated using G*power, with the level of significance () = .05, power of test = .80, and an estimated effect size of 0.9 (Rivera, Elliott, Berry, & Grant, 2008). Following the calculation, we added 10% to anticipate potential dropouts. Given the possible attrition rate, a minimal sample size of 50 was considered adequate. We recruited 50 family caregivers divided into 25 people in the intervention group and 25 people in the control group (Figure 1). Eligible family caregivers were as follows: being a primary family caregiver of the patient; 18 years or older; not diagnosed with life-limiting illness; and willing to spend time for the training.

Table 1 Schedule, content and activities of HBPC-FC training

Time	Contents	Method
Week 1 (1-2 hours)	Basic needs (personal hygiene, discussion of medication regimen for patient). pain control (assessment, pain medication management and non-pharmacological interventions).	- Trust establishment - Program overview - Teaching and providing information - Breathing exercise - Providing feedback and encouragement
Week 2 (1-2 hours)	Symptom management: - nausea - loss of appetite	- Teaching, demonstrating - Evaluating participant's understanding, - Providing feedback and encouragement
Week 3 (1-2 hours)	Dyspnea management Spiritual support	- Teaching - Demonstrating deep breathing exercise - Asking participants to redemonstrate - Providing feedback and encouragement - Program evaluation

Ethical Considerations

The semi-structured in-depth interview method was We conducted the study after approval from the University Ethics Committee in Research (No.023/EC-KEPK/II/2019). We recruited family caregivers using data from the Primary Health Care center. The researchers explained the study to the family caregivers and included study objectives, process, potential benefits, and risks. Following that, participants who agreed to be involved in the study provided their consent. We assured the participants that they could withdraw at any time and this would not affect the healthcare service. We kept all participants' data confidential without individual identification in any form.

Research Instruments

The research instruments consisted of three parts: (i) a demographic information questionnaire; (ii) caregiving preparedness; and (iii) caregiving burden). The demographic information questionnaire was developed to obtain the participants' age, gender, relationship to the patients, and type of employment. In addition, we also developed illness-related questions: type of disease, length of illness, and availability of support.

We assessed family caregivers' preparedness using the Caregiving Inventory (CGI) developed by Merluzzi et al. (2011) We received permission to use and translate the CGI. The CGI consists of 21 items and is categorized into four subscales that include: managing medical information, caring for the care recipient; caring for oneself, and managing difficult interactions and emotions. The questionnaire has a 9-point Likert scale (1 = "not at all confident" to 9 = "totally confident"), with a higher score reflecting a higher preparedness in caregiving. The CGI was translated into Indonesian, with a reliability score of 0.856 (Rochmawati & Pawitasari, 2021).

Table 2 Characteristics of the family caregivers

Characteristic	Intervention group		Control group	
	n	%	n	%
Gender				
Female	21	84	22	88
Male	4	16	3	12
Age				
26-35 y	7	28	3	12
36-45 y	7	28	13	52
46-55 y	6	24	6	24
56-65 y	4	16	3	12
>65 y	1	4	0	0
Relationship with patient				
Spouse	11	44	7	28
Children	9	36	15	60
Parents	1	4	0	0
Sibling	3	12	2	8
Other (niece)	1	4	1	4
Support from other family member				
Yes	18	72	21	84
None	7	28	4	16
Employment				
Government employee	1	4	0	0
Private employee	5	20	2	8
Self-employed	5	20	3	12
Housewife	13	52	19	76
Other	1	4	1	4
Length of caregiving				
<1 year	7	28	2	8
>1 year	18	72	23	92
Patient's medical diagnose	7	28	5	20
Diabetes	4	16	5	20
Stroke	4	16	6	24
Cancer	6	24	6	24
COPD	4	16	3	12
Heart Failure				

Caregiving burden was measured using Zarrit Burden Index (ZBI). We utilized the Indonesian version of ZBI with a Cronbach's alpha score of 0.93 (Tristiana, et al., 2019). The ZBI has 22 items rated on a 5-point Likert scale that ranges from 0 (never) to 4 (nearly always). The sum score ranges between 0–88, with higher scores, indicating a greater burden. A score of 61or more was considered a high burden. Data on caregiving preparedness and burden were collected at baseline and upon completion of the intervention

Data Collection Procedures

We conducted the study in February 2020-May 2020. We divided the caregivers' group based on the location of their homes. The intervention group received HBPC-FC which was delivered in the form of one-on-one training using the structured module, while the control group did not receive any training during the study. After obtaining written consent and completing baseline assessments, the researchers' scheduled one-on-one sessions with the caregivers for training. The researchers were postgraduate students in nursing. The HBPC-TC training was conducted at the caregiver's home. The training was offered based on the family caregivers' availability to participate. The researchers delivered the HBPC-FC training to the intervention group for three weeks. In the study, we provided education to enhance family caregivers' skills, including self-care, basic needs, pain, and symptom management, and spiritual support. This is based on a previous study conducted in a rural area in Canada that identified the most prevalent needs were caring for the patient's pain, fatigue, body, nourishment, and caregivers' personal needs (Robinson et al., 2012).

Table 1 shows detailed contents and methods in our HBPC-FC training. In the first week, we trained family caregivers on patients' basic needs (personal hygiene, discussion of medication regimen for patients) and pain control (assessment, pain medication management, and nonpharmacological interventions). Each meeting ranged from 1-2 hours. We provided information on managing nausea, such as providing small and frequent meals, and maintaining preferred meals, fatigue (an example is pleasant activity scheduling), and loss of appetite in the second week of the training. In the third week, we trained the participants to manage dyspnea and provide spiritual support for patients. We taught strategies for managing psychological distress by conducting deep breathing and progressive muscle relaxation

Data Analysis

Statistical analysis was performed using SPSS 23.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were utilized to describe participants' demographic and background variables. All tests were performed, assuming $p < 0.05$ to be statistically significant. Independent t-tests were used to measure the statistical difference of the mean scores of caregiving preparedness and burden. Wilcoxon Signed Ranks Test was used to test the difference in caregiving burden and preparedness in the experimental group between pre- and post-intervention.

Results

In the current study, a total of 50 family caregivers were divided into intervention group (25 participants) and control group (25 participants). None of the family caregivers withdrew from the study. The comparison of demographic and clinical findings of the study population is displayed in Table 2. Overall, there were no significant differences in the study participants' demographic characteristics and disease-related data. The data showed that most family caregivers were female both in the intervention and control group. Most of the caregivers were the patient's spouse or children (intervention group: 80%, control group: 88%). The majority of caregivers in the intervention group were 26-35 years and 36-45 years. The primary caregivers in both groups had support from other family members.

Table 3 shows the difference in outcomes after three weeks of HBPC-FC training intervention in the intervention and control group. The family's preparedness in providing caregiving increased significantly in the intervention group. There is also a

Table 3 Preparedness and burden of providing care to patient at home pre-post-test in intervention and control group

Variable	Intervention group Min-max	mean±SD	Control group Min-max	mean±SD	P-value
Caregiving preparedness					
Pre-test	55-94	66.53±10.947	50-92	68.12±9.382	0.000
Post-test	84-174	131.56±29.551	51-90	71.20±9.513	
Caregiving burden					
Pre-test	57-93	79.32±8.966	61-87	78.52±7.332	0.000
Post-test	24-71	41.32±15.569	68-87	79.84±5.778	

Table 3 Preparedness and burden of providing care between groups

Variables	Intervention (n=25)	Control (n=25)	T test	P-value
Caregiving preparedness	131.56 (29.55)	71.20(9.51)	9.72	* .000
Caregiving burden	41.32 (15.57)	79.84(5.77)	11.59	*.000

*Correlation is significant at the 0.05 level (2-tailed).

significant difference between the intervention and control groups regarding caregiving preparedness (Table 3). The caregiving burden decreased significantly in the intervention group. Statistically significant differences in caregiving burden were found between groups ($P < 0.05$).

Discussions

The findings of previous studies are similar to this study (Duimering et al., 2020; Petruzzo et al., 2019). The majority of family caregivers in our study were female. This study was undertaken to assess the effectiveness of HBPC-FC training for family caregivers in rural areas on their caregiving preparedness and burden. Providing training at home is suggested in limited-resource settings (Kizza & Muliira, 2019). In Indonesia, where the study was conducted, the resource is still limited in some areas, particularly rural areas. Therefore, we conducted a HBPC-FC training session for family caregivers at their home as suggested by previous study. In addition, due to the characteristics of the family caregivers, the researcher followed suggestions from two previous studies to provide information for families in simple language; we also provided written instruction on administrating medication and evaluating symptoms (Dionne-Odom et al., 2018; El Osta & Bruera, 2015).

Findings from the study have highlighted that caregiving preparedness among family caregivers in the intervention group was significantly improved by HBPC-FC training. We conducted the intervention in the form of one-on-one training. Such form of intervention was highlighted by participants in Hendrix et al. (2016) study). Previous related studies in the field confirm the results of the present study (Chi, et al., 2016; Hendrix et al., 2016; Mollica, et al., 2017). For example, in their study, Hendrix et al. (2016) delivered enhanced training that included two components symptom management for patients and managing stress for family caregivers and found that the training significantly improved the caregiving preparedness. The two components were similar to materials of HBPC-FC training that we provided in our study. Further, many studies indicate that caregiving preparedness is associated with other positive outcomes. For example, although we did not measure in our study, previous study indicates that a higher preparedness associates with higher competence and quality of life (Winterling, Kisch, Alvariza, Årestedt, & Bergkvist, 2021).

Family caregivers experienced a high burden due to the lack of real support in managing patient symptoms at home. The caregiving burden mean scores in both groups before the intervention were considered high. This is different to the previous study. A cross-sectional survey of family caregiver's burden in a specialized palliative care unit in Malaysia found that the caregiving burden was low (Ahmad et al., 2020). The difference could be due to different setting, as, in our study, the family caregivers provided care to the patients at home where they cared for the patients 24/7. Following the HBPC-FC training, we found the caregiving burden score in the intervention group had decreased compared to the baseline values. This suggests that HBPC-FC training was instrumental in influencing the caregiving burden. Furthermore, similar results are found in previous study. Although, previous study focused on caring specifically for patients with cancer, it was shown that education training had a direct impact on the perception of burden among family caregivers (Mollica et al., 2017). Support is needed by family and it can be provided in several forms such as training or café meeting (Finley, 2018). Our study showed that HBPC-FC significantly decreases family caregivers' burden. This confirms the previous study that lack of receipt of training increases the burden among family caregivers (Hendrix et al., 2016; Mollica et al., 2017). In addition, a systematic review found that experimental interventions slightly reduce caregivers' burden (González-Fraile et al., 2021).

The study has several limitations. First, we conducted our study with primary family caregivers at home. There was variety in terms of supports of family caregivers at home (availability of other members to be a proxy caregiver) that could contribute to a different level of caregiving burden. Secondly, the type of disease and complexity of the patient's symptoms varied, thus the needs and burden could also vary.

Conclusions

A three-week HBPC-FC training is an effective approach to improve caregiving preparedness and reduce the caregiver burden of the family caregivers in rural areas. For nursing practice, particularly in community and adult nursing, nurses can provide HBPC-FC training for family caregivers in the current practice. In addition, primary healthcare nurses can implement sustainable empowerment for caregivers or partnerships with community health workers to assist palliative patient care. Further studies can adopt technology to support caregivers, such as developing mobile apps that can be used to increase caregivers' preparedness and reduce the level of family stress in providing care independently.

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ORIGINAL ARTICLE

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Five Cs as reflective learning attitude among Philippines nursing students

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ABSTRACT

Introduction: Philosophical viewpoints from the first-hand source regarded as the best inception of COVID-19 knowledge are not widely explored. Humanity's understanding grounded on experiences becomes substantial only when stringent documentation of any events is performed carefully. COVID-19 as a phenomenon and as an ongoing struggle has myriad global impacts; hence the study aims to explore the understanding of nursing students' stances regarding the COVID-19 pandemic in their daily life.

Methods: The study used a qualitative study design with online survey. A total of 41 nursing students were recruited through total sampling technique. The study was conducted to students in a university in the Philippines. Interview guidelines used open questions and were spread online. The data were subjected to thematic analysis.

Results: The thematic analysis revealed five organizing themes, such as communication, commitment, care, collaboration, and change. Those themes were found among nursing students' stance regarding the COVID-19 phenomenon.

Conclusions: The communication, commitment, care, collaboration, and change as development of a crisis-induced framework from study findings satisfies the essential finding that the pandemic is likewise giving rise to a new normal. Moreover, the results assist nursing students and other health-inspired domains to effectively maintain positivity amidst catastrophic climates.

Keywords: caring; COVID-19; nursing attitudes; nursing education; pandemic

Introduction

Coronavirus Disease 2019 (COVID-19) is considered as pandemic that has greatly changed human life (Saadat et al., 2020). Countries are confronted with issues the solution to which is hardly recognized since it affects multiple categories of governance other than the health sector. Strong knowledge and skills are required in the prevention of infection transmission during healthcare and the availability of personal protective equipment is among the major problems encountered which have challenged leadership (Hernández, 2020). COVID-19 had a major impact on the world of health and education (Chaturvedi et al., 2021; France et al., 2021; Kim et al., 2022; Seow et al., 2022). Strengthening and increasing the role of health personnel is particularly important. Not only that, but students who focus on the health sector, such as nursing, also need to play a role in dealing with COVID-19 (Bacci et al., 2021; Tausch et al., 2022).

COVID-19 is highly infectious and can be transmitted through close contact. Infected persons can spread the virus when exposed to others through coughing, sneezing, respiratory droplets or aerosols (Dewi et al., 2021; Riou & Althaus, 2020). The first cases of pneumonia associated with COVID-19 were reported in

Wuhan, China, by the end of 2019 (Huang et al., 2020). As of April 2022, there were more than 503 million cases and six million deaths globally, whereas in South-East Asia there were more than 57 million cases (WHO, 2022).

COVID-19 has had many negative impacts in all sectors of life (Nundy et al., 2021). The most felt impact is in the field of education, where students face a new pattern of education with a home learning system. Not only that, other perceived impacts such as stress with online learning methods (Acob et al., 2021; Black Thomas, 2022; Nodine et al., 2021), as well as a decrease in the skills of nursing students have gained considerable attention (Aldridge & McQuagge, 2021; Park & Seo, 2022). Other problems provoked by the COVID-19 outbreak are social stigma and discriminatory behaviors against people perceived to have contracted the virus as well as ethnic groups (UNICEF, 2020a; Wahyuhadi et al., 2022). Social isolation can be led by stigma of those who have contracted viruses where people may be very afraid to get infected. Meanwhile, deaths caused by COVID-19 pandemic lead to irreversible damage to the community (Chakraborty & Maity, 2020).

The gap is that COVID-19 has given fear to everyone such as of death (Servidio et al., 2021). This affects all daily activities that become paralyzed (Karataş & Tagay, 2021). However, with the right knowledge, the spread and impact of COVID-19 can be minimized. For this reason, the role of all groups, both in the community, hospitals, and education, is needed. However, very limited research is found to describe a positive side from the event of the COVID-19 pandemic. This essay unfolds the contradictory angle claiming that the pandemic doesn't only procure gloomy effects. It also exhibits and unfolds in beneficial and favorable contributions across human experience. Thus, the study aim was to explore the understanding of nursing students' stances regarding the COVID-19 pandemic.

Materials and Methods

The Research Team and Reflexivity

The research process was carried out online due to the COVID-19 pandemic. The researchers have immense scientific experience in the fields and interest as nursing researchers and nursing lecturer in the sphere of medical surgical nursing, nursing care, caring in nursing and resilience in nursing.

Study Design

In achieving the central study concepts, the proponents utilized a qualitative process of surveying participants' perspectives regarding the favorable effects of COVID-19 to humanity.

Participant Selection and Setting

This involved online inquiry with guided questions to purposively identify level one nursing students officially enrolled for the academic year 2019-2020 with no force or coercion. Students must know the COVID-19 information. If the students do not know, they can leave this online survey. Following the declaration of enhanced community quarantine, these 41 students recruited by total sampling technique went to their respective home places and provinces in the Visayas and Mindanao regions of the Philippines.

Students were explained the purpose of the research and how they participate as well as benefits of the research to them and the nursing sphere as information for consent. When they agreed to participates they were given an approval letter and asked to give their understanding of the pandemic based on individual observations to their respective locales. Three guiding questions, such as "What are the positive attributes of the phenomenon (COVID-19 pandemic) to human life?" were used to extract their understanding and appreciation amidst these testing times. Responses were all taken and sent through email with a return rate of 90% (74/82), five days after the guide question was released.

During the research process, eight participants dropped out because of the students' condition, such as limited access to internet connectivity and those who did not respond to the questions before the deadline. Participants in this study provided informed consent. Each participant's identity is protected by using a code that is only known by the researchers. In addition, the research data were kept confidential by researchers and are used only for research purposes.

Data Collection

The study was conducted from April until May 2020 in the Philippines, when students and educational institutions were put on hold. During the period of limited mobility, the researcher utilized the opportunity to request ideas from young people on the positive standpoint about COVID-19. Before students answered the question, the researcher provided a research guideline by email which was sent to all participants. Through a guided question by which participants could freely express their thoughts and which was sent through email and other electronic means, responses were treated qualitatively. Students were free to ask the reviewer anything regarding the question

Table 1 Theme distribution and participant quotes

Themes	Sub-Themes	Quotes
Communication	Recognition	Q1: "*People and government recognized that Healthcare Providers are underappreciated and taken for granted*"
		Q2: "*Served as basis to prepare for a more prepared system to combat future pandemics*"
		Q3: "*People learned the importance of and role of health workers*"
	Bonding	Q4: "*Crisis provides families the opportunity to be together*"
		Q5: "*… families are coming closer*"
		Q6: "*Gift of time to spend for family and bonding to each other*"
	Spiritual	Q7: "*People are moved closer to God, faith made stronger*"
		Q8: "*…rebuild relationship to God*"
		Q9: "*Praying for healing of the world*"
	Sacrifice	Q10: "*Sacrificing lives for others*"
Commitment	Responsibility	Q11: "*People observe proper hygiene, disciplined, responsible*"
		Q12: "*Helps people to be more responsible of their own health*"
	Discipline	Q13: "*To be more disciplined in terms of caring for our own health*"
		Q14: "*Teaches us the importance of discipline*"
		Q15: "*People observe proper hygiene, disciplined*"
Care	Giving	Q16: "*Helping others to decrease the spread of disease through giving Personal Protective Equipment*"
		Q17: "*…giving to those in need*"
		Q18: "*Opportunity to reconnect to their family, community and self*"
	Sharing	Q19: "*Significance of helping and sharing to one another during this world crisis*"
		Q20: "*Sharing to most in need is practiced*"
	Compassion	Q21: "*Eye opener for humanity to unite, compassion for others*"
		Q22: "*…sense of humanity and compassion*"
		Q23: "*People are compassionate and generous by donating Personal Protective Equipment, shelter*"
Collaboration	Unity	Q24: "*United as one, reminded of the importance of healthcare professionals*"
		Q25: "*Reuniting with families and loved ones*"
		Q26: "*Front liners are in unison for the safety and security of everyone*"
	Helping	Q27: "*People develop empathy toward others and try to help as much as they can*"
		Q28: "*People are helping together to fight against this disease*"
		Q29: "*Helping those in need and build stronger relationship with the Lord*"
Change	Appreciation	Q30: "*…eye opener for everyone that our HCS is vulnerable*"
		Q31: "*Giving importance to health providers such as nurses, doctors, which are less appreciated before*"
	Positive environment effects	Q32: "*Lessen pollution, thus environment is slowly turning back to normal*"
		Q33: "*People are more vigilant, cautious, and alert toward actions to the environment*"
	Cleanliness	Q34: "*Environment is rehabilitating such as clear blue skies, pollution free-air, and reduced pressure on resources*"
		Q35: "*Recognizing the importance of hygiene as they stay clean and healthy*"
	Improved healthcare	Q36: "*Front liners and health professionals showed their act of patriotism toward greater good*"
		Q37: "*…improve the healthcare system*"
		Q38: "Importance of the health sector and healthcare providers"
		Q40: "*People are becoming more aware of their hygiene and learning healthy practices in order to prevent catching the virus*"
		Q41: "*Emphasized the importance of healthcare providers*"

Data Analysis

The study employed the step-by-step protocol of qualitative data analysis defined as the rational framework. The analytical framework described the flow of how data were processed and later in identifying developed themes (Akinyode & Khan, 2018). Through data logging or recording of inputs from the nursing students, anecdotes were recorded from the significant statements and then vignettes (basic themes) documented from the responses, as well as inductive coding of data, and thematic network wherein the investigator connected basic links and organized a network on the constructive impact of the pandemic to people's lives. Moreover, the procedure was established on thematic networks which aimed at familiarizing the subject of concern with clarity on how the strategy was done. The stages consisted of 1) gaining familiarity with the data; 2) generating the initial codes; 3) searching for themes; 4) reviewing the themes; 5) defining and naming the themes; and 6) producing the report (Braun et al., 2006).

Ethical Consideration

This study received ethical approval from the health ethical committee, St Paul University Philippines with number PC-2020-05.

Results

All participants were officially enrolled to Bachelor of Science in Nursing Program Level 1 in the Philippines at the time the study was conducted. They were ranged from 17-19 years old, both males (18 students) and females (64 students). They were situated to different provinces in the Philippines during the survey; Leyte province (75%), Samar province (4%), Bohol province (18%), and Surigao province (3%). Subsequently, the online open question e-poll lasted for five calendar days and transcribed using careful scrutiny of the retrieved information. Keywords and basic themes or vignettes were named. The vignettes were extracted from the transcripts that directly answered the issue. In this phase, a total of 117 keywords and basic themes emerged which were further clustered into five theses. The thematic network reflected the five issues as communication, commitment, care, collaboration, and change (Table 1).

In Table 1, it is seen that communication consists of five sub-themes, namely recognition, bonding, spiritual, and sacrifice. Communication is an important basis in building positive perceptions of the COVID-19 pandemic. This consists of 1) recognition of health workers, preparation and assistance from the government (quotes 1-3), 2), bonding from the family and always supporting each other (quotes 4-6), 3), spiritual communication to God (quotes 7 -9) and 4) sacrifice to help others' lives (quote 10).

The commitment theme consists of two sub-themes, namely responsibility and discipline. To build a positive commitment during the COVID-19 pandemic period, responsibility is needed in maintaining cleanliness (quotes 11-12) and discipline in maintaining health, as well as knowing the importance of discipline to prevent the spread of COVID-19 (quotes 13-15).

The next theme is care, which consists of three sub-themes, namely giving, sharing and compassion. Care consists of the willingness of both the citizens and the government in paying attention to the conditions during the COVID-19 pandemic and helping each other, both health workers and the community (quotes 16-18). In addition, sharing is needed during the COVID-19 pandemic (quotes 19-20). Compassion to others by paying attention to conditions and needs with donations or other things is very meaningful during the COVID-19 pandemic conditions (quotes 21-23).

The collaboration theme consists of two sub-themes, namely unity and helping. During the COVID-19 pandemic, a unity attitude is needed to maintain health and hygiene by reminding each other (quotes 24-26) and helping each other with empathy, helping each other in fighting the spread of COVID-19 and strengthening each other (quotes 27-29).

The theme of change consists of four sub-themes, namely appreciation, positive environment effects, cleanliness, and improved healthcare. Appreciation can be given in the form of knowing the conditions and needs of HCS, such as nurses, doctors and other health workers (quotes 30-31). From several opinions of the participants, it is known that the existence of COVID-19 with restrictions on activities is having a positive effect on the environment, such as low levels of pollution (quotes 32-33), a clean environment such as environmental rehabilitation, and the importance of maintaining cleanliness (quotes 34-35). Improved health services during the COVID-19 pandemic were mostly carried out by health workers, improving the health system to monitor the spread and handling of COVID-19, as well as public awareness of its spread (quotes 36-41).

Discussions

Communication is very important during the COVID-19 pandemic (Reddy & Gupta, 2020). The study found that the good communication can lead to communication between health, family, spiritual, and community workers to help each other (Maloney, 2020; Reddy & Gupta, 2020; UNICEF, 2020b; Wickner et al., 2020). The COVID-19 pandemic has a great opportunity to provide misinformation, so it requires providing proper information to the public (M. H. Nguyen et al., 2020). Nursing students have an important role in disseminating correct information about COVID-19 to the public and health workers (Swift et al., 2020). In addition, during the lockdown period implemented by the government, communication within the family has changed (Marra et al., 2020). In this case, nursing students can be the right reference information for families to provide accurate information. So, worries related to the COVID-19 pandemic can be reduced. The research data show that, during the lockdown period, the spiritual relationship between the people and their gods became more intense. Nursing students can play a role in increasing religiosity and spirituality to provide calm during dealing with COVID-19 and reduce anxiety (Ferrell et al., 2020). With good and correct communication, a strong relationship to live life with COVID-19 can be built.

The finding in the study showed that nursing students present commitment due to the COVID-19 pandemic. The commitment shown includes compliance and discipline in washing hands to avoid contracting COVOD-19. Nursing students can be examples of discipline in hand washing, both in their surroundings and in their families. Commitment to maintain cleanliness is an important key to preventing and spreading COVID-19. Research conducted by several researchers states that commitment is a basic thing that must be owned by everyone (Alzyood et al., 2020; Singh, 2020). This aims to reduce the number of spread and transmission of COVID-19, which can be done routinely and be disciplined to wash hands.

The results showed that the presence of the COVID-19 pandemic can increase caring behavior, such as giving, sharing, and affection. Nursing students feel the change in caring to be able to share with others during the COVID-19 pandemic. Research conducted by several researchers shows that the sense of caring has increased during the pandemic, which can be seen from the provision of Personal Protective Equipment (PPE) for health workers, the general public, and food assistance for people experiencing economic impacts due to COVID-19 (Santos, 2020; Schroeder et al., 2020; Zheng, 2020). It should be noted that Filipinos by nature are cheerful givers. The ability to share resources intrinsically comes out when somebody is observed to be of greater need amidst a dearth of reserves. Directly, the state is empowered to move and take immense initiatives in addressing the crisis's pressing needs. Government works for and on behalf of its people who breathes more apparent. Whatever be the cause or origin, the occurrence of COVID-19 has emphasized to improve the mutually-affective connection between humans where a feeling to care for each other is naturally developed (Fernandez et al., 2020).

During the COVID-19 pandemic, nursing students said that collaboration in handling the disease was needed, both in the family environment and in health workers. Health workers must help and strengthen each other in overcoming the spread of COVID-19 (da Costa Belarmino et al., 2020; Wong et al., 2020). Health workers as front liners must maintain health and care for COVID-19 patients (L. H. Nguyen et al., 2020). The government's role in collaboration with health workers is very important. So that we need policies that can help and ensure the health and welfare of health workers (The Lancet, 2020). ResCOVID-19 and collaboration with all aspects is needed to accelerate the handling of the pandemic (Bielicki et al., 2020; The Lancet, 2020).

This study shows the results that COVID-19 will not only cause bad changes, but also changes that have a positive impact. This can be seen from all aspects of society which sees HCWs as health workers who are very vulnerable to contracting COVID-19, so there is a lot of appreciation from the community for providing assistance to HCWs (ICN, 2020). In addition, COVID-19 can have a positive impact on the surrounding environment. This can be seen from the low threshold value of air pollution during the lockdown period. The results of research conducted by several studies show that pollution, temperature, and carbon-dioxide conditions on earth decreased during COVID-19 (Kanniah et al., 2020; Le Quéré et al., 2020; Rume & Islam, 2020). Another change is shown in the hygiene awareness behavior shown by the community, such as washing hands regularly, using masks, and maintaining environmental hygiene (Kim et al., 2020; Knell et al., 2020). Not only that, changes from the healthcare system are also the center of attention, such as improved service quality supported by adequate facilities to prevent the spread of COVID-19 (Chan et al., 2020).

This study presents the positive insight from nursing students regarding the COVID-19 Pandemic in the Philippines. However, the study is only located in one university. A wider sample including other countries will provide more information.

Conclusions

During the COVID-19 pandemic, there are not only negative aspects, but several things can lead to positive aspects. Nursing students in the Philippines show an attitude that, during the COVID-19 pandemic, it can lead to integrated communication for health workers, families and the government. In addition, there is an increased commitment to mutual care and care to reduce the spread of COVID-19. Not only that, collaboration in all aspects, such as society, health workers and the government, has a very important role in preventing the spread of COVID-19. Positive changes are shown in behavior, environmental changes, and improvisation in the health service system. In this case, the government can take the positive side to continue making improvements, as well as issue policies that can maintain health stability in the community, health workers, and policies to maintain good behavior change.

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ORIGINAL ARTICLE

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Factors associated with duration of mechanical ventilation at Intensive Care Unit Dr. Soebandi: a retrospective study

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ABSTRACT

Introduction: Several factors cause the increase in the duration of mechanical ventilation. This study aims to analyze the relationship between initiating diagnostic factors, age, gender, comorbidities, and mechanical ventilation complications with the duration of mechanical ventilation in the Intensive Care Unit Dr. Soebandi Jember.

Methods: : This study used a quantitative correlative design with a retrospective approach from medical records. This study used purposive sampling to select samples from 414 total populations, obtaining 81 medical records that met the inclusion criteria. The duration of mechanical ventilation is the dependent variable, while the initiation diagnosis, age, gender, comorbidity, and complications are independent variables. Data were collected using a checklist compiled by the researcher. Data were analyzed using Chi-square and logistic regression.

Results: The results showed that there was a relationship between initiation diagnosis (p=0.000) and complication factors (p=0.000) with the duration of mechanical ventilation, while age (p=0.449), gender (p=0.632), and comorbidities (p=0.752) had no relationship with the duration of mechanical ventilation. Multivariate analysis showed that the initiation diagnosis factor was the most dominant factor associated with the duration of mechanical ventilation, with an odds ratio of 11.9 and statistically significant (p=0.000).

Conclusions: This study shows that the duration of mechanical ventilation is most dominantly associated with the diagnosis of ventilator initiation and ventilator complications.

Keywords: duration mechanical ventilation; mechanical ventilation

Introduction

Mechanical ventilation is crucial for patients in the ICU because it is a supportive tool for patients undergoing surgical procedures, patients in critical condition, or experiencing a severe respiratory injury (Estenssoro et al., 2005). The use of mechanical ventilation is increasing along with the number of patients who need mechanical ventilation. For example, Herold et al. (2020) stated that the number of patients at high risk of requiring mechanical ventilation increased to 80% in 2020 due to the increasing incidence of patients with respiratory failure. Meanwhile, data from the Intensive Care Unit (ICU) Dr. Soebandi Jember also saw an increase in the use of ventilators in non-COVID ICU patients in 2020, more than 200 patients. They increased again in 2021 to 214 patients. This ventilator-associated increase also occurred in the duration of use. In 2020, the duration of ventilator use was recorded for 1 to 18 days but increased in 2021 to 29 days. Ideally, ICU patients use a ventilator for a short duration, which is about 24 hours to 21 days (Liu et al., 2019).

However, several factors can cause patients to take longer to use a ventilator (Ghauri Sanniya Khan et al., 2019). According to various studies, the prolonged use of mechanical ventilation is caused by several reasons, one of which is the inability of patients to recover quickly due to their complex illness, coupled with a history of previous illnesses suffered by patients before being admitted to the ICU (Bice and Carson, 2017). This is also supported by several other studies, which state that the diagnosis of initiating patients using a ventilator can be a factor that causes the duration of ventilator use to vary (Figueroa-Casas et al., 2014). Prolonged mechanical ventilation is also exacerbated by increasing age, where the elderly are more at risk of using a ventilator for longer.

Long duration of mechanical ventilation use can lead to problems or illnesses in the ICU or what can be called Ventilator-Associated Events (VAE), such as Ventilator Associated Pneumonia (VAP), Barotrauma, pulmonary edema, cell damage, and necrosis. VAE can also increase if the patient has comorbidities (Al Enezi et al., 2018; Liu et al., 2019). Another study added that prolonged duration of mechanical ventilation use could also lead to infection, Post-Extubation Respiratory Failure (PERF) and reintubation, and even risk for ICU readmission. Complications in patients who experience prolonged mechanical ventilation (PMV) can cause other problems, such as increasing ICU length of stay, increasing treatment costs, and increasing ICU patient mortality (Esteban et al., 2002; Chang et al., 2018).

In the various studies mentioned above, data were obtained that several reasons were suspected to be related to the duration of mechanical ventilation. However, no studies discuss what factors are related and how strong this relationship is with the duration of mechanical ventilation in Indonesia. However, early identification of factors related to the duration of mechanical ventilation in Indonesia is essential for nurses to make plans while managing patients with various characteristics and diagnoses. Nurses also need to predict the length of mechanical ventilation use and collaborate with other health workers to determine mechanical ventilation weaning strategies, which differ between ventilator weaning strategies and patients who use ventilators for short and long periods (Huang et al., 2014). In conclusion, the present study summarized the most significant factors related to the duration of mechanical ventilation, including the initiation diagnoses of mechanical ventilation, age, gender, comorbidities, and patient complications. This study aim is to examine the relationship between initiating diagnoses, age, gender, comorbidities, and complications on the duration of mechanical ventilation.

Table 1 Characteristics of research respondents (N = 81)

Characteristics	N	%
Initiation diagnoses		
Medical	24	29.6
Surgical	57	70.4
Age		
18-59 years	67	82.7
> 60 years	14	17.3
Gender		
Male	60	74.1
Female	21	25.9
Comorbidity		
None	51	63
With comorbidities	30	37
Complication		
None	40	49.3
With complications	41	50.7

Materials and Methods

Study Design

This study was a correlation design with a retrospective approach to examine the relationship between initiating diagnoses, age, gender, comorbidities, and complications on the duration of mechanical ventilation.

Place, Time, Population, and Sample

This research was conducted in the intensive care unit (ICU) RSD Dr. Soebandi Jember. This study was conducted from October 2021 to May 2022. The population of patients treated in the ICU during April 2020 - December 2021 was 414 patients. Our team determined the medical records that will be used as research respondents by purposive sampling technique. We set the inclusion criteria, among others: (1) non-COVID patients treated at Dr. RSD. Soebandi Jember from April 2020 to December 2021; (2) over 18 years old; (3) use the ventilator more than 24 hours. Samples that met the criteria obtained as many as 81 medical records.

Instrument and Data Collection

We used structural checklist to identify mechanical ventilation initiation diagnosis, age, gender, comorbidities, mechanical ventilation's complications, and duration of mechanical ventilation. We searched the data in the medical record room of Dr. Soebandi Jember. The head of the medical record room looked for the medical record number required according to the inclusion criteria. Researchers recorded the variables needed for research (name, age, gender, initiator diagnosis of ventilator installation, past medical history, patient complications). Researchers recorded duration of patient's use of a ventilator

Table 2 Chi-square analysis of initiation diagnoses, age, gender, comorbidities, and complications with the duration of mechanical ventilation

		Duration of mechanical ventilation				p-value
		1-7 days		> 7 days		
		n	%	n	%	
Initiation diagnoses	Medical	9	14.8	15	75	0.000
	Surgical	52	85.2	5	25	
		Duration of mechanical ventilation				**p-value**
		1-7 days		**> 7 days**		
		n	**%**	**n**	**%**	
Age	18-59 years	49	80.3	18	90	0.449
	> 60 years	12	19.7	2	10	
		Duration of mechanical ventilation				**p-value**
		1-7 days		**> 7 days**		
		n	**%**	**n**	**%**	
Gender	Male	46	75.4	14	70	0.632
	Female	15	24.6	6	30	
		Duration of mechanical ventilation				**p-value**
		1-7 days		**> 7 days**		
		n	**%**	**n**	**%**	
Comorbidity	None	32	63.9	12	60	0.752
	With comorbidities	22	36.1	8	40	
		Duration of mechanical ventilation				**p-value**
		1-7 days		**> 7 days**		
		n	**%**	**n**	**%**	
Complication	None	37	60.7	3	15	0.000
	With Complications	24	39.6	17	85	

Data Analysis

We used bivariate and multivariate analysis for several variables that were obtained. Chi-square was used to see the relationship between the independent variables (diagnose initiation, age, gender, comorbidities, and mechanical ventilation's complications) and the dependent variable (duration of mechanical ventilation). Relationship analysis was said to be significantly related if the p-value<0.05. This study used a 2x2 table, so cells with an expected value of <5 are a maximum 20% of the number of cells (continuity correction). If the expected value did not meet the Chi-square requirement, Fisher's exact test would be used as an alternative. Logistic regression was used to see which variable has the most substantial relationship. Data analysis was performed using Statistical Package for Social Sciences (SPSS) version 16.

Ethical Considerations

This study was approved by the Health Research Ethics Committee, Faculty of Nursing, University of Jember with an Ethical Approval Certificate Reg. Number. 037/UN225.1.14/KEPK/2022.

Results

During this study period, 414 patients over 18 years who were hospitalized and underwent mechanical ventilation over 24 hours were enrolled, and 81 medical records met the study inclusion criteria; 70.4% of the 81 medical records in this study were surgical. Most patients are in the age range of 18-59 years. Most of the patients have a male gender (74.1%). Most patients (63%) had no comorbidity in the comorbidity variable. The difference in the percentage between patients who experienced complications after using the mechanical ventilation (50.7%) and patients who did not experience complications was not too significant (49.3%) (Table 1).

Patients who used mechanical ventilation for 1-7 days mostly came from surgical diagnosis (85.2%), while 75% of patients with medical diagnosis used mechanical ventilation for > 7 days. The bivariate analysis results in Table 2 concluded a significant relationship between initiation diagnosis with the duration of mechanical ventilation, as indicated by the p-value of p=0.000.

Patients who used mechanical ventilation for 1-7 days mostly came from the age range 18-59 years (80.3%), as well as patients who used mechanical ventilation for >7 days dominated by age > 60 years (90%). The bivariate analysis results in Table 2 obtained p=0.449. There is no significant relationship between the age factor and the duration of mechanical ventilation.

Patients who used mechanical ventilation for 1-7 days mostly came from the male gender (75.4%), as well as patients who used mechanical ventilation for >7 days were also dominated by the male gender (70%). The bivariate analysis results in Table 2 obtained p=0.632. There is no significant relationship between the gender factor and the duration of mechanical ventilation.

Patients who used mechanical ventilation for 1-7 days were dominated by patients who did not have a comorbidity (63.9%), as well as patients who used mechanical ventilation for >7 days were also dominated by patients who had comorbidities (60%). The bivariate

Table 3 Full model bivariate selection

Variables	p-value
Initiation diagnoses	0.000
Age	0.449
Gender	0.632
Comorbidity	0.752
Complication	0.000

analysis results in Table 2 obtained p=0.449. There is no significant relationship between the comorbidities factor and the duration of mechanical ventilation.

Patients who used mechanical ventilation for 1-7 days were dominated by patients who had no complications (60.7%), while 85% of patients who had complications used mechanical ventilation for >7 days. The bivariate analysis results in Table 2 concluded a significant relationship between complications with the duration of mechanical ventilation, as indicated by the p-value 0.000.

Table 3 shows that the bivariate analysis results have two variables related to the duration of mechanical ventilation: the initiation diagnosis and mechanical ventilation complications. Furthermore, the multivariate analysis used logistic regression to determine which variables were most related to the duration of mechanical ventilation.

Table 4 shows the final results of the logistic regression analysis, which shows that the initial diagnosis is the most related factor to the duration of mechanical ventilation with OR = 11.9 (CI 95% = 3.3 – 43.4) compared to the complication factor (OR = 4,8; CI 95% = 1,1 - 21.2).

In conclusion, patients with medical diagnoses were 11.9 times more likely to have a mechanical ventilation duration of more than seven days than patients with the surgical diagnosis.

Discussions

Relationship between Initiation Diagnoses and the Duration of Mechanical Ventilation

Based on the results of bivariate analysis using Chi-square, the p-value of 0.000 <0.05 was obtained. In conclusion, there is a relationship between the initiation diagnoses and the duration of mechanical ventilation in the ICU Dr. Soebandi Jember. There are a few previous studies stating that the initial diagnosis of mechanical ventilation could be a factor causing prolonged duration mechanical ventilation (Estenssoro et al., 2005; Clark, Inocencio and Lettieri, 2018). A study by Saleha et al. (2012) states that the majority of surgical patients (98%) use mechanical ventilation for 1-5 days. This differs from patients with a medical or non-surgical diagnosis, where most patients with a medical diagnosis use a ventilator for more than seven days.

The initial diagnosis of mechanical ventilation is a patient's current condition that underlies the installation of mechanical ventilation. According to the Acute Physiology and Chronic Health Evaluation (APACHE) IV, last updated in 2006, the underlying diagnoses of patients admitted to the ICU are divided into non-surgical and surgical diagnosis (Zimmerman et al., 2006).

The difference in the duration of mechanical ventilation is caused by differences in diagnoses, namely medical and surgical diagnoses (Saleha et al., 2012). Medical diagnoses of the respiratory system can exacerbate prolonged duration of mechanical ventilation, as in ARF and COPD. This prolonged use is due to decreased patient condition, which can be caused by impaired coordination of the central nervous system with respiratory muscles, leading to hypoxemia. Clinical condition, cause, and the severity of the disease can adjust mechanical ventilation use and duration in patients (Shebl, et al., 2022).

We assume that the factors that cause the initiation diagnoses are related to the duration of mechanical ventilation from differences between surgical and medical diagnoses. The severity of the disease and condition decreases, causing patients with a medical diagnosis to have an average duration of >7 days. This condition contrasts with surgical patients where the surgical procedure causes them to be on mechanical ventilation

Relationship between Age and the Duration of Mechanical Ventilation

Based on the bivariate analysis results using Chi-square, p-value 0.321 > 0.05, there is no relationship between age and duration of mechanical ventilation in the ICU RSD Dr. Soebandi Jember. Previous studies show that there is indeed a relationship between age and duration of ventilator use. Previous study from Nurhasty, Nurachmah and Maria. (2020) stated that patients over 60 years used mechanical ventilation for two to three days longer than the average use of

Table 4 Final analysis logistic regression

Variables	S.E	Wald	Sig	Exp (B)	95% C.I	
					Lower	Upper
Initiation diagnoses	0.657	14.289	0.000	11.980	3.306	43.416
Complication	0.750	4.464	0.035	4.879	1.122	21.227

mechanical ventilation. In addition, patients over 65 years use mechanical ventilation longer than patients under 65 years (Feng et al., 2009),

However, different opinions occurred from other studies. For example, a previous study by Mori et al. (2020) said there was no relationship between age and duration of mechanical ventilation. Similar statements come from the study by Hira and Mittal (2006) and Bruno et al. (2022) which said there was no significant difference between the duration of mechanical ventilation and age.

Age is the time a living thing began to exist or was born (Wardani, 2012). Wheeler (2017) says age is divided into productive age from 18 to 59 years, and elderly age, 60 years and over. Several things can cause age-related duration of mechanical ventilation. Clearly, age affects physiological factors. Environmental and genetic factors also provide opportunities for accumulating diseases. Therefore, age affects acute and chronic organ failure. Which can cause complications (Wu et al., 2019). This complication causes the duration of mechanical ventilation to increase. The alveoli of the elderly above 65 years are more easily deformed and tend to be loose. The strength of the diaphragm muscle also decreases, which causes muscle atrophy at this age, so the risk of respiratory failure is also greater. This respiratory failure can lead to an increase the duration of mechanical ventilation than it should (Frengley et al., 2014).

However, other studies said the age factor is not independent, so there is no relationship between age and duration. Younger patients can have more chronic diseases than older patients. Other factors such as disease severity, quality of life, and activity daily living are additional factors and more considered at this time (Mori et al., 2020). A similar statement comes from Frengley et al. (2014), that physiological conditions, especially in the respiratory system, can be a significant determinant of the duration of mechanical ventilation.

We argue that there is no relationship between the age factor and the duration of mechanical ventilation could occur because age is not an independent factor. Younger patients can have more chronic and complex diseases than older patients. Older patients may have better physiological conditions due to suitable daily living activities, fulfilled quality of life, and less severe disease severity compared to younger ages.

Relationship between Gender and the Duration of Mechanical Ventilation

Based on the bivariate analysis results using Chi-square, p-value 0.632 > 0.05, there is no relationship between gender and duration of mechanical ventilation in the ICU RSD Dr. Soebandi Jember. Several studies said that gender is one of the variables associated with the duration of mechanical ventilation. Mori et al. (2020) said that 54% of male patients who underwent mechanical ventilation also experienced a prolonged duration of mechanical ventilation and even experienced difficulties during the extubation process. Study from Feng et al. (2009) said differently, that there was no relationship between age and duration of mechanical ventilation. Other studies reported that gender was not an independent factor in determining the duration of mechanical ventilation (Roushdy, Abdel-Ghaffar and Saleh, 2018).

Gender is a biological difference between men and women. Gender is often associated as one of the factors associated that increased ICU stay, mortality, and duration of mechanical ventilation use. This increase happens because of other factors that may accompany this factor, such as daily living habits between men and women, such as smoking, unhealthy living habits, lack of activity, and comorbidities. These factors can lead to a gender-related relationship with the duration of ventilation (Mori et al., 2020).

Actually, the relationship between gender and duration of mechanical ventilation has not been well-studied, and some studies said that many biases could occur if only looking at the gender factor. Previous studies explained that there is no relationship between gender and the duration of mechanical ventilation because gender did not determine the severity of the disease, although Mori et al. (2020) mentioned that male patients are at risk of using mechanical ventilation longer than women because they tend to have smoking habits, low Activity Daily Living, and comorbidities such as heart or lung disease. There is no difference in daily activities between men and women because the number of women who have inadequate living habits and have comorbidities is also high (Hira and Mittal, 2006).

We argue that the fact that there is no relationship between gender and the duration of mechanical ventilation could be because gender is not an independent factor. Other factors such as their daily living habits, the severity of their congenital disease, or differences in life expectancy could cause a longer duration of mechanical ventilation in female or male patients.

Relationship between Comorbidities and the Duration of Mechanical Ventilation

Based on the bivariate analysis results using Chi-square, p-value 0.752 > 0.05, there is no relationship between comorbidities and duration of mechanical ventilation in the ICU RSD Dr. Soebandi Jember. Previous study from Mori et al. (2020) stated that 54.5% of patients who underwent mechanical ventilation have comorbidities. The patient's comorbidities included diabetes mellitus, heart disease, COPD, and kidney failure. Other studies also said that patients with comorbidities (acute kidney disorders, chronic liver disease, COPD, congestive heart failure, diabetes mellitus, myocardial infarction, and cancer) contain prolonged mechanical ventilation until 28 days (Lee and Cho, 2020). However, there is slightly different result from Hira and Mittal (2006), which stated that there was no significant relationship between comorbidities and duration of mechanical ventilation.

Comorbidities are a history of physical and psychological diseases in patients (diabetes mellitus, hypertension, asthma, stroke). Increasing age can have a variety of disease histories and can increase the risk of prolonged mechanical ventilation. In addition, respiratory comorbidities can prolong the duration of mechanical ventilation, such as COPD, asthma, and bronchitis. Comorbidity that is not related to the respiratory system was reported to have no significant relationship with the increase in the duration of mechanical ventilation (Lim et al., 2022)

We argue that there is no relationship between comorbidities and the duration of mechanical ventilation lies in data limitations. Medical records data in ICU Dr. Soebandi only listed two medical histories, hypertension and diabetes mellitus. This finding collides with the previous studies mentioned above, which mapped various patient comorbidities. This study also showed that the initiation diagnosis did not come from the patient's medical record but primarily due to a post-traffic accident that did not have a history of previous illness. Based on the data of this study, it was also found that most of the patients who used ventilators for 1-7 days or >7 days had no comorbidity.

Relationship between Mechanical Ventilation's Complications and the Duration of Mechanical Ventilation

Based on the results of bivariate analysis using Chi-square, the p-value of 0.000 <0.05 was obtained. In conclusion, there is a relationship between the mechanical ventilation's complication and the duration of mechanical ventilation in the ICU Dr. Soebandi Jember.

Patients' complications can increase the duration of mechanical ventilation more than patients without complications. This increase has been investigated in previous study by Chang et al. (2018) which said ICU patients with septic shock and sepsis complications increased mechanical ventilation's duration by 21 days. Research conducted by Tobin (2013) stated that 20-50% of ICU patients, especially those who underwent mechanical ventilation, have one or more complications with a mortality percentage of 20-50%, and can increase with increasing duration of mechanical ventilation. Another study also stated that patients who experience complications while undergoing a mechanical ventilation could increase their mortality rate by ten times (Peña-López et al., 2018).

Complications after using a mechanical ventilation are calculated 48 hours after the patient underwent mechanical ventilation. These complications include septic shock, pneumonia, cardiac output instability, splanchnic hypoperfusion, hypoalbumin, hypoxemia, hypercapnia, alkalemia, hypokalemia, hypomagnesemia, hypocalcemia, and changes in urine output. Things that cause a relationship between complications and the duration of mechanical ventilation because of the installation of the ventilator equipment are such as Positive Pressure Ventilation (PPV), endotracheal or tracheostomy tube, or when the patient is connected to the mechanical ventilation. (Udi et al., 2021).

We believe there is a relationship between complications and the duration of mechanical ventilation because most patients who underwent mechanical ventilation with a duration more than seven days experience complications. This is different from patients who underwent a mechanical ventilation for 1-7 days who did not experience complications.

The most Related Variables to the Duration of Mechanical Ventilation

The results of the bivariate analysis have two variables related to the duration of mechanical ventilation, the initiation diagnoses variable and mechanical ventilation complications. The final results of the logistic regression can be seen, that the initiating diagnostic factor is the most related factor to the duration of mechanical ventilation with OR = 11.9 (CI 95% = 3.3 – 43.4) compared to the complication factor (OR = 4.8; CI 95% = 1.1 - 21.2).

In conclusion, patients with medical diagnoses were 11.9 times more likely to have a mechanical ventilation duration of more than seven days compared to patients with postoperative diagnoses. Previous study by Clark, Inocencio and Lettieri (2018) said that the duration of mechanical ventilation depended on the initial diagnosis. This may be due to differences in surgical and medical diagnoses. A report by Saleha et al. (2012) stated that the majority of surgical patients (98%) underwent mechanical ventilation for 1-5 days. This duration differs from patients with medical diagnoses, where most patients use mechanical ventilation for more than seven days. Factors other than the two factors studied, such as BMI, pre-operative, reintubation, activity daily living, and differences in the weaning process may be factors that can relate to the duration of mechanical ventilation (Muzaffar et al., 2017). Another study also identified several independent predictors related to patients' demographics (advanced age and gender), health status (COPD, elevated heart rate, low ejection fraction, and kidney dysfunction), and surgery-related incidents (emergency and redo surgeries as well as the need of blood transfusion) (Ghauri Sanniya Khan et al., 2019). We argued that the initial diagnosis of mechanical ventilation is still an independent factor related to the duration of mechanical ventilation. These two factors can stand alone and can still be related to the duration of the ventilator.

Conclusions

This study's main finding showed a relationship between initiation diagnosis and complications with the duration of mechanical ventilation in the ICU Dr. Soebandi. There is no relationship between age, gender, and comorbidity factors with the duration of mechanical ventilation in the ICU Dr. Soebandi. The initiation diagnosis was the biggest factor related to the duration of mechanical ventilation in the ICU Dr. Soebandi. Finally, further research is needed to develop other factors, increase the sample, and readjust the inclusion and exclusion criteria that may relate to the duration of mechanical ventilation.

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Conflict of Interest

This research does not concern any commercial product

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ORIGINAL ARTICLE

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The relationship between disease severity and functional status of post-covid-19 patients in Banda Aceh, Indonesia

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ABSTRACT

Introduction: Coronavirus Disease-2019 known as COVID-19 has spread rapidly worldwide, changing many aspects of life, including the functional status. Therefore, this study aims to assess the relationship between disease severity and the functional status of COVID-19 patients after recovery in Banda Aceh, Indonesia.

Methods: A cross-sectional study was conducted with 109 post COVID-19 patients having been cured for more than 4-8 weeks in a hospital in Banda Aceh, Indonesia. The history of disease severity of COVID-19 was collected from medical records and was divided into mild, moderate, severe, and very severe according to the WHO guidelines. The functional status was assessed using the Post-COVID-19 Functional Status Scale (PCFS) questionnaire and divided into five categories namely no functional limitation, negligible, slight, moderate, and severe functional limitation. The relationship between the severity of COVID-19 and functional status was assessed statistically using the Spearman rank test.

Results: Out of 109 selected respondents, there was one patient with mild severity, and 68, 37, and three patients have a history of moderate, severe, and very severe COVID-19, respectively. Those imply the functional status with no functional limitation (6%), negligible (21%), slight (4%), moderate (42%), and severe functional limitation (28%). In addition, fatigue was the most common symptom that persisted among respondents. Furthermore, the statistical result showed that the history of COVID-19 severity had a significant relationship with the post-COVID-19 functional status ($p<0.05$).

Conclusions: This study showed that post-COVID-19 cases have varying functional limitations ranging from negligible to severe. The COVID-19 severity significantly correlates with the functional status post-recovery. Hence, it is recommended to conduct a monitoring program to assess the post-COVID-19 functional status regularly, especially in outpatient clinics of the government healthcare center, in order to enhance the research findings.

Keywords: disease severity; post-COVID-19 functional status; post-COVID-19 persistent symptom

Introduction

According to data released by World Health Organization (WHO), there have been more than 100 million confirmed cases of COVID-19 and more than two million deaths worldwide since the pandemic (Hawlader et al., 2021). In Indonesia, 5.667,355 confirmed cases based on the Indonesian Ministry of Health have been recorded and 149,268 deaths as of March 3, 2022 (Indonesian Health Ministry, 2022). According to the United Nations (UN) (2020), this disease continually shows conditions of uncertainty, exhaustion, and changes in the overall pattern of life, thereby having a tremendous impact on the world. It is well-known that the symptoms are highly variable and can result in a long-term disorder with persistent symptoms, regardless of age, comorbid conditions, in young adults and without chronic disease (Poudel et al., 2021). The recovering case of COVID-19 is a tremendous pressure worldwide. Furthermore, the primary functional side is estimated to affect physical, mental, cognitive, and public health status (United Nations, 2020). This outbreak has previously been associated with a persistent disruption in lung function, muscle weakness, pain, lethargy, depression, anxiety, vocational disorders, and impaired quality of life at various levels (Catherine et al., 2007; Neufeld et al., 2020). The clinical spectrum of Coronavirus Disease 19 (COVID-19), which has caused a global pandemic, varies from a moderate illness to a life-threatening condition. Most COVID-19 patients initially only experience minor symptoms like fever and cough, but a tiny percentage develop severe pneumonia and experience life-threatening side effects, including acute respiratory distress syndrome, multi-organ failure, and death. Therefore, the World Health Association has made a guideline to classify the severity of COVID-19 from mild, moderate, severe, and very severe (WHO, 2021).

The prevalence of post-COVID-19 symptoms varies widely, ranging from 13% - 83%, in patients undergoing self-isolation by 10% - 30%, while those treated in hospitals are as high as 80%. In Indonesia, it was recorded that 63.5% of patients experienced persistent symptoms (Callard and Perego, 2021). These are often similar to the symptoms that developed during the acute phase of this virus. Furthermore, the most common manifestation of post-COVID-19 symptoms is fatigue, shortness of breath, cough, joint pain, and chest pain. Adult survivors have limitations in Activities of Daily Life (ADLs), such as walking, bathing, and wearing clothes. Therefore, the disabilities in activities of daily living result in increased use of health services, such as nursing, and a higher risk of mortality (Aiyegbusi et al., 2021). Even though the majority of these symptoms are curable, some persist over time and profoundly influence daily living. It can develop into chronic illnesses with severe economic and public health implications. Therefore, a study is required related to the severity of the disease on the daily functional ability of post-COVID-19 patients in Indonesia.

According to the World Health Organization, quality of life refers to an individual's view of their position in life, which includes their culture and values in connection to goals, expectations, standards, and concerns. COVID-19 is considered a significant physical and psychological disorder, which leads to deterioration in health as well as affects the quality of daily life. A simple and basic assessment is needed to monitor the progression of symptoms and their effect on the functional status of the sick patient. This is because many recovered cases require regular, easy, and measurable monitoring to categorize those patients with slow recovery or needing assistance (World Health Organization, 1996). Therefore, Klok, Boon and Barko (2020) compiled THE Post-COVID-19 Functional Status Scale (PCFS) which (after slight adaptation) is helpful during the pandemic. A new scale is recommended for use in patients discharged from the hospital after 4-8 weeks or six months to evaluate the functional status Mohamed Hussein et al., (2021).

There are still limited studies assessing the functional status of people recovering from COVID-19, especially in Indonesia. Therefore, this study aims to determine the relationship between disease severity and the functional

Table 1 Scale Assessment of Post-COVID-19 Functional Status (PCFS) scale

1. Constant Care	**Yes**	**No**
1.1 Do you require constant care after recovering from Covid-19?		
2. Basic Activities of Daily Living	**Yes**	**No**
2.1 I can't eat alone after recovering from Covid-19		
2.2 I can't shower or dress myself after recovering from Covid-19		
2.3 I can't clean my face, brush my teeth, do my hair after recovering from Covid-19		
2.4 I can't walk like walking in the park, in the yard or around the house after recovering from Covid-19		
3. Instrumental Activities of Daily Living (iADL)	**Yes**	**No**
3.1 I can't do activities such as washing dishes, preparing food, taking out trash, sweeping the house, watering plants after recovering from Covid-19		
3.2 I can't travel like using a vehicle as usual after recovering from Covid-19		
3.3 I can't buy daily supplies after recovering from Covid-19		
4. Participation in usual social roles	**Yes**	**No**
4.1 I am reducing my activity/task time at home or at work after recovering from Covid-19		
4.2 I need to avoid or reduce activities at home or work that I usually do after recovering from Covid-19		
4.3 I am not able to take care of my family such as husband or wife, children, grandchildren, and parents as usual after recovering from Covid-19		
4.4 Since being diagnosed with COVID-19 positive, have you had problems with your neighbors or at work?		
4.5 I am limiting my participation in social and recreational activities such as doing hobbies, going to public places, playing games after recovering from Covid-19		

Table 2 Characteristics of respondents

Characteristics	Frequency(n)	Percentage (%)
Gender		
Male	66	61
Female	43	39
Age		
25-44 years old	17	15.5
45-64 years old	69	63.3
65> years old	23	21.1
Occupation		
Entrepreneur	56	52
Civil servant	25	24
Jobless	27	25
College student	1	1
History of COVID-19 severity		
Mild	1	1
Moderate	68	62
Severe	37	34
Very severe	3	3
Post-COVID-19 Functional Status Scale		
No Functional Limitation	6	6
Negligible Functional Limitation	23	21
Slight Functional Limitation	4	4
Moderate Functional Limitation	46	42
Severe Functional Limitation	30	28
Total	109	100

status of recovered COVID-19 patients in Aceh, Indonesia

Materials and Methods

Study Setting

This research was a cross-sectional study design on confirmed COVID-19 patients that have been treated in New Emerging and Re-Emerging Infectious Diseases Ward and Respiratory Intensive Care Unit at Dr. Zainoel Abidin Hospital, Banda Aceh, Indonesia. Respondents aged 18 to 70 years, declared cured for more than 4-8 weeks, willing for an interview met the criteria for inclusion. Meanwhile, patients with probable and suspected virus cases without symptoms were excluded from this study. As many as 109 respondents were involved in this research by using a total sampling technique for one month in 2021. The research variables were the history of disease severity of COVID-19 and the post0COVID-19 functional status with additional information of post-COVID-19 persistent symptoms.

Assessment of The Disease Severity

The history of disease severity of COVID-19 was divided according to the WHO guidelines into mild, moderate, severe, and very severe (Son, Lee and Hwang, 2021) and provided from medical records.

Assessment of Post-COVID-19 Functional Status (PCFS) Scale

The demographic data collected include gender, age, occupation, and severity of disease. The patient's functional status was assessed using the Post-COVID-19 Functional Status scale (PCFS) questionnaire, which consisted of several questions and was divided into five grades, namely grade 0 (no functional limitations), grade 1 (negligible functional limitations), grade 2 (slight functional limitations), grade 3 (moderate functional limitation), and grade 4 (severe functional limitation), as measured by constant care needs, limitations in basic and instrumental activities of daily living, and participation in usual social role after recovering from COVID-19. Grade 4 shows severe functional limitation, which involves having limitations in daily activities, being unable to take care of oneself, still require treatment and has symptoms such as anxiety, fatigue, weakness muscle tone, difficulty breathing, depression, memory impairment, and cough.

The PFCS questionnaire used in this study was adopted from previous study (Klok, Boon and Barco, 2020). The original language of the questionnaire was English, which was then translated into Bahasa by other independent experts. For validation, the questionnaire was tested in an outpatient clinic. Completing the survey takes approximately 10 minutes. This study evaluated the questionnaire questions and gained reliability of 0.9 and the validity was lower than 0.5. The blueprint of the questionnaire is shown in Table 1.

Statistical Analysis

This study uses descriptive analysis to describe the characteristics, patient’s clinical symptoms, and the post-COVID-19 functional status. Furthermore, the relationship between the severity COVID-19 and PCFS was assessed statistically using the Spearman rank test. This statistical analysis uses SPSS (Statistical Package for Social Sciences) for Windows version 25.0 (IBM SPSS Inc., USA). This study was approved by the Health Research Ethics Committee at the Faculty of Medicine, Syiah Kuala University/Dr. Zainoel Abidin No. 310/EA/FK-RSUDZA/2021.

Table 3 The Relationship between History of COVID-19 severity and Functional Status of Post-COVID-19

History of Severity	Functional limitation										Total		p-value	r
	None		Negligible		Slight		Moderate		Severe					
	n	%	n	%	n	%	n	%	n	%	n	%		
Mild	0	0	1	100	0	0	0	0	0	0	1	100	0.000	0.358
Moderate	4	5.9	18	25.5	3	4.4	33	48.5	10	14.7	68	100		
Severe	2	5.4	4	10.8	1	2.7	12	32.4	18	48.6	37	100		
Very Severe	0	0	0	0	0	0	1	33.3	2	66.7	3	100		
Total	6	5.5	23	21.1	4	3.7	46	42.2	30	27.5	109	100		

Results

This study collected 109 respondents, and more than half (61%) were male (n = 66) with age range of 45-64 years found to be the most (63.3%), and more than half (52%) work as self-employed (n = 56). This study revealed that the most disease severity history of COVID-19 was in the moderate grade (n = 68 or 62%). The majority of respondents (46 patients or 42%) had severe degrees of PCFS and only 4% (four respondents) showed a slight functional limitation (Table 2). The most common post-COVID-19 persistent symptoms were fatigue (89%), muscle weakness (60%), cough (53%), and depression (43%) (Figure 1). Furthermore, this study shows that the disease severity of COVID-19 has a significant relationship with post-COVID-19 functional status with $p < 0.05$ (Table 3). The patients with moderate severity of COVID-19 (n = 43) show PCFS at the moderate grade (n = 33 or 48.5%) or even more severe (n = 10 or 14.7%).

Discussions

COVID-19 patients with mild (1,1%), moderate (68,62%), severe (37,34%), and very severe (3,3%) severity were included in the study, with fatigue and persistent cough being present in 90% and 50% of the respondents, respectively. During the COVID-19 pandemic, the most common complaints were mild clinical symptoms such as cough, fever, shortness of breath, musculoskeletal (lethargy and joint pain), gastrointestinal and sleep disturbances (Docherty et al., 2020; Wang et al., 2020). According to the course of the disease, the Coronavirus (SARS-CoV-2) has the highest affinity for the angiotensin-converting enzyme-2 (ACE-2) receptor, primarily located in the lungs. Pulmonary damage occurs when the virus attacks type II pneumocytes of the alveolar epithelium in the lungs. It can develop lung injury and sequels persistent such as scarring and pulmonary fibrosis, leading to long-term breathing problems. In addition, endothelium damage can trigger an inflammatory response in the capillaries and form microthrombi with extensive pulmonary consolidation. COVID-19 changes the lungs' ability to diffuse carbon monoxide (DLCO). This pathophysiology describes the extent and severity of COVID-19 and manifests in symptoms (Thomas, Price and Hull, 2021).

A previous study of 355 patients with mild to severe COVID-19 showed that approximately 46% of them experienced post-COVID-19 symptoms in female patients, with fatigue often appearing as the primary symptom (Mahmud, Rahman and Rassel, 2021). Furthermore, a study observed patients with mild to severe disease that met WHO criteria and discovered that approximately 87% had persistent clinical complaints such as fatigue (53.1%), dyspnea (43.4%), joint pain (27.3%), and chest tightness (21.7%) (Carf, Bernabei and Landi, 2020).

Fatigue is a disabling mental and physical exhaustion sensation and is more common in people with post-COVID-19 syndrome (Diem et al., 2022). Another study that also supports the results is from Aiyegbusi et al. (2021), which states that the most common post-COVID-19 clinical symptoms experienced by patients were fatigue (47%), dyspnea (32%), muscle pain (25%), pain Head (18%), and cough (18%). Also, an additional study conducted by Qi et al. (2021) on 1171 COVID-19 patients in China stated that 21.4% and 22.6% of them experienced post-COVID-19 anxiety and depression, respectively Taquet et al. (2021) conducted a retrospective cohort study of 236,379 COVID-19 patients in the United States, of which 19.15% experienced an anxiety event within six months after infection. Pant et al. (2021) reported that nearly 90% of patients had at least clinical symptoms. Fever is the most common symptom, followed by cough, shortness of breath, and chest pain. Therefore, impaired lung function, mental health problems, and decreased quality of life have a long-term impact on physical, mental, social, and cognitive health, leading to decreased functional status (Pant et al., 2021).

The virus enters the host cells, seizes control of cellular metabolism, and activates catabolic mechanisms like apoptosis and autophagy that primarily destroy cell proteins to provide amino acids for the generation of virions. This virus's tactics cause cellular damage, protein malfunction, mitochondrial energy

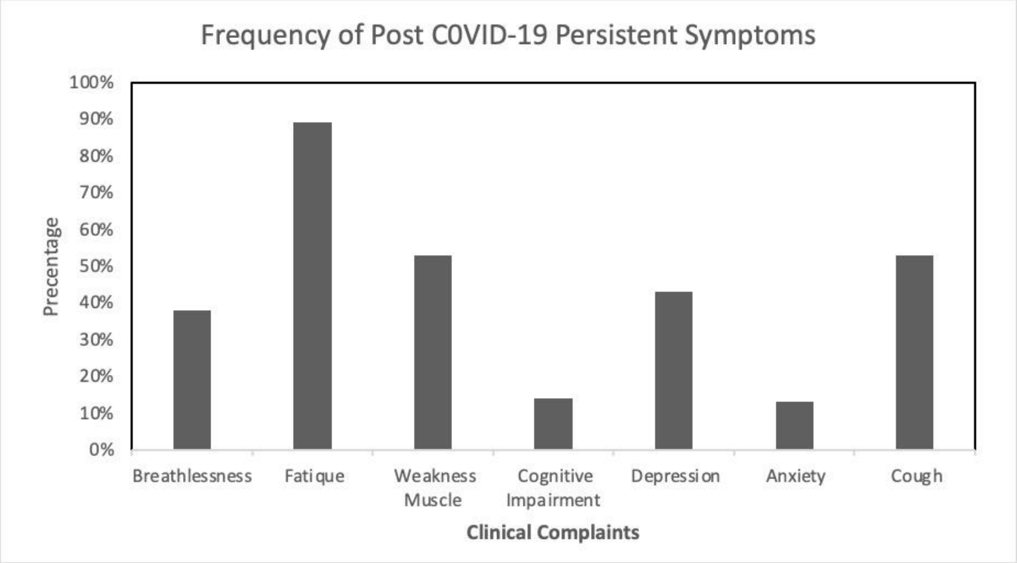

Figure 1 Post-COVID-19 Persistent Symptoms

loss, and iron leakage, which causes an increase in serum ferritin and the symptoms of weakness and fatigue (Pasini et al., 2021). This mechanism links it to the two physical symptoms that are most frequently reported: fatigue and unexpected shortness of breath that impair daily activities (Thomas, Price and Hull, 2021). The duration of treatment and psychological disturbances while suffering from this disease result in extraordinary mental and attitude disorders. In addition, these play an essential role in causing physical activity disorders. (World Health Organization, 2020).

Indeed, post-COVID patients have not entirely recovered from the disease's health issues even though they recovered from the disease. In addition to the risk of lasting disruption from COVID-19, many patients must contend with it daily in the community. This study assessed any persistent functional impairment in recovered COVID-19 patients using the recommended PCFS questionnaire. Patients had varying degrees of functional limitation ranging from no functional limitation (6%), negligible functional limitation (21%), slight functional limitation (4%), moderate functional limitation (42%), and severe functional limitation (30%) based on PCFS. Sepsis survivors are likely to have similar difficulties as other survivors of severe COVID-19. In addition, COVID-19 can lead to many consequences due to the severe course of infection. Minimized sedation, daily breathing testing, early mobility, and other evidence-based practices can improve ICU outcomes. However, this practice is not implemented in ICUs overloaded with other COVID-19-related problems that interfere with routine care. Therefore, patients with severe COVID-19 may experience deeper drowsiness, less respiratory effort, and limited mobility compared to other severe patients, all of which can impact day-to-day living and result in a poorer prognosis (Iwashyna et al., 2010).

The results were supported by a study conducted by Machado et al. (2021), which stated that 1,011 people (52%) of the 1,939 respondents experienced the Post-COVID-19 Functional Status scale (PCFS) at severe degree. However, according to Pant et al. (2021), 60 people (56.6%) experienced the Post-COVID-19 Functional Status scale at no functional limitation, followed by mild degree up to 29 people (27.3%) and four (1.9%) of the respondents experienced severe degree. Additionally, Hussein et al. (2021) stated that of 444 respondents, 280 (63.1%) experienced Post-COVID-19 Functional Status scale at mild degree (Mohamed Hussein et al., 2021).

This study showed a significant relationship between disease severity and post-COVID-19 functional status ($p<0.05$). The main target population for the intervention of long-term recovery is patients who were more seriously unwell during their hospital stay and had more severe decreased pulmonary diffusion capabilities due to severe pneumonia and abnormal chest imaging entity. In severe COVID-19 pneumonia, respiratory virus infection may cause different fibroblast activation throughout the convalescence phase and cause pathological fibroproliferation in the lung. Both of these effects have a significant impact on both short- and long-term outcomes in functional status. In addition, pulmonary diffusion abnormalities and value CT imaging change were related to the severity of the disease during the acute phase (Nalbandian et al., 2021).

In all the studies analyzed, there was a decrease in the performance of daily activities after COVID-19 infection regardless of the rating scale used. Patients that developed complications during hospitalization, such as ICU admission (Poudel et al., 2021), mechanical ventilation (Region and Maugeri, 2020), decreased consciousness (Mcloughlin et al., 2020), or greater oxygen demand (Curci et al., 2020), all had poorer outcomes with persistent symptoms postoperatively after COVID-19. Participation in a rehabilitation program is also a factor that might alter outcomes in functional status; however, Activity Daily Living (ADLs) performance does not improve in all cases. Various factors related to the patient's condition, such as disease severity, tend to affect functional capacity and performance of activities of daily living (Pizarro-Pennarolli et al., 2021). Likewise, Hussein et al. (2021) stated that only 3% of patients treated in the ICU had no functional status restrictions and 97% had limited functional status where 93% had only negligible functional status limitation.

This study has several limitations. The proportion of patients with comorbidities was not disclosed in this study. In addition, this study is only based on a questionnaire of clinical symptoms related to impaired lung function, not directly carried out tests, so that it may not arise from COVID-19. The data for new symptoms in early COVID-19 were not further stratified to establish whether the symptoms were post-discharge, exacerbated after COVID-19 recovery, or persisted after COVID-19. Mild COVID-19 symptoms did not qualify patients for enrollment. More work is required to compare the long-term results between inpatients and outpatients.

Conclusions

Most post-COVID-19 cases have varying degrees of functional limitations ranging from negligible to severe according to PCFS. This study discovered that history of severe COVID-19 significantly impacted the functional status after recovering from the disease. Therefore, it is recommended to conduct a regular post-COVID-19 monitoring program at a government clinic or be part of an outpatient program, following the patient's functional status during the 1st, 3rd, and 6th months of visit.

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Conflict of Interest

The author declares that there is no conflict of interest in this study.

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ORIGINAL ARTICLE

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Stigma and discrimination against breast cancer survivors in indonesia: an interpretive phenomenology study

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ABSTRACT

Introduction: Breast cancer is the most common malignancy in women worldwide. Breast cancer and its treatment have a direct impact on all aspects of a woman's life, as well as on breast cancer survivors, thereby affecting the fulfillment of her needs. The purpose of the study is to explore stigma and discrimination against breast cancer sufferers.

Methods: This study uses a qualitative method of interpretive phenomenology. Semi-structured interviews were purposively conducted from March to June 2022 with 14 women breast cancer survivors. The process of data analysis in this study was carried out based on Braun and Clarke.

Results: The three themes identified in this study include: a short duration of survival, being labeled as a suffering person, and social discrimination.

Conclusions: Breast cancer survivors experienced stigma regarding their cancer diagnosis. Thus, highlighting the rising need of health professionals' intervention in resolving and adapting to stigma and discrimination regarding breast cancer diagnosis in Indonesia..

Keywords: breast cancer; cancer survivors; discrimination; stigma

Introduction

Breast cancer is the most common malignancy in women worldwide. In women, breast cancer accounts for almost 1 in 4 cases. The number of breast cancer cases every year also always increases (Lee et al., 2021). In 2020, it was estimated that the number of new cases of breast cancer in the world is 2,261,419 cases (Ferlay et al., 2020). The incidence of breast cancer is the highest incidence of cancer in women in Indonesia compared to the incidence of cervical cancer, ovarian cancer, and other gynecological cancers (Pangribowo, 2019). The same incident occurred in Bali Province, as described in the study by Aryana, Adiputra, Prayudi, Permatasari, Setiawan, and Kuswardhani (2018), Balinese women who experienced breast cancer were 1,045 samples. In the study of Aryana et al. (2018), it was also explained that race or ethnicity might play an important role in the expression of certain breast cancer phenotypes. This role can be attributed to differences in genetics and lifestyle among women within each race.

The incidence of breast cancer in the province of Bali, Indonesia, is one of the highest. Based on data reported by Sanglah Hospital Denpasar, breast cancer patient visits from August to November 2020 there were 285 cancer patient visits from 1,380 patient visits at Sanglah Hospital Denpasar. The experience of breast cancer is an experience that greatly affects a woman's life. The results of recent studies confirm that it is very important to carry out health checks, address post-treatment concerns, and improve the well-being and quality of life of cancer survivors (Runowicz et al., 2016).

As in many Asian and Eastern background, in Indonesia, the view of illness or chronic disease is often influenced the culture and beliefs of the community.

Many illnesses are associated with negative views or stigma. Similarly, cancer is often viewed negatively, such as a karmic retribution, a form of God's punishment, is infectious, and so on (Orujlu et al., 2022; Phenwan et al., 2019). These negative perceptions of cancer developed into a stigma among many communities' way of viewing individuals with cancer.

Goffman (1963) first defined stigma as an attribute that leads to being discredited by society for a negative label of the person affected. The definition has since been conceptualized into different fields, including health-related stigma. According to Weiss et al. (2006), health-related stigma is a social process, characterized by exclusion, rejection, blame or devaluation resulting from experience, perception, or anticipation of negative social judgement related to a person's health condition.

The stigma that affects a woman with breast cancer can have an impact on the problem of meeting her healthcare needs. A study by Amane (2021) explains that, of all types of cancer, breast cancer is the type of cancer that has the most supportive care needs. On the other hand, many existing studies investigating cancer stigma were conducted in lung cancer patients or survivors and preferred cross-sectional methods.

An in-depth study of the stigma and discrimination among cancer survivors, in specific groups such as breast cancer, is, in contrast, relatively scarce. Especially in the unique cultural community of Indonesia, there is a knowledge gap on how the women with breast cancer were viewed or treated by their community. Meanwhile, perceptions of stigma and experiences of discrimination against breast cancer survivors are very important to understand. This study was conducted to fulfil the need to explore in depth, the stigma and discrimination experienced based on direct stories from breast cancer survivors in Indonesia

Materials and Methods

Research Design

The research design used in this study is an interpretative phenomenological qualitative research design to explore stigma and discrimination against breast cancer survivors. This research design was a concept from Heidegger which stated that the focus of hermeneutic inquiry was not the pure content of human subjectivity, rather, what the individual's narratives imply about what he or she experiences daily (Speziale et al., 2011).

Sample and Sampling

Participants in this study were determined by selecting individuals or participants using the purposive sampling method and saturation principles. The sample in this study was selected from the women with breast cancer survivors who were indicated to have had experiences getting a stigma and social discrimination after a cancer diagnosis. The inclusion criteria for the participants were: 1) able to communicate in Indonesian language, able to understand questions, and to express their experiences; 2) had been a breast cancer survivor for at least two years; and 3) had no cancer metastasis.

Data Collection Process

The first and the third authors collected the data using in-depth interviews. The interviews were conducted in Bahasa Indonesia from March - June 2022. The study was conducted at the oncology outpatient of Sanglah Hospital Denpasar. During the interview, the women were encouraged to elaborate on their experiences of what kinds of stigma were like for them and how they responded to them. Sample questions were *"What is your community's thought of the cancer diagnosis you experienced?"; "Is there any stigma from your community regarding the cancer you experienced? How did you respond to them?"*

All interviews were tape-recorded and lasted between 60 to 80 minutes. The interview tapes were transcribed. The researcher avoided personal bias by using a bracketing technique during the interview process. In this technique, the researcher sets aside personal beliefs and knowledge, not making judgments about what is observed or heard, and remains open to the data as they are revealed (Speziale et al., 2011).

Data Analysis Process

The second and the first conducted the data analysis. The process of data analysis in this study was carried out based on Braun and Clarke, (2006) regarding the thematic approach to analysis, namely identifying, analyzing, and reporting patterns (themes) in the data. The first stage is to read and re-read the subsets of interview transcripts independently and capture exciting elements from the coding data by the first and the second author. Throughout this coding process, the researchers conducted debriefing and reflexive writing simultaneously to generate themes and maintain a solid and oriented relation to the participants' experiences. When the final themes were defined, a research report was written up.

Data Validity

The validity of the data in this study enhances the trustworthiness of the findings, and a number of means of credibility were established. Due to the nature of qualitative research approach, the researcher themselves is the research instrument. As the research instrument, the researcher is obliged to fulfil the validity elements to gather representative data. One the elements of validity in qualitative research is researcher's credibility (Creswell, 2013).

The credibility of this study is established by the researchers, who are a nurse with experience in caring for women with breast cancer and members of an Indonesian cancer foundation. For these reasons, the researchers could build trust with participants by discussing the intimate details of their experiences. Furthermore, to enhance data credibility, confirmation and member-checking of the themes were established with the participants.

Results

Demographic Characteristics

There were seventeen participant candidates that fit the inclusion requirement. Of the seventeen candidates, three women expressed unwillingness to participate in the study, resulting in the final sample size of fourteen participants. The fourteen women who participated in the study ranged in age from 33 to 55 year with a mean age of 40 years. Twelve women were married and two women were unmarried (single). There was variation of educational background among the participants. Five participants had bachelor degree, three from senior high school, four from college with a diploma, and the others had master degree. Participants were workers, housewives, and civil servants. This study resulted in three themes, namely a negative view of women with breast cancer supported by three themes, including 1) short duration of survival, 2) being labeled as a suffering person, and 3) social discrimination

Theme 1: Short Duration of Survival

Several participants described that there are still many people who believe that someone will soon die when they are diagnosed as suffering from cancer. This affects the mentality of participants when interacting with other people because they are considered unfit to live. Participant 5, 47 years old, self-employed, explained that some people believe that people who have cancer will face death. She said:

> *"But still there are some people who believe cancer will not live long. Cancer can't be cured. Our mentality is affected too, right?" (P5)*

Participant 6, a 55-year-old woman, who was a housewife, conveyed that there is still a strong stigma attached to someone with cancer, one of which is considered a family disgrace. While in truth, breast cancer survivors also want to live a decent life like other people in general.

> *"I feel like I can't change people's views about cancer. I really hope that people are aware of cancer survivors, and start to realize how much we don't want to be privileged, no, but we just want to live a decent life. As survivors, we have the right to be accepted properly, not to be considered a family disgrace. Don't be thought of as someone who is so down that she is to be pitied." (P6)*

Participant 7, a 50-year-old woman, who works as a housewife, explained about hearing words that someone with cancer will not last long. She affirmed:

> *"Once, there were people who saw me. I heard bad words, he said 'cancer is scary, it doesn't live long' and then I said 'I'm sorry, if you look at me,' I say various things, 'it's better not to look at me, okay,' I answered that. So, he kept quiet and immediately apologized." (P7*)

Theme 2: Being Labeled as a Suffering Person

Several participants explained that they wanted people to stop talking about cancer patients because they did not like to be labeled as sick people. Participant 8, a 49-year-old housewife, said:

> *"I want to convey to the people around, please stop using the word sufferer. Because when someone is given the word lab suffers, she will label herself suffering. 'Survivors' or 'patients' is better. For example, such as patients who have finished undergoing cancer therapy. So the effect of the word sufferer as a sick person. The proof is that we can travel, we can work but why do people call me suffering like that. So, what do you feel like, it's like we were created by another group. You are a sufferer." (P8)*

Participant 9, a 33-year-old woman, unmarried, explained that there is a stigma attached to women who have breast cancer, namely, they are considered to have bad luck. Here is the participant's statement:

> *"It seems that there is a mistake in women who have breast cancer, there seems to be a stereotype type or label minded attached that bad luck happens to women, bad behavior to women. The woman did not dare to speak up like that. To express himself sick and*

> *when the woman is sick, maybe the work environment is not supportive, the family environment is also not supportive. So, I thought what do I need, such assistance.” (P9*)

Theme 3: Social Discrimination

In young unmarried women, the experience of breast cancer has a profound impact on their lives. Young women in Bali who experienced breast cancer and must undergo a mastectomy often get stigmatized as imperfect people; this is associated with the values that exist in Balinese society, which still prioritizes appearance so that sometimes someone who has incomplete limbs, such as having one breast removed, is often the subject of discussion, especially by the general public about breast cancer. Furthermore, in Balinese society, there is often a fear of having a female partner who has breast cancer because it is considered that it will carry bad genes for the offspring in the family. Participant 11, a woman aged 34 years, unmarried, explained that, when she had breast cancer, many friends did not want to hang out, and the opposite sex was not interested in her. She explained:

> *“I felt like I was being shunned when I got breast cancer or like I was being left behind. I feel that many people don't want to be friends with me anymore because of my condition after therapy. I feel more like that. I am also aware that the opposite sex of men would want a perfect partner, right, while I am not perfect anymore.” (P11)*

Participant 13, a 53-year-old woman, who was a housewife, explained that the people around her felt sorry for the participants when they had breast cancer. She stated:

> *"Yes, they feel sorry for me, right if people in the village are a bit scary to think that they have breast cancer, in the city it's normal. If you're in the village you say why you're sick like that, even though we're used to it. The proof is that we can move here and there.” (P13)*

Participant 6, a 55-year-old woman, who was a housewife, conveyed that there is still a strong stigma attached to someone with cancer, one of which is considered a family disgrace. Whereas breast cancer survivors also want to live a decent life like other people in general.

> *"I feel like I can't change people's views about cancer. I really hope that people are aware of cancer survivors, and start to realize how much we don't want to be privileged, no, but we just want to live a decent life. As survivors, we have the right to be accepted properly, not to be considered a family disgrace. Don't be thought of as someone who is so down that he is pitied.” (P6*)

Discussions

The main purpose of this study was to have a deeper understanding of the stigma and discrimination against women with breast cancer. Participants explained the need to change society's stigma about cancer survivors. Participants conveyed that there is still a strong stigma attached to women who have breast cancer, such as being considered not to live long, considered a person who suffers, considered a family disgrace, considered to have bad luck, and considered an imperfect woman. These findings were similar to several previous studies on cancer stigma in general (Huang et al., 2020; Shiri et al., 2018). In breast cancer survivors specifically, stigma impacting the self-identity, self-esteem, and body image has been proven to be a burden to the survivors' physical and emotional quality of life (Amini-Tehrani et al., 2021; Chu et al., 2020; Fujisawa et al., 2020; Yeung, Lu, & Mak, 2019).

The first theme identified in this study gathered that individuals with breast cancer have a short duration of survival or are short-lived. Similar sentiments were shown in the findings of a different study on cancer stigma (Bhattacharyya et al., 2018). Additionally, according to Nyblade et al. (2017), breast cancer and cervical cancer in women in India are considered infectious diseases both for children and even for society at large, considered as punishment, and considered incurable, and those who suffer from it will die quickly. Whereas breast cancer survivors also want to live a decent life like other people in general. In accordance with Solikhah et al. (2020), in Indonesia, women with breast cancer are considered to be dying. This causes women with breast cancer in Indonesia to feel ashamed and afraid to reveal their identity to the surrounding environment.

Unfortunately, there was no accurate statistical data on breast cancer survival rate in Indonesia to provide insight into the notion of breast cancer survivors being short-lived. According to World Population Review (2022), in its Global Cancer Survivor Rates, the survival rate of breast cancer in Indonesia was 77,70%. However, the factors influencing such value were not stated clearly. The researchers deliberated that such finding was the result of several factors.

When facing breast cancer diagnosis, patients tended to seek medical treatment at the later stage of cancer. Oftentimes, patients seek traditional or folk medicine to treat their illness. This resulted in worse treatment outcomes. This was supported with the findings of Solikhah (2020) that stated patients chose traditional treatment before seeking medical treatment when the symptoms worsen. Additionally, the healthcare facilities in Indonesia were not equally equipped to treat cancer diagnosis. Furthermore, individuals with breast cancer who live in rural areas or provinces with less comprehensive healthcare facilities might find seeking proper medical treatment a challenge. Thirdly, while cancer treatments were covered in National Health Insurance, the coverage is applicable only when cancer diagnosis is established, other costs, such as the screening phase and many miscellaneous costs, must be covered by the individuals and their families. The cost could amount to an enormous number, which discourages the women with breast cancer to seek treatment.

The second theme identified was Being labeled as a suffering person. The participants explained that they were uncomfortable with the use of labels such as sufferer or unlucky person when addressing them. This may impair the quality of life of the participants in this study. The reality in Bali, according to the participants, is they are not allowed to participate in religious rituals anymore because they are viewed as a sick person. These labels were more prevalent in sub-culture communities or low to middle-income countries (LMIC) culture as opposed to high income countries' view of cancer. Similarly, in high income countries stigma about cancer was low or confined in small communities and small percentage of cases, for example the stigma around male breast cancer survivors (Midding et al., 2018; Vrinten et al., 2019).

The last theme identified was social discrimination. The discrimination referred to the ability to participate in social engagements or interactions. Owing to the cultural beliefs, a breast cancer diagnosis may delay a woman's marriage and hinder their interaction with family members and the community. This could negatively impact the woman's willingness to seek treatment and support in their experience with cancer, which is directly adverse to optimal outcomes. Furthermore, it can cause women with breast cancer to be isolated from their surroundings. This is consistent with the results of existing research that, in general, women with breast cancer receive negative stigma from the general public (Dewan et al., 2021; Jin et al., 2021). Therefore, an explanation is needed for the surrounding community about breast cancer so that patients who are undergoing cancer therapy or who have completed cancer therapy are not ostracized by the surrounding community.

This study highlights the importance of adding nursing interventions to overcome the stigma that occurs in the community about breast cancer (Kang et al., 2020), such as carrying out educational programs about marital problems and relationships after a cancer diagnosis. This can increase general public knowledge about empathy and self-acceptance of cancer survivors so that there is no fear when having family members or partners who have breast cancer or other gynecological cancers (Reese et al., 2019). While cancer stigma itself has received much attention, interventions to alleviate cancer stigma negative impact, in contrast, need further exploration (Akin-Odanye & Husman, 2021). Recent research by Afiyanti et al. (2020) highlights the needs of breast cancer survivors, including explaining cancer to others and moving on with their life. The results of this study explain that breast cancer survivors have a need to explain this cancer to other people, in this case, namely the community (explaining cancer to others), and want to return to life as it should be (moving on with their life) because participants only want to return to a normal life without the bad stigma attached to her as someone who is helpless, has bad luck, disgraces her family, is close to death, or is considered an imperfect woman.

The results of this study are also expected to provide an overview to nurses and other health workers regarding the needs to accommodate psychological post-cancer treatment, especially about the stigma on breast cancer survivors. In addition, the findings of this study raise the expectation of the availability of consultation on problems experienced by patients and cancer survivors, which triggers the importance of the presence of oncology specialist nurses in existing cancer care installations. Furthermore, a specific program is needed such as comprehensive nursing care provided by nursing care providers to help cancer survivors meet their needs so that there is an increase in the life expectancy or survival rate of cancer survivors in.

Limitation of The Study

Several researchers realize that there are limitations and shortcomings in this study. The first includes the stigma issues, which are generally sensitive and tend to be ignored, especially in Eastern culture. The participants of this study might not fully to express their feelings when discussing their experiences and preferences. The second is the small sample size, the characteristic of qualitative study, which may cause the study to be limited to a certain population, that is, in women attending the research cancer hospital. Therefore, it may not represent the general population and it is difficult to establish transferability of study results.

Conclusions

This study showed the stigma and discrimination experiences of breast cancer survivors faced. It can be concluded the breast cancer survivors received negative views from their community as a result of their cancer diagnosis. The results of this study offer insights, information, and understanding into experiences of Indonesian women with breast cancer related to the various stigmas from their community. They were blamed by the community as a dying person, a sick person, and various social discriminations, which lowered their quality of life. There is an opportunity for oncology nurses in Indonesia to assume the roles and responsibility to work with the breast cancer survivors in resolving the stigma they experienced and disseminating information to the society that breast cancer survivors are not what they are negatively assumed to be.

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Conflict of Interest

The author declares that there is no conflict of interest in this study.

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ORIGINAL ARTICLE

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Analysis factors related to prisoner's resiliency in Rutan Perempuan kelas IIA Surabaya

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ABSTRACT

Introduction: Staying in prison as a female prisoner will affect her physical and psychological conditions. Psychologically, the emotional state and mental health of women are different from men, and the prevalence of poor mentality among female prisoners is higher. Such a situation can be avoided if the prisoners have good resilience. One of the efforts to increase resilience is to know the factors related to resilience through this research.

Methods: This is a correlational study with cross-sectional approach. The population was all prisoners and detainees in Rutan Perempuan Kelas IIA Surabaya with a sample size of 115 respondents. The variables of this study are individual factors (detention status, recidivism, length of detention, latest education, previous employment, and criminal acts committed), emotional regulation, social support, stigma, and resilience. The data were collected using a questionnaire and analyzed using multiple linear regression.

Results: There is a relationship which shows that emotional regulation (p = 0.012; r = 1.223), social support (p = 0.003; r = 1.363) can increase resilience while stigma (p = 0.010; r = -1.383) can reduce the level of resilience in prisoners and prisoners. Meanwhile, individual factors were not associated with resilience (p = 0.596; 0.627; 0.298; 0.170; 0.857; 0.457).

Conclusions: Increasing resilience in prisoners and detainees can be achieved by increasing emotional regulation and social support as well as reducing stigma against prisoners and detainees by doing the active participation of prisoners and detainees, detention center officers, and families or people closest to inmates and holding a positive activity within the prison.

Keywords: emotional regulation; prisoner; resiliency; social support; stigma

Introduction

Crime is a form of behavior that violates social rules applied by legal entities. Anyone can commit crimes. Both men and women can occur at the age of children, adolescents, adults, and even the elderly (Raisa & Ediati, 2016). A person forced to stay in prison because he is serving a sentence will affect his physical and psychological condition (Tomar, 2013). They will find it difficult to adjust their lives and follow the rules, be separated from their families, lose goods and services, lose the freedom to live outside, or lose their sexual patterns. That will cause a person to get pressure from living in a detention center which causes them to become stressed (Fajarani & Ariani, 2017). Female prisoners and detainees have the same rights and obligations as male prisoners and detainees. However, female prisoners and detainees' psychological, emotional, and mental health differ from male prisoners and detainees (Ardilla & Herdiana, 2013). The prevalence of poor mental well-being among female prisoners is higher among the general prison population (WHO, 2014). In addition, Fajarani & Ariani (2017) shows that as many as 80% of female prisoners experience mild stress.

The pilot study was conducted at Rutan Perempuan Kelas IIA Surabaya by interviewing two detainees who said that most of the residents usually cried a lot in the first week of detention because they had never faced a situation like this before. However, as time goes on with the activities held in the detention center, they will become more accustomed to the state of the detention center. Prison officials said that in the first one to two months of detention, the prisoners usually did not accept the situation and showed several negative responses, such as excessive sad behavior. They facilitated counseling with a psychiatrist so that prisoners could accept the situation and could continue to live their lives well inside the detention center. This situation can be avoided if the prisoners have an excellent resilience level. Resilience can affect mental health. People with high levels of resilience tend to have better mental conditions (Kowalkowska et al., 2017). Knowing the factors related to resilience is an effort to increase resilience and prevent a decrease in mental welfare in prisoners and detainees.

Materials and Methods

This research is quantitative with a correlational design and a cross-sectional approach. This study assessed the independent and dependent variables only once at a time, with no follow-up. The sampling technique is the probability sampling method with a simple random sampling technique. The number of respondents in this study was 115 with criteria, namely prisoners and detainees at Rutan Perempuan Kelas IIA Surabaya who were detained for more than three months. The independent variables in this study are demographic factors (detention status, recidivism, length of detention, latest education, previous employment, and criminal acts committed), emotional regulation, social support, and stigma, while the dependent variable in the study is the resiliency of prisoners and detainees. Data collection in this study used a demographic questionnaire, the Emotion Regulation Questionnaire (ERQ) to measure emotional regulation, the ENRICHD Social Support Inventory (ESSI) to measure social support, the Self-Stigma Scale-Short (SSS-S) to measure stigma, and Connor Davidson Resilience Scale (CD-RISC) to measure resilience. The instrument used in this study has been tested for validity and reliability by the researcher and has asked the owner permission to use their questionnaire as an instrument in this study.

Before collecting the data, prospective respondents were selected according to predetermined criteria. Then the prospective respondents were collected to listen to an explanation of the purpose and benefits of doing this research. If the prospective respondents were willing to participate, then the respondents would be given informed consent to become research respondents. Respondents filled out the questionnaire in the room provided. During filling out the questionnaire, the respondent was accompanied by the researcher so the respondent could ask if there was a question that was not understood. Before the respondent leaves the room, the researcher will re-check the completeness of filling out the questionnaire so that if there is incomplete data, the respondent can immediately complete it.

This research has gone through an ethical test and was declared ethically worthy by the Health Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga (certificate number 1878-KEPK). This research took place at Rutan Perempuan Kelas IIA Surabaya from

Table 1 Characteristics of prisoners and prisoners' respondents

Characteristic	Frequency	Percentage (%)
Age		
< 25 years	25	21,7
26-35 years	47	40,9
36-45 years	26	22,6
46-55 years	15	13,0
> 56 years	2	1,7
	115	100,0
Detention status		
Detainee	67	58,3
Prisoner	48	41,7
	115	100,0
Recidivism		
Been detained	6	5,2
Never been detained	109	94,8
	115	100,0
Length of detention		
3-6 months	63	54,8
> 6 months	52	45,2
	115	100,0
Latest education		
Uneducated	0	0
Primary school	13	11,3
Secondary school	19	16,5
High school	55	47,8
Diploma/College	28	24,3
	115	100,0
Previous employment		
Unemployed	16	13,9
Student	5	4,3
Entrepreneur	31	27,0
Employees	48	41,7
Civil Servants	0	0
Labor	1	0,9
Etc.	14	12,2
	115	100,0
Criminal acts committed		
Narcotics	55	47,8
Theft	11	9,6
Embezzlement	29	25,2
Fraud	3	2,6
Child human rights violations	4	3,5
Etc.	13	11,5
	115	100,0

Table 2 Distribution of resilience indicators among respondents

Parameters of Resiliency	**Category**		∑
	High	**Low**	
Personal competence, high standards, and tenacity	64 (55,7%)	51 (44,3%)	115
Tolerance of negative affect and strengthening effects of stress	62 (53,9%)	53 (46,1%)	115
Positive acceptance of change and secure relationships	77 (67%)	38 (33%)	115
Control	81 (70,4%)	34 (29,6%)	115
Spiritual influences	79 (68,7%)	36 (31,3%)	115

November 2019 – January 2020. The data analysis used in this study was a logistic regression statistical test (p ≤ 0.05).

Results

47 respondents in the age range 26-35 years old took the highest proportion (40.9%) compare to other range and most of the respondents were detainee (58.3%). In addition, almost all respondents had never been detained before (94, 8%) and they lived in the remand center for less than six months (54.8%). Furthermore, 47.8% respondents (n = 55) just graduated from high school, 48 respondents (41.7%) were previously private workers, and as many as 55 respondents (47.8%) detain because of a narcotics case (Table 1).

Out of 5 parameters of resiliency, control ability was the highest with 70.4% respondent showed high control abilities. In contrast, almost half of the respondents have low ability to tolerate the adverse effects of stress and low in personal competence, high standard and tenacity (Tabel 2).

The logistic regression test results on individual factors showed that the detention status variable was p = 0.596; recidivism variable p = 0.627; length of detention variable p = 0.298; education variable p = 0.170; previous employment p = 0.857; and the variable of criminal acts committed p = 0.453 not related to the resilience of prisoners and detainees at Rutan Perempuan Kelas IIA Surabaya with a significant p-value <0.05. The results of the logistic regression test showed that the emotional regulation variable was associated with a value (p = 0.012) and value (r = 1.223), which means that the higher the emotional regulation, the higher the level of resilience in prisoners and detainees. The social support variable has a value (p = 0.03) and a value (r = 1.363), which means that the higher the social support, the higher the level of resilience of prisoners and detainees. The stigma variable is related to value (p = 0.010) and value (r = -1.383), which means that the lower the stigma, the higher the level of resilience of prisoners and detainees

Discussions

Individual Factors

The analysis of this research shows no relationship between detention status and the resilience of prisoners and detainees. That occurs because the treatment and facilities available to prisoners and detainees are not differentiated, so neither the status of prisoners nor detainees affects the prisoners' resilience level. This study also shows no relationship between recidivism and resilience in prisoners and detainees. According to the researchers, recidivists should have better resilience than non-recidivists because they already have experience dealing with the same stressors. Research conducted by Anggraini, Hadiati, and A.S. (2019) said that non-recidivists had a higher stress level than recidivists but had low resilience.

The results showed no relationship between the length of detention and the resilience of prisoners and detainees. According to Anggraini, Hadiati, and A.S. (2019), length of detention is related to resilience due to the duration of prisoners and detainees exposed to stressors and time to adjust. The absence of a relationship between the length of detention and resilience in this study may be because the length of detention in this study is less specific, so there is no difference. This research also shows no relationship between education and work with the resiliency of prisoners and detainees. This statement contradicts the research of Anggraini et al. (2019), which states that education affects an individual's ability to absorb new information and the learning process so that higher resilience can be obtained for prisoners and detainees with a higher education level. This study is different because many respondents dropped out of school, so there is bias in the research results.

Based on the analysis, this research also shows no relationship between criminal acts and the resilience of prisoners and detainees. According to the researcher, the criminal acts committed are not related to resilience because all types of criminal acts can be a stressor for prisoners and detainees. Meanwhile, according to

Table 2 The results of the analysis on the factors that influence the resilience

Variable	**B (r)**	**Sig. (p)**	**Exp (B)**
Detention status	0,258	0,596	1,294
Recidivism	0,525	0,627	1,690
Length of detention	-0,524	0,298	0,592
Latest education	-0,373	0,170	0,689
Previous employment	-0,025	0,857	0,975
Criminal acts committed	-0,124	0,457	0,884
Emotion regulation	1,223	0,012	3,397
Social support	1,363	0,003	3,909
Stigma	-1,383	0,010	0,251

research conducted by Anggraini, Hadiati, and A.S. (2019), the level of resilience of prisoners and detainees with narcotics cases is lower due to the absence of a detoxification process. That is different from the research conducted by researchers because in this research place, if some prisoners or detainees need detoxification, they will be transferred to the rehabilitation center.

Emotion Regulation

Based on the analysis of this study shows that there is a relationship between emotional regulation and resilience in prisoners and detainees. This statement is in line with previous studies which show that the higher a person's emotional regulation ability, the higher the level of resilience (Widuri, 2012; Rizki, 2016; Sukmaningpraja & Santhoso, 2016). Research conducted by Marsha et al. (2019) said that prisoners and detainees who cannot control their negative emotions and accept the fact that they have to stay in prison tend to be alone and have difficulties solving problems.

According to researchers, the ability to regulate emotions is crucial for prisoners and detainees to be resilient because resilience means they must be able to control their emotions when faced with a stressor or problem. This opinion is in line with the opinion of Kay (2016), which states that by understanding an effective emotional regulation strategy, an individual can reduce negative emotions and increase positive emotions, which is essential in increasing resilience. According to research by Britt et al. (2016), all definitions of resilience involve emotionally tricky experiences and the ability to bounce back. To be able to bounce back from this challenging experience, the person must be able to control their emotions. Thus, it can be concluded that there is a relationship between the ability to regulate emotions with the resilience level.

The results showed that more than half of the respondents used an emotional regulation strategy to suppress their emotional expression by not showing their true feelings. This finding is in line with research conducted by Rizki (2016), which also shows that prisoners and detainees tend to hide sadness or disappointment and other emotions they feel. So that we need a media or place to help prisoners and detainees so that they can positively express their emotions. In this case, the detention center officers can provide and monitor empowerment activities and free time as a forum for inmates and detainees who, whether they realize it or not, have helped them to vent their emotions.

Social Support

This study shows a relationship between social support and the resilience of prisoners and detainees. This statement is in line with research conducted by (Raisa & Ediati, 2016; Tunliu, Aipipidely, and Ratu, 2019; Hafidah & Margaretha, 2020), which states that the higher social support, the higher a person's level of resilience. Research by Marsha, Erlyani & Fauzia (2019) also states that subjects whose families rarely visit have not handled their problems and negative emotions optimally. That is in line with research by Riza & Herdiana (2012), which states that social support from family or closest people also helps build resilience.

Researchers believe that prisoners and detainees need social support to become resilient because social support can create an environment that makes prisoners and detainees feel understood. It can help them deal with stressors or their problems and adapt and make it a motivation to get back up and carry out daily activities in the detention center. The researcher's opinion is in line with the statement of Hidayat and Nurhayati (2019), which states that with social support, individuals will feel support and hope that makes them able to deal with stress, adjust themselves, and rise again.

The study results indicate that the social support most prisoners and detainees feel is emotional support obtained from family and relatives who visit prisoners and detainees. Research by Meyers et al. (2017) suggests that there are two types of visitors, supportive visitors, and unsupportive visitors. Prisoners and detainees who are met by supportive visitors are less likely to commit offenses in the detention center, have good mental health, and have high expectations for social support when they are released so as not to become recidivists. The visitation program at the detention center is significant for prisoners and detainees. The detention center can organize the visitation program properly so that the detention center can become a healthier and safer community

Stigma

Based on the analysis, this study shows the relationship between stigma and resilience in prisoners and detainees. This statement is in line with the research by Crowe, Averett, and Glass (2016), which states that the higher the stigma a person feels, the lower the level of resilience. Fitryasari et al. (2018), stated that stigma is a risk factor if it is not regulated correctly to achieve a resilient condition. According to researchers, the more prisoners and detainees feel a high stigma, the lower their resilience level because stigma can cause prisoners and detainees to close themselves or be isolated by the environment so that they cannot seek or get help in overcoming stressors or problems they are experiencing. This opinion is in line with the research of Corrigan and Rao (2013), which states that stigma can lead to a state of social isolation. According to Caie (2012), stigma makes it difficult for prisoners and detainees to build meaningful relationships that can help them return to their communities as active and productive people. Crowe, Averett, and Glass (2016), in their research, stated that stigma could cause an individual to refuse someone's presence or help, resulting in them being unable to achieve a resilient state.

The results showed that behavior was the highest indicator of stigma felt by prisoners and detainees. Self-stigmatizing behavior is an advanced stage that leads to self-insult and withdrawal from social interactions that are negatively associated with self-esteem (Mak & Cheung, 2010). In this case, reducing the level of self-stigmatizing behavior could increase the self-esteem of prisoners and detainees. One of the activities to increase self-esteem in prisoners and detainees is activity group therapy activities. Yusuf et al. (2007) showed an increase in self-confidence, which is shown by the ability to identify positive aspects of self, solve problems, and accept situations. Of course, that must be done with the active participation of prisoners and detainees, family and relatives, and prison officials so that self-stigmatizing behavior does not continue and makes prisoners and detainees resilient.

Conclusions

Based on the results and discussion, it is known that to be resilient, prisoners and detainees must be able to control their emotions in facing problems and get sufficient social support because social support can create an environment where prisoners and detainees feel helped to adjust. Besides, to increase resilience, the stigma on prisoners and detainees must be lowered so that prisoners and detainees do not close themselves and can seek help in overcoming the problems they are experiencing. In this case, the detention center is essential in improving emotional regulation and social support and reducing stigma on control and detainees. The detention center can carry out empowerment activities, help the prisoners and detainees to release the energy through exercise, increase the visit quota, and provide group activity therapy.

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ORIGINAL ARTICLE

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Fracture patient experience in undergoing traditional massage therapy (Topu Bara) in Maluku Province: phenomenology study

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ABSTRACT

Introduction: In Indonesia, especially among the Maluku people, there was a culture of seeking traditional fracture treatment, namely "Topu Bara." Their belief has been passed down from generation to generation who believe that conventional medicine (Topu Bara) can cure the problem of fractures experienced by sufferers The study aimed to explore patient's fracture healing experience in Topu Bara

Methods: The method used wasa phenomenological study that used deep interviews from August to September 2021 The participants were taken by purposive sampling, adults aged 21 to 59-years old, and were in the second or more of healing series Data originated from 15 participants Interviews were recorded, transcribed verbatim, and subjected to Collaizi analysis.

Results: The results of the study found 7 themes, including causes of fracture, time events, action taken directly after inside, pain experiences during handling in "Topu Bara" therapy, coping of the patients, pain management, and advice given by healer to other participants.

Conclusions: Most of them stated that safety and comfort were the priority for fracture healing The concept of culture in the behavioral alteration of fracture healing can have an impact on the participants.

Keywords: family; educational program; perspectives; maternal critically ill patient Fracture, traditional healing, topu bara, transcultural nursing

Introduction

Fracture is a crucial problem that is difficult for health professionals to handle Treatment failure often occurs so it is deemed necessary for proper treatment Fractures have a high prevalence rate Common causes of fracture are accidents traffic accidents, work accidents, and other accidents (Nadler et al., 2014). Worldwide, road injuries cause disproportionately more than 1.3 million deaths and many more disabilities each year (Yuniar & Nasution, 2017). Based on studies conducted by Mirhadi et al. (2013), the average incidence of fractures associated with traffic accidents was 14.5 and 4.2 per 100,000 people (Sugiharto et al., 2016).

According to the World Health Organization (WHO), India ranks first as the country with the highest number of deaths due to traffic accidents. Meanwhile, Indonesia ranks 5th (Sudayasa et al., 2018). Indonesia is reported to have experienced an increase in the number of traffic accidents by more than 80% (Darmawan, 2013). In Indonesia, the death toll from traffic accidents reaches 120 people per day (Akhrani & Ardyaningrum, 2019). The prevalence of injury by province from 2007-2018 increased gradually with all age categories including in 2007 around 7.5% (Arie, 2017), increased in 2013 to 8.2% (Roma, 2013), and lastly in 2018 to 9.2%. Injury events can occur anywhere, such as on roads, homes and neighborhoods, schools, or workplaces (Mirhadi et al., 2013). Traffic accidents according to 35 provinces and the highest characteristics are in the North Sulawesi region (3.5%), and Maluku itself ranks 30th (2.0%). Types of fractures suffered, are namely in the tibia, hip, femur, ankle, and knee (Kemenkes RI, 2018).

Fractures are indirectly treated by medical treatment. However, this is not following the reality in society (Agarwal-Harding et al., 2015). Most people prefer alternative medicine, where they believe that massage therapy (Topu Bara) can solve the fracture problem in patients without surgery or plate placement. Massage is an effort to relax the stiff part of the muscle because it has not been moved for a long time before exercise therapy (Kautsar, 2018). The proportion of utilization of traditional health services in Indonesia is 31.4 percentile, and in the Maluku area is 14.5 percentile (Kemenkes RI, 2018). While Topu Bara therapy is a typical name from the Maluku region for one of the traditional therapies for patients with fracture problems, in the Java area it is known as a denial putting therapy (Maelissa et al., 2020).

In Indonesia, Sangkal putung therapy is still widely used in the community; this is supported by research in Central Java that people prefer to seek treatment for alternative treatments of Sangkal Putung compared to modern hospitals that are easily accessible and have advanced developments in orthopedic and radiological surgery (Kautsar, 2018). Based on a preliminary study in February 2021, it was found that, in the Maluku Region, four areas have Topu Bara treatment, including Liang (Ambon City), Masohi (Central Maluku Regency), Kamarian (West Seram Regency), and Namlea (Buru Regency). On average per day, there are about 10-16 people who come for treatment. Patients who received treatment experienced fractures in the tibia, hip, ankle, and knee areas, and the average number of patients came without complications. Topu Bara's treatment has never received a warning from the local government before. Based on the results of interviews conducted by researchers in February 2021, data from three participants showed that the reason those who had experienced fractures and underwent Topu Bara massage therapy was due to the fast-healing process, saturation, and ineffective medical services; information related to this treatment was obtained from relatives/family. Based on the results of the interview, the researcher wanted to explore the experiences of fracture patients who underwent traditional massage therapy in Maluku Province.

Materials and Methods

Study Design

We used a phenomenological study using in-depth interviews. This methodology allowed researchers to explore the phenomenon (Yuniar & Nasution, 2017) of fracture sufferers who decided to go to traditional Topu Bara massage for fracture healing. These can be identified through clinical nursing problems and asking researchable questions (Suarilah et al., 2017). Likewise, Sudayasa et al. (2018), suggest that self-interest can be the driving force needed to formulate research questions. To some extent, the practitioner then needs to identify and develop an interest in potential changes in practice problems, which are usually stimulated by patient preferences and dissatisfaction, quality improvement data, practitioner inquiries, evaluation data, or new research data (Mulyono, 2017). The data collection process was for two months from August to September 2021.

For this study, the participants were taken by purposive sampling, adults aged 21 to 55-years old and were in the second or more of healing series visiting. Data originated from 15 participants. Interviews were recorded, transcribed verbatim, and analyzed. There are seven participants taken by purposive sampling, aged 21 to 55-years old and already treated with Topu Bara for less than two times, more and almost finished.

Respondent

For this study, participants were taken by purposive sampling. The inclusion criteria in this study included: Adults aged 25 to 55 years and ranked second or more in the series of healing visits. Exclusion criterion was: Those who do not have a history of fractures with a history of Topu Bara treatment. Data come from 15 participants, recorded interviews, transcribed verbatim, and analyzed using the Collaizi method.

Data Analysis

The data analysis method was adopted from Collaizi (1978) (Maelissa et al., 2020) as below: Describing the phenomenon under study by trying to understand the phenomenon of the patient's experience as well as coping strategies they adopt through the study of literature. In addition, researchers were trying to dive in and immerse themselves in a state of participant's experience taking alternative healing by Topu Bara. Transcribing data interviews enabled to describe the experience of patients with fractures who went for Topu Bara. Thus, collecting descriptions of the phenomenon through the opinion of participants and reading those data two to three times thoroughly until able to

Table 1. The Charateristics of participants

Participants	Age	Sex	Employee Status	Type of Fracture	Reason
Ab	54	Female	Midwife	Right Hip	Traffic accident
Jd	21	Female	College student	Right knee	Fall
Ds	37	Female	Housewife	Right Carpus	Fall
Da	47	Male	Motorcycle taxi driver	Left Tibia	Traffic accident
Gh	59	Female	Civil servant	Left Clavicle	Traffic accident
Hs	43	Male	Army	Right ankle	Fall
Jk	46	Male	Government employee	Lumbar	Fall
Gi	55	Male	Fisherman	Right knee	Fall
Dk	42	Male	Fisherman	Right ankle	Fall
Hn	33	Male	Motorcycle taxi driver	Left Tibia	Traffic accident
Mn	22	Male	College student	Right Tibia	Traffic accident
Rj	31	Male	Nurse	Left ankle	Fall
Hi	46	Male	Fisherman	Left Tibia	Traffic accident
Bd	27	Female	Housewife	Right Hip	Traffic accident
Hi	34	Male	Fisherman	Left Tibia	Traffic accident

understand the experience of patients. Additionally, reading the entire descriptions of the phenomena that have been submitted by participants. For understanding the experiences of the participants, the entire transcript of the interview was read, and significant statements selected and following the goals for analysis. Significant data were identified by re-reading the statement and trying to find keywords that were the core of the statement. Every keyword was studied and then grouped into categories. This is followed by re-reading the entire existing category, comparing, and looking for similarities between these categories, and eventually grouping similar categories into themes. Passed through to the theme found in the data it was then written into a description of the relevant experience of participants. Participants were then asked to read the description of the study. This was done to determine whether the description that had been developed by researchers followed the state of the respondent's experience. Analyzed data obtained during validation to the participants was put in the final description to enable the readers to recognize the experience of participants as perceived during the Topu Bara fracture healing process.

Data Collection

The Researchers conducted research in four locations for Topu Bara treatment located in the Maluku Region, including Liang (Ambon City), Masohi (Central Maluku Regency), Kamarian (West Seram Regency), and Namlea (Buru Regency). Participants were interviewed while undergoing treatment with the therapist. The average length of the interview ranged from 45-60 minutes per participant. Ten questions were asked to the participants by conducting in-depth interviews. The opening question posed to the participants was "How long have you been on Topu Bara treatment?" The interviews were stopped when the data were saturated. When collecting data, there were 15 participants due to data saturation. All data taken from the interviews were recorded, transcribed, and validated by double-checking the participants. Thus, valid data are then analyzed.

Ethical Consideration

All the participants gave their informed consent to be involved in this study. This study has been registered and passed the research ethics committee of the Health Research Ethics Commission of the Faculty of Nursing, STIKes Maluku Husada with letter number RK. 089/KEPK/STIK/VIII/2021.

Results

The participants of this research are described in Table 1. They are in the second and more visit to traditional massage therapy (Topu Bara) in Maluku Province. There are seven themes identified from the results of qualitative data analysis collected through in-depth interviews.

Theme 1: Causes of fracture

Almost half of the participants had fractures by falls and traffic accidents.

"My father knew well the father of the healer. I was around ten when I fell from a mango tree and my father took me here and I was satisfied with the result. My leg was normal after that (he exposed his right leg), *I had no difficulties. Even though not all my extended family agreed to go to this Topu Bara* (for fracture healing, another family member went to another traditional massage)*, I am sure this one is the most suitable for me."* (Rj, 31-year-old with fractured left ankle).

Theme 2: Time events

A small percentage of participants experienced more than a year. Almost all of them suffered a closed fracture less than three months ago. There was one of the participants experienced a fracture one week ago. Those participants were already getting treatment at the time of the interview which was at their third visit. Although each visit always brought positive progress, i.e., the range of motion that extends and pain are reduced, it was not denied that the pain was still present when the healer did massage. Overall, everything written above did not deter the participants to stop coming for treatment.

"I broke a bone in my left leg while working as a motorcycle taxi driver for 2-3 months ago, when I was driving a motorcycle when it hit a tree." (Da, 47-year-old with fractured Left Tibia).

Theme 3: Almost taken directly after inside

Almost no participant went directly to the traditional Topu Bara massage therapy location, where the interview was taken, at the time after the incident for healing. One participant went straight to other than traditional massage therapy. Most headed to the hospital. Less than half of them rushed to the traditional massage therapy after being less satisfied with the handling of service and they got suggestions as to the traditional massage therapy directly by the physician.

"This was not my first experience going to Topu Bara to get treatment for my clavicle; I had gone to another traditional massage. It seemed I was a Topu Bara's adventure.hahaha (laugh). *I heard too many suggestions, so I compared what my friend said, and which one was the best based on my personal views. Finally, this Topu Bara helped me much."* (Gh, 59-year-old with fracture left clavicle).

Theme 4: Pain experiences during handling in traditional massage therapy (Topu Bara)

Almost all participants said a similar statement when they began therapy/massage as a part of fracture treatment by a healer at the traditional Topu Bara massage therapy center, starting from the pain of mild to severe. One participant said that he combined the traditional massage therapy treatment with physiotherapy at one of the state hospitals. This respondent stated very significant progress in the healing process. The pain was present when the massage was processed by the healer. However, pain can be reduced to the level of mild pain after the massage is finished.

"That was a magic power or something like that. In my religion (Islam), *a selected person may be given by Allah* (God) *that kind of ability; they were able to cure without medication. I heard the healer always start with prayer before and after doing massage."* (Tn Da, 47year-old, fractured left tibia)

Theme 5: Coping of the patients

Almost all the participants had positive responses to the treatment they got from traditional massage therapy. There were no statements from the respondents that they would stop the treatment process any time when they had no intention as to the outcome.

"Three days ago, after she finished (the healer) *with massage, she told me that the bone was joined well. I was very grateful to hear that. I wish* (now) *she will inform me that the bone conjunctions were strengthening than before. My fracture is more difficult to be healed compared to others* (because of that) *I was suggested to immobilize this knee. At home, my husband and sons help me with my daily needs."* (Gi, 55-year-old, fractured right knee).

Theme 6: Pain management

Medication such as painkillers oral was suggested by the healer. The healer informed the participant the name of the analgesic oral and topical to buy at the medication store. In addition, the healer also recommended some multivitamins to support bone union and encouraged avoiding certain foods.

"You must know this kind of analgesic? (She showed a blister of analgesic to reduce pain), *feel free to ask all patients here* (at Topu Bara)*, they should bring the similar thing."* (Ds, 37-year-old with fracture right carpus)

"Look! This ointment is burning my skin (showing his right hip). *The healer recommended me to have this. I bought it from medicine store. It is limited, so the price was a bit expensive."* (Ab, 54-yearold, fracture right hip).

Theme 7: Advice given by healer to other patients

The first participant was advised by the healer to go to a physician when they first arrived at traditional massage therapy. Participants thought that traditional massage therapy was advisable because it not only solved the physical problem but also psychological and/or spiritual problems caused by fracture Almost all of the participants declared that the severity of a fracture should be attended by a medical professional first before traditional massage therapy.

"Before I went to Topu Bara for treatment, I was previously treated at a doctor. But after two months of

treatment, it showed no cure. So, I was advised by my family to try the treatment at Topu Bara. Initially the therapist suggested that you must first believe that the fracture you experienced could heal after undergoing the Topu Bara treatment. I was not allowed to undergo Topu Bara therapy at other therapists. Before treatment, the therapist first reads a prayer as a healing ritual." (Hs, 43-year-old, right ankle).

Discussions

Traditional massage therapy (Topu Bara) as an alternative for fracture healing was recommended by family, relatives, and close friends. No one participant came to traditional massage therapy on her/his initiative. A positive statement from previous patients became a strong motivation to make a final decision regarding fracture healing (Sudayasa et al., 2018). The healer as the center of the healing process of fracture at a Topu Bara center practiced a supernatural approach through massage which was perceived by participants. They believed that every healer at a Topu Bara center had that kind of power.

They expressed that, during this massage process, participants experience a pain sensation. To reduce pain, the healer recommended the name of an oral or topical painkiller. Although they did not exactly know the series of visits needed for bone recovery, all participants said that they wanted to get well soon so they followed what the healer suggested.

The healer sometimes informed about the bone healing process after the massage was finished. Everything that comes from the healer during the healing process was perceived positively by participants. Implicit in the results of interviews was sources of hope and advice conveyed such as others suffered the same fracture. It was not merely because of lack of funds for medical treatment (Table 1) as all participants were financially independent, but they came to a Topu Bara center for various considerations and reasons.

Family, relatives, and close friends who suggested them to have Topu Bara treatment were fully attentive and followed the result of every visit. Further, during the waiting time for healing, most participants talked to each other and shared their experiences. Participants perceived that situation was not found in any hospital. It has been stated that perception is the major social aspect so that people are freed from using services of an alternative based on their perspectives (Mulyono, 2017). In addition, treatment by a healer at a Topu Bara center as perceived by the public works, most stating that cost was not relevant. Almost all of the respondents knew the suitability of the herb used in techniques and they believed the herb is very useful in fracture healing (Suarilah et al., 2017).

Additionally, based on the background of participants, demographics, economic, religion and culture, and economic, vary from middle to high economic level, Muslim, and Maluku Province. Further, even though the coverage of health insurance provided by Indonesia's government was fully funded for any hospital service, it does not replace the existence of Topu Bara.

Generally, participants believed in the medical services, but they are also searching for an alternative treatment that did not only focus on the physical problem as they perceived it. It is stated that negative perception makes public attitudes toward complementary medicine negative (Agarwal-Harding et al., 2015). It has been expressed by a participant that a Topu Bara healer was able to provide a sense of confidence that they will recover. The spiritual characteristic was a basic that bridged the participant's expectation as to the bone recovery (Mirhadi et al., 2013). This was the less than they got when going to the medical service.

Conclusions

It can be concluded that participants put safety and comfort as a priority when they decide to get help for fracture. Pain which is commonly expressed by people with fractures decreases effectively when painkillers are combined with a safe and comfortable atmosphere and work in balance. In Topu Bara during the healing process, people with fractures experienced holistic care that combined multiple approaches of culture, cure, and care. Topu Bara as an alternative for fracture healing has been well-developed from generation to generation. The benefits of Topu Bara as an alternative treatment for fractures have been widespread in various ethnic groups and levels of society in Indonesia. This research was conducted in Maluku Province as a reference for health services for Eastern Indonesia. Further studies are needed to be explored considering cultural values and ethical practices.

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Appendix II. Family information needs from nurses' perspectives before and after receiving the training program

Family needs items (Items 15 to 23) information needs	**not important n (%)**	**slightly important n (%)**	**important n (%)**	**very important n (%)**
To know about the types of staff members taking care of the patient				
Before	2 (7.1)	10 (35.7)	11 (39.3)	5 (17.9)
After	0 (0)	1 (3.6)	11 (39.3)	16 (57.1)
P value	0.000			
To know how the patient is being treated medically				
Before	2 (7.1)	6 (21.4)	14 (50.0)	6 (21.4)
After	0 (0)	5 (17.9)	6 (21.4)	17 (60.7)
P value	0.000			
To be assured that the best care possible is being given to the patient				
Before	1 (3.6)	0 (0)	11 (39.3)	16 (57.1)
After	0 (0)	2 (7.1)	11 (39.3)	15 (53.6)
P value	0.000			
To have a place to be alone while in the hospital				
Before	11 (39.3)	11 (39.3)	4 (14.3)	2 (7.1)
After	0 (0)	0 (0)	9 (32.1)	19 (67.9)
P value	0.000			
To know precisely what is being done for the patient				
Before	3 (10.7)	10 (35.7)	7 (25.0)	8 (28.6)
After	3 (10.7)	8 (28.6)	11 (39.3)	6 (21.4)
P value	0.000			
To feel accepted by the hospital staff				
Before	1 (3.6)	5 (17.9)	10 (35.7)	12 (42.9)
After	1 (3.6)	4 (14.3)	8 (28.6)	15 (53.6)
P value	0.000			
To have someone to help with financial problems				
Before	0 (0)	11 (39.3)	11 (39.3)	6 (21.4)
After	0 (0)	1 (3.6)	12 (42.9)	15 (53.6)
P value	0.000			
To have a telephone near the waiting room				
Before	6 (21.4)	5 (17.9)	13 (46.4)	4 (14.3)
After	0 (0)	5 (17.9)	13 (46.4)	10 (35.7)
P value	0.000			
To have a pastor visit				
Before	14 (50.0)	7 (25.0)	3 (10.7)	4 (14.3)
After	2 (7.1)	4 (14.3)	12 (42.9)	10 (35.7)
P value	0.000			

Appendix III. Family proximity and assurance needs from nurses' perspectives before and after receiving the training program

Family needs items (Items 24 to 32) proximity or closeness	**not important n (%)**	**slightly important n (%)**	**Important n (%)**	**very important n (%)**
To talk about the possibility of the patient's death				
Before	3 (10.7)	3 (10.7)	15 (53.6)	7 (25.0)
After	3 (10.7)	8 (28.6)	11 (39.3)	6 (21.4)
P value			0.000	
To have another person with you when visiting the critical care unit				
Before	10 (35.7)	6 (21.4)	9 (32.1)	3 (10.7)
After	0 (0)	9 (32.1)	13 (46.4)	6 (21.4)
P value			0.000	
To have someone concerned with patient health				
Before	2 (7.1)	1 (3.6)	10 (35.7)	15 (53.6)
After	5 (17.9)	10 (35.7)	7 (25.0)	6 (21.4)
P value			0.000	
To be assured it is all right to leave the hospital for a while				
Before	8 (28.6)	5 (17.9)	12 (42.9)	3 (10.7)
After	0 (0)	3 (10.7)	14 (50.0)	11 (39.3)
P value			0.000	
To talk to the same nurse every day				
Before	14 (50.0)	7 (25.0)	6 (21.4)	1 (3.6)
After	3 (10.7)	8 (28.6)	10 (35.7)	7 (25.0)
P value			0.000	
To feel it is all right to cry				
Before	5 (17.9)	9 (32.1)	9 (32.1)	5 (17.9)
After	10 (35.7)	12 (42.9)	4 (14.3)	2 (7.1)
P value			0.000	
To be told about other people that could help with problems				
Before	1 (3.6)	6 (21.4)	13 (46.4)	8 (28.6)
After	0 (0)	7 (25.0)	10 (35.7)	11 (39.3)
P value			0.000	
To have a bathroom near the waiting area				
Before	1 (3.6)	4 (14.3)	15 (53.6)	8 (28.6)
After	2 (7.1)	1 (3.6)	17 (60.7)	8 (28.6)
P value			0.000	
To be alone at any time				
Before	9 (32.1)	10 (35.7)	8 (28.6)	27 (96.4)
After	0 (0)	2 (7.1)	8 (28.6)	18 (64.3)
P value			0.000	
Family assurance needs items (items 33 to 39)				
To be told about transfer plans while they are being made				
Before	7 (25.0)	6 (21.4)	10 (35.7)	5 (17.9)
After	6 (21.4)	5 (17.9)	13 (46.4)	4 (14.3)
P value			0.000	
To be told about someone to help with family problems				
Before	15 (53.6)	6 (21.4)	4 (14.3)	3 (10.7)
After	4 (14.3)	5 (17.9)	12 (42.9)	7 (25.0)
P value			0.000	
To have explanations given that is understandable				
Before	1 (3.6)	3 (10.7)	14 (50.0)	10 (35.7)
After	0 (0)	3 (10.7)	11 (39.3)	14 (50.0)
P value			0.000	
To have visiting hours start on time				
Before	3 (10.7)	10 (35.7)	14 (50.0)	1 (3.6)
After	0 (0)	1 (3.6)	12 (42.9)	15 (53.6)
P value			0.000	
To be told about chaplain services				
Before	3 (10.7)	8 (28.6)	3 (10.7)	4 (14.3)
After	3 (10.7)	8 (28.6)	7 (25.0)	10 (35.7)
P value			0.000	
To help with patient's physical care				
Before	6 (21.4)	9 (32.1)	12 (42.9)	1 (3.6)
After	0 (0)	3 (10.7)	15 (53.6)	10 (35.7)
P value			0.000	

AUTHORS INDEX

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AUTHOR INFORMATION PACK

Update: March 2022

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Table 1. Effects of plant growth regulator types and concentrations on embryogenic callus induction from leaf tip explants of *D. lowii* cultured in ½ MS medium supplemented with 2.0 % (w/v) sucrose under continuous darkness at temperature of 25 ± 2 °C after 60 days of culture

Table 3. Maternal and child health care-seeking behaviour for the last pregnancy in women aged 15 – 45 years old

Type of care	Age Groups (Years)							
	<30		30 - 39		40 - 45		All Age	
	n	%	n	%	n	%	n	%
Place for antenatal care								
Village level service (Posyandu, Polindes or Poskesdes)	1	9.1	1	4.6	1	3.5	3	4.8
District Level service (Puskesmas/Pustu)	2	18.2	7	31.8	1	3.5	10	16.1
Hospital, Clinics, Private Doctor or OBGYN	1	9.1	4	18.2	2	6.9	7	11.3
Private Midwife	7	63.6	10	45.5	25	86.2	42	67.7
Place of Birth								
Hospital	5	50.0	5	22.7	4	13.8	14	23.0
Birth Clinic/Clinic/Private health professional	5	50.0	15	68.2	21	72.4	41	67.2
Puskesmas or Pustu	0	0.0	2	9.1	0	0	2	3.3
Home or other place	0	0.0	0	0	4	13.8	4	6.6
Ever breastmilk								
No	1	9.1	1	4.6	1	3.5	3	4.8
Yes	10	90.9	21	95.5	28	96.6	59	95.2
Exclusive breastfeeding								
No	4	36.4	10	45.5	18	62.1	32	51.6
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