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Research Article

Spatial Distribution and Determinants of Nonautonomy on Decision Regarding Contraceptive Utilization among Married Reproductive-Age Women in Ethiopia: Spatial and Bayesian Multilevel Analysis

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Background. Studies conducted to date in Ethiopia did not explore the spatial distribution, individual-level, and community-level factors affecting women's nonautonomy on decision to use contraceptives. Hence, this study aimed to assess the spatial distribution of women's nonautonomy on decision regarding contraceptive utilization and its determinants in Ethiopia. *Methods*. Data were accessed from the Demographic Health Survey program official database website (https://dhsprogram.com). A weighted sample of 3,668 married reproductive-age women currently using contraceptives was included in this analysis. Bayesian multilevel logistic regression models were fitted to identify the determinants of women's nonautonomy on contraceptive utilization. Adjusted odds ratio with 95% credible interval was used to select variables that have a significant effect on nonautonomy on contraceptive utilization. *Results*. A high proportion of women with nonautonomy on decision regarding contraceptive utilization was found in northern parts of Southern Nations, Nationalities, and People's Region, Southern parts of Oromia, and Benishangul-Gumuz regions of the country. Overall, 2876 (78.40% (95% CI: 77.0%, 79.7%)) women were nonautonomous on decision regarding contraceptive utilization. In the final model, age from 35–49 (AOR (95% CI) = 0.63 (0.54, 0.72)), living in the richer households (AOR (95% CI) = 0.12 (0.03, 0.26)), being married at 18 years or above (AOR (95% CI) = 0.33 (0.19, 0.57)), and residing in an rural areas (AOR (95% CI) = 1.34 (1.01, 1.71)) and metropolitan regions (AOR (95% CI) = 0.71(0.54, 0.91)) were associated with women's nonautonomy on decision regarding contraceptive utilization. *Conclusions*. In Ethiopia, the spatial distribution of women's nonautonomy on decision about contraceptive utilization was nonrandom. More than three-fourths of married reproductive-age women in Ethiopia are nonautonomous on decision regarding contraceptive utilization. Region, residence, current age, age at marriage, and wealth index were statistically associated with women's nonautonomy on decision regarding contraceptive utilization.

1. Background

Although women's decision-making autonomy on sexual and reproductive health is crucial for better maternal and child health outcomes, restriction of open communication between partners due to gender-based power inequalities limits women's access to sexual and reproductive health services, particularly contraceptives [1]. The findings of different studies have shown the effects of women's autonomy on contraception utilization [2–4], and it is one of

the influential sociocultural factors determining women's uptake of their preferred contraceptives [5–10]. In the settings where women are less autonomous on decision regarding contraceptive utilization, a low proportion of women use contraceptives [5, 11].

Globally, 45% of married women were nonautonomous on decision regarding SRH issues, with 64% in sub-Saharan Africa [12]. In Ethiopia, the existing evidence shows a considerable variation in the women's nonautonomy on decision regarding contraceptive utilization across different geographical areas that ranges from 20% to 78% [13–18]. Several studies conducted across the world have identified different community- and individual-level factors affecting women's nonautonomy on decision regarding contraceptive utilization [15–24].

Different strategies, policies, and programs have been strived in the past decades to improve safe motherhood at global, regional, and national levels [25]. In Ethiopia, promoting the use of SRH services and information as part of the reproductive health strategy [26], the incorporation of women's rights to information and rights to be protected from the risk of unwanted pregnancy through the use of contraceptive methods into the country's constitution [27], and implementation of five-year Health Sector Transformation Plan strategies [26, 28] were the efforts taken to improve reproductive health. Despite this, nearly 76% of women are nonautonomous on decision regarding contraceptive utilization in Ethiopia [21].

Studies conducted previously did not explore the spatial distribution of women's nonautonomy on decision regarding contraceptive utilization. Besides, individual- and community-level factors affecting women's nonautonomy on contraceptive utilization are not well investigated.

Identifying spatial distribution and determinants of women's nonautonomy helps to take targeted interventions and has become important to define geographical areas with women's nonautonomy on contraceptive utilization using Geographic Information Systems (GISs) and Spatial Scan Statistical (SaTScan) analyses. Besides, it could also be used as input for policymakers and programmer managers of the study area in the field of public health. Therefore, this study aimed to assess the spatial distribution of women's nonautonomy on decision regarding contraceptive utilization and its determinants in Ethiopia using Bayesian multilevel analysis.

2. Materials and Methods

2.1. Data Source, Study Period, Study Design, and Procedures. Data were retrieved from the Demographic and Health Survey (DHS) program official database website (https://dhsprogram.com), which were collected from January 18 to June 27, 2016. The Ethiopian Demographic and Health Survey (EDHS) is a nationally representative survey conducted every five years in the nine regional states (Afar, Amhara, Benishangul-Gumuz, Gambela, Harari, Oromia, Somali, Southern Nations, Nationalities, and People's Region, and Tigray) and two administrative cities (Addis Ababa and Dire-Dawa) of Ethiopia [29]. A total weighted sample of 3,668 married reproductive-age women currently using contraceptives was included in this study. The detailed sampling procedure exists in the full EDHS 2016 report [29].

2.2. Study Variables

2.2.1. Dependent Variable. The outcome variable of this study was "women's autonomy on decision regarding contraceptive utilization." The outcome variable was dichotomized into "nonautonomous = 1" and "autonomous = 0."

2.2.2. Independent Variables. Independent variables were classified into individual-level variables and community-level variables. Individual-level variables were the respondent's age, couple's age difference, marital status, type of marriage, women's education level, husband's education level, husband's occupation, respondent's occupation, wealth index, religion, exposure to mass media, age at marriage, and the number of living children. Community-level variables were region, residence, community media exposure, community women education level, and community poverty level. The community-level explanatory variables were constructed by aggregating individual-level characteristics at the community (cluster) level, and categorization of the aggregated variables was carried out as high or low based on the distribution of the proportion values calculated for each community.

2.3. Data Management and Statistical Analysis. We used ArcGIS version 10.6 and Spatial Scan Statistics (SaTScanTM version 9.6) software to perform the spatial data analysis. Global Moran's index (Moran's I) was used to measure spatial autocorrelation. Getis-Ord Gi* statistics were applied for hotspot analysis. Spatial scan statistics were applied to detect significant clusters. The scan statistics were developed using the Bernoulli model by applying by Kulldorff and SaTScan™ software version 9.6 to determine the presence of purely spatial nonautonomy on contraceptive utilization clusters.

Sample weights to the EDHS data were applied to estimate proportions and frequencies to adjust disproportionate sampling and nonresponse. A full clarification of the weighting procedure was explained in the 2016 EDHS report [29]. The analysis was performed using Stata version 16.0.

2.4. Convergence Assessment for Bayesian Multilevel Modeling. In this study, Markov Chain Monte Carlo (MCMC) simulation with Metropolis–Hastings sampling algorithm was carried out. To assess the convergence algorithm in our study, we used time-series (history) plots, density plots, and autocorrelation plots, and Gelman–Rubin statistics was used to assess whether the sample had reached stationary distribution or not.

2.5. Model Comparison and Selection. We have fitted four models that contain predictors of interest for this study: model I (null model), a model without independent variables

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to test random variability in the intercept and to estimate the intraclass correlation coefficient and proportion change in variance (PCV); model II, a model with only individual-level explanatory variables; model III, a model with only community-level explanatory variables; and model IV (full model), a model with both individual- and community-level predictors.

Deviance information criterion (DIC) value was used for model selection criteria, and the model with a low DIC value was considered as a more likely best-fitted model for this analysis. From the models fitted, model IV (full model), a model with both individual- and community-level predictors, has the smallest DIC value. Hence, model IV (full model) most likely fits the data.

Summary statistics were carried out from the posterior distribution, and adjusted odds ratio (AOR) with 95% Bayesian credible interval in the Bayesian multivariable multilevel analysis was used to select variables that have a statistically significant effect on women's nonautonomy on decision regarding contraceptive utilization.

2.6. Ethical Consideration. The data were accessed from the DHS website (https://www.measuredhs.com) after being registered and permission was obtained. The retrieved data were used for this registered research only. The data were treated as confidential, and no determination was made to identify any household or individual respondent.

3. Results

3.1. Sociodemographic Characteristics of the Study Participants. Out of the total respondents, 2,806 (76.5%) women resided in rural settings, 1,948 (53.1%) did not attend formal education, and 1,750 (47.7%) of the respondents' age ranged from 25–34 years. In this study, 1,988 (54.2%) of the study participants did not have exposure to mass media (Table 1).

3.2. Spatial Distribution of Nonautonomy on Contraceptive Utilization. The spatial distribution of women's nonautonomy on contraceptive utilization in Ethiopia was nonrandom. The global Moran's I value was 0.082 (P value <0.001). Nonautonomous women on decision regarding contraceptive utilization were higher in Tigray, Amhara, eastern part of Afar, Eastern and Northern Somali, Benishangul-Gumuz, northern parts of SNNPR, Gambela, and Oromia regions. A low proportion of nonautonomous women was observed in Addis Ababa, Dire-Dawa, some parts of Amhara, Afar, Tigray, Gambela, and Oromia regions (Figure 1(a)).

*3.3. Hotspot Analysis (Getis-Ord Gi*Statistic).* High (hotspot) areas for nonautonomous women on contraceptive utilization were identified in northern parts of SNNPR, Southern parts of Oromia, and Benishangul-Gumuz regions which are represented in red color in Figure 1(b).

Table 1: Weighted sociodemographic characteristics of the study participants, Ethiopia, 2016.

Variables	Frequency (%)
Residence	
Urban	8629 (23.50)
Rural	2,806 (76.50)
Religion	
Orthodox	1,877 (51.17)
Protestant	968 (26.38)
Muslim	768 (20.94)
Others^{+}	55 (1.51)
Age (years)	
15–24 years	850 (23.18)
25–34 years	1,750 (47.70)
3–49 years	1,068 (29.12)
Age at first marriage	
<18 years	1,397 (38.08)
≥18 years	2,271 (61.92)
Respondent's educational status	
No education	1,948 (53.10)
Primary	1,146 (31.25)
Secondary and above	574 (15.65)
Husband's educational status	
No education	1,427 (38.91)
Primary	1,445 (39.39)
Secondary and above	796 (21.70)
Respondent's occupation	
Not employed	1,844 (50.27)
Employed	1,824 (49.73)
Husband's occupation	
Not employed	1,844 (50.27)
Employed	1,824 (49.73)
Wealth index	
Poor	1,028 (28.02)
Middle	765 (20.85)
Rich	1,875 (51.14)
Media exposure	
No	1,988 (54.20)
Yes	1,680 (45.80)
Number of living children	
<=2	1,635 (44.56)
>2	2,033 (55.44)
Type of marriage	
Monogamy	3,497 (95.3)
Polygamy	171 (4.7)
Couple's age difference	
Negative	119 (3.2)
Equal	79 (2.2)
≤10 years	2,767 (75.4)
≥10 years	703 (19.2)

Others^{+} = catholic, traditional, and other EDHS categories. Others^{++} = other EDHS categories. Others^{+++} = other EDHS categories.

3.4. Spatial Scan Statistical Analysis. In spatial scan statistics, 1 primary and 4 secondary clusters were identified; the primary cluster is located at 9.306441 N, 35.546886 E with a 159.63 km radius, a Relative Risk (RR) of 1.23, and an LLR of 32.11 (Figure 2 and Table 2). It showed that women inside the spatial window had 1.23 times higher likelihood of being nonautonomous on decision regarding contraceptive utilization than women outside the spatial window. The most likely clusters of nonautonomous women were detected in

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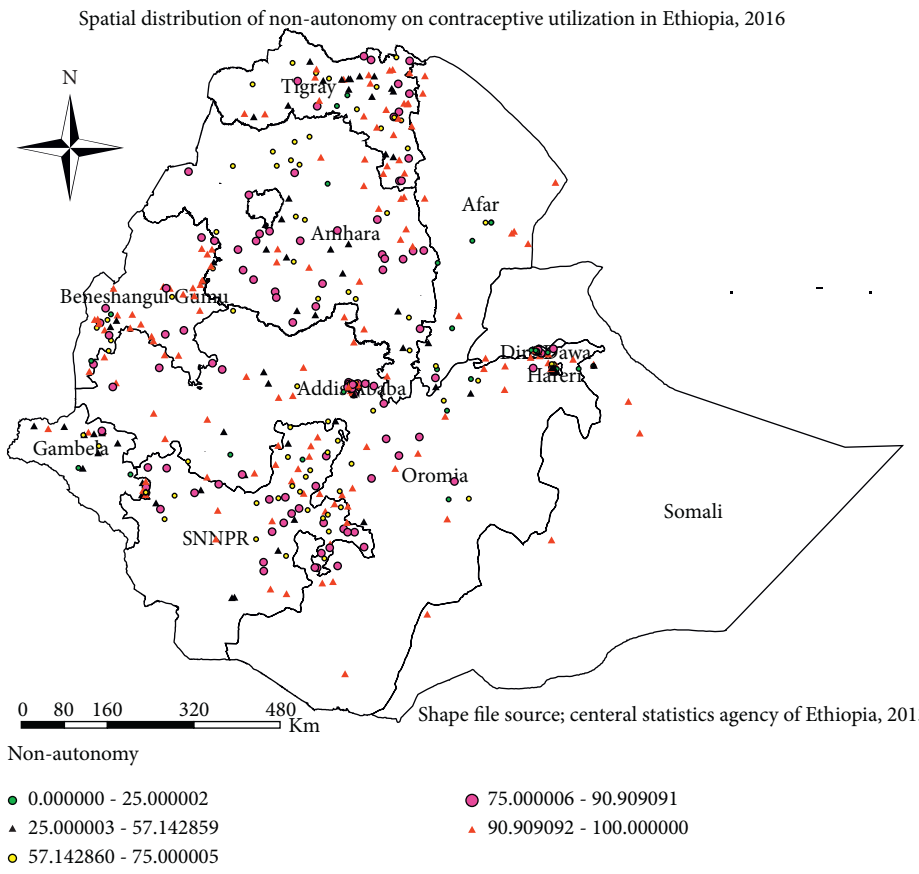

(a)

Figure 1: Continued.

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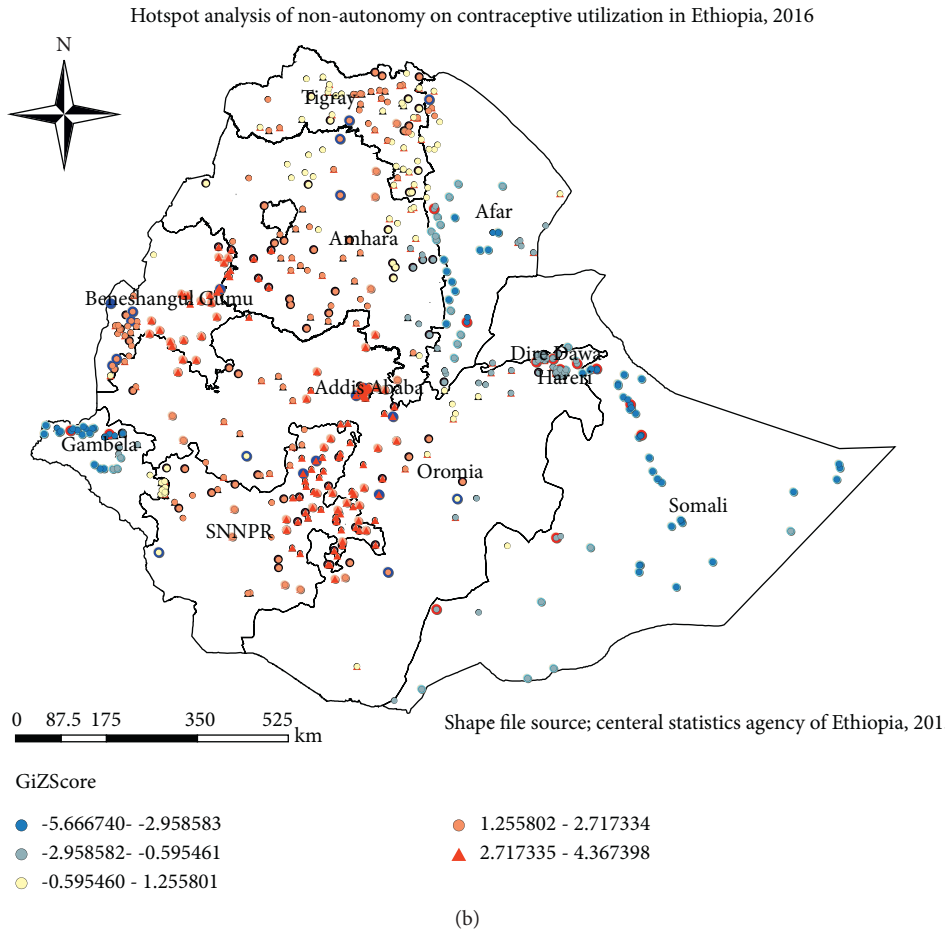

FIGURE 1: (a) The spatial distribution of women's nonautonomy on decision regarding contraceptive utilization, Ethiopia, 2016. (b) Hotspot analysis of women's nonautonomy on decision regarding contraceptive utilization, Ethiopia, 2016.

most parts of Benishangul Gumz and western parts of Oromia region.

3.5. Women's Nonautonomy on Decision Regarding Contraceptive Utilization. Overall, 2876 (78.40% (95% CI: 77.0%, 79.7%)) women were nonautonomous on contraceptive utilization.

3.6. Result of the Empty (Null) Bayesian Multilevel Logistic Regression Model. The Bayesian null model showed that variance of the random part was 0.46 with a 95% credible interval of 0.22–0.71, showing EA differences in women's nonautonomy on contraceptive utilization in Ethiopia. The variance estimate, which is greater than zero, indicates that there are EA, differences in nonautonomy on contraceptive utilization among married reproductive-age women in the country.

The unobserved heterogeneity has a logistic distribution with a variance at the individual level equivalent to $\prod^2/3$ (that is, 3.29) [30–32]. Therefore, the ICC = 0.46/0.46 + 3.29 = 0.12, which implied that 12% of the total variability in nonautonomy on decision regarding contraceptive utilization among married reproductive-age women is due to differences across enumeration areas, and 88% of the variability is accounted by individual differences. Both the random factor variance and the ICC value were proposed to apply the Bayesian multilevel logistic regression model for additional analysis to handle the heterogeneity between EAs (Table 3).

3.7. Bayesian Multilevel Logistic Regression Analysis. The random-walk Metropolis–Hastings sampling procedure was applied with 12,500 total iterations. After 2,500 burn-in terms were discarded, 10,000 samples were generated from the full posterior distribution. Noninformative normal prior distribution with mean = 0 and variance = 10^6 for the fixed-effect and gamma distribution with scale = 0.1 and shape-= 0.1 for the variance of random effect was used. Convergence-assessment plots have confirmed the convergence produced from Markov chains, before taking any inference from the posterior distribution. Before undertaking any inference from the posterior distribution, the convergence generated from Markov chains was proved by convergence-assessment plots (Annex 1)

3.8. Bayesian Multivariable Multilevel Logistic Regression Model. In the Bayesian multivariable multilevel logistic

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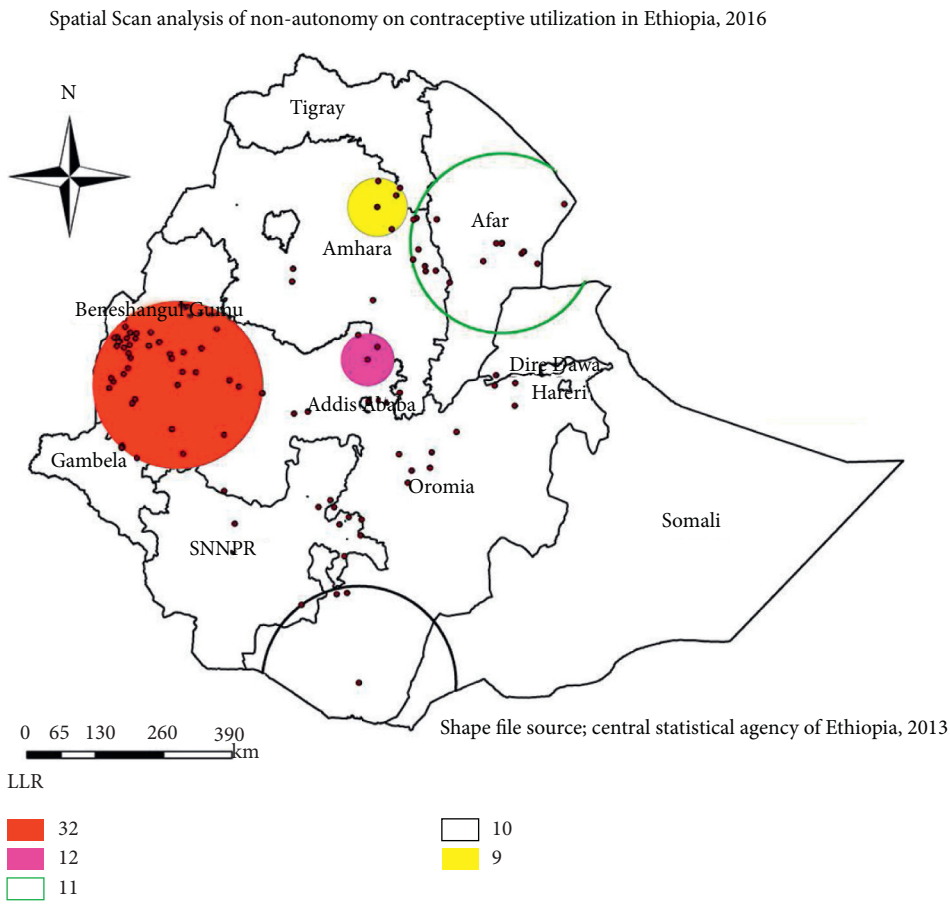

Figure 2: Spatial scan statistics of women's nonautonomy on decision regarding contraceptive utilization, Ethiopia, 2016.

Table 2: The spatial scan statistical analysis of women's decision-making nonautonomy on contraceptive utilization, Ethiopia, 2016.

Cluster type	Number of significant enumeration areas	Coordinates/radius	Populations	Cases	RR	LLR	*P* value
1	53	(9.306441 N, 35.546886 E)/159.63 km	272	259	1.23	32.11	<0.001
2	3	(9.739794 N, 38.793594 E)/49.89 km	65	64	1.26	11.96	0.003
3	17	(11.731000 N, 41.095173 E)/ 170.63 km	100	95	1.22	11.01	0.010
4	4	(4.211065 N, 38.646702 E)/183.90 km	40	40	1.28	9.72	0.021
5	5	(12.349051 N, 38.961666 E)/55.64 km	37	37	1.28	8.98	0.044

Table 3: Estimates for the variance components model of women's decision-making nonautonomy on contraceptive utilization, Ethiopia, 2016.

Fixed effect	Estimate	SDMCSE		95% credible interval
Intercept	3.38	0.201	0.013	(3.01, 3.79)
Random effect	Estimate	SD		95% credible interval
δ_u^2	0.46	0.12	0.016	(0.22, 0.71)
ICC	0.12	—		—

regression model, region, residence, current age, age at first marriage, and wealth index were statistically associated with women's nonautonomy on decision about contraceptive utilization. After adjusting for covariates, the odds of being nonautonomous on contraceptive utilization among women residing in rural settings was 51% lower than that of those living in an urban area (AOR (95% CI) = 1.34 (1.01, 1.71)).

Women who had their first marriage at the age of 18 years and above were 67% less likely to be nonautonomous on decision to use contraceptives compared to those married

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Table 4: Bayesian multilevel multivariable logistic regression of the individual- and community-related variables associated with women's nonautonomy on contraceptive utilization, Ethiopia, 2016.

Variables	Women's autonomy						
	No	Yes	SD	MCSE	Model II AOR (95%)	Model III AOR (95%)	Model IV AOR (95%)
Age (years)							
15–24 years	600 (78.7)	162 (21.3)	—	—	1		1
25–34 years	1040 (76.1)	326 (23.9)	0.077	0.009	0.74 (0.60,0.90)*	—	0.85 (0.68, 1.03)
35–49 years	614 (72.1)	238 (27.9)			0.48 (0.36,0.61)*		0.63 (0.54, 0.72)*
Religion							
Orthodox	1189 (75.0)	397 (25.0)					1
Protestant	512 (80.3)	126 (19.7)	0.123	0.015	1.32 (1.10,1.57)*	—	0.89 (0.58, 1.37)
Muslim	523 (72.6)	197 (27.4)	0.065	0.012	0.81 (0.69,0.95)*		0.62 (0.42, 1.95)
Others+	30 (83.3)	6 (16.7)	0.154	0.023	1.53 (1.25,1.85)*		0.56 (0.18, 1.22)
Age at 1st marriage							
<18 years	1317 (76.1)	414 (23.9)	—				1
≥18 years	937 (75.0)	312 (25.0)	0.084	0.016	0.48 (0.22,0.65)*		0.33 (0.19,0.57)*
Respondent's educational status							
No education	954 (75.2)	315 (24.8)					
Primary	792 (76.5)	244 (23.5)	0.074	0.006	1.03 (0.89,1.18)		—
Secondary and above	508 (75.3)	167 (24.7)	0.09	0.015	1.09 (0.91,1.29)		
Husband's educational status							
No education	683 (74.1)	239 (25.9)					
Primary	888 (77.8)	253 (22.1)	0.732	0.012	1.05 (0.91,1.20)		—
Secondary and above	683 (74.5)	234 (25.5)	0.108	0.024	0.90 (0.72,1.13)		
Husband's occupation							
Unemployed	1121 (74.5)	384 (25.5)					—
Employed	1133 (76.8)	342 (23.2)	0.072	0.009	1.20 (1.06,1.36)		
Wealth index							
Poor	532 (74.5)	182 (25.5)					1
Middle	368 (78.8)	99 (21.2)	0.063	0.011	0.32 (0.09,1.56)		0.21 (0.01,1.10)
Rich	1354 (75.3)	445 (24.7)	0.078	0.014	0.23 (0.05,0.44)*		0.12 (0.03,0.26)*
Media exposure							
No	1016 (77.1)	301 (22.8)					—
Yes	1238 (74.4)	425 (25.6)	0.099	0.014	0.89 (0.72,1.11)		
Number of living children							
≤2	1154 (75.2)	380 (24.8)					1
>2	1100 (76.1)	346 (23.9)	0.130	0.014	1.14 (1.19,1.72)*		1.32 (0.98, 1.62)
Residence							
Urban	803 (71.2)	325 (28.8)				1	1
Rural	1451 (78.3)	401 (21.6)	0.35	0.024		1.61 (1.06,2.45)	1.34 (1.01, 1.71)*
Region							
Large central	1357 (77.5)	393 (22.5)				1	1
Small peripheral	408 (79.5)	105 (20.5)	0.195	0.029	—	1.13 (0.79,1.56)	1.16 (0.92,1.44)
Metropolitan	489 (68.2)	228 (31.8)	0.107	0.012		0.62 (0.42,0.86)	0.71 (0.54,0.91)*
Community media exposure							
Low	1149 (77.8)	327 (22.2)	0.167	0.022	—	1	—
High	1105 (73.5)	399 (26.5)				1.02 (0.74,1.42)	
Community-level women's illiteracy							
Low illiteracy	1154 (77.4)	336 (22.6)				1	
High illiteracy	1100 (73.8)	390 (26.2)	0.171	0.017		1.17 (0.85,1.57)	
Community poverty status							
Low	1094 (74.2)	381 (25.8)				1	
High	1160 (77.1)	345 (22.9)	0.125	0.011		0.76 (0.56,1.05)	

*Statistically significant variables at 95% confidence interval. Others+ = catholic, traditional, and other EDHS categories.

before 18 years (AOR (95% CI) = 0.33 (0.19, 0.57)). Similarly, women in the age range of 35–49 years (AOR (95% CI) = 0.63 (0.54, 0.72)) had lesser odds of being nonautonomous on decision regarding contraceptive utilization compared to younger women.

Our analysis also revealed that the likelihood of being nonautonomous on decision regarding contraceptive utilization was 82% lower for women in rich households compared to those from poor households (AOR (95% CI) = 0.12 (0.03, 0.26)). Moreover, women living in metropolitan

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regions were less likely to be nonautonomous on decision regarding contraceptive utilization compared to those in large central regions (AOR (95% CI) = 0.71(0.54, 0.91)) (Table 4).

4. Discussion

Women's decision-making autonomy on contraceptive utilization is an essential component of SRH rights [33]. This study assessed the spatial distribution and determinants of nonautonomy on decision regarding contraceptive utilization among married women in Ethiopia. It was revealed that more than three-fourth women in Ethiopia were nonautonomous on decision regarding contraceptive utilization. This finding is higher compared to the results of the studies in different parts of Ethiopia [15–19, 34] and South Africa [35]. On the contrary, our finding is lower than in a study in Senegal [36]. The discrepancy might be due to the methodological differences of the studies and variations in the sociocultural and religious context of the study areas.

The spatial analysis showed that, in Ethiopia, the spatial distribution of women's nonautonomy on contraceptive utilization was nonrandom. The clustered pattern was confirmed with hotspot and spatial SaTScan analysis.

Region, residence, wealth index, current age, and age at first marriage were identified as significant factors affecting women's nonautonomy on decision about contraceptive utilization. Accordingly, women from rural areas had increased likelihood of being nonautonomous on contraceptive utilization compared to those residing in urban settings. This finding is consistent with the result of the previous studies in Ethiopia [20, 21], which found lower odds of nonautonomy among urban women. This might be because women in urban residences have better educational opportunities and have access to information, particularly on contraceptives and other SRH-related issues, than their rural counter group, which enables them to have greater involvement in contraceptives and other household decision-making processes.

Women aged 35–49 years were less likely to be nonautonomous on decision regarding contraceptive utilization than women aged 15–24 years. This finding is similar to the previous studies in Ethiopia [19, 21, 36]. This might be because younger women are less likely to visit family-planning clinics and lack awareness due to limited access to SRH information [37] and, therefore, have little control over their contraceptive decision. On the contrary, this finding is inconsistent with studies in Southern Ethiopia [16, 18]. Methodological differences might contribute to these variations.

Women who had their first marriage after the age of 18 years and above had decreased odds of being nonautonomous compared to those married before 18 years. This finding is consistent with a previous study [12]. This might be due to the inferior negotiating power of younger women associated with limited educational opportunities as a consequence of early marriage [38, 39].

This study also showed that women who lived in metropolitan regions had decreased likelihood of being nonautonomous on decision regarding contraceptive utilization compared to those in large central regions. Differences in urbanization and access to sexual and reproductive health services and its information which have a direct relation with healthcare decision might have contributed to this finding [22, 40].

Furthermore, consistent with the results of previous studies [12, 41], this study revealed that women from rich households had lesser odds of being nonautonomous on a decision regarding contraceptive utilization compared to those from poor households. This might be because women in the richer household are more likely to be employed, have an increased level of self-confidence, and have access to information, which could improve their involvement in healthcare decisions [42].

This study has strengths of nationally representative weighted data, and appropriate advanced statistical models were used to account for the clustering effect and to get a reliable standard error and parameter estimates. Moreover, the use of GIS and SaTScan statistical tests helps to detect similar and statistically significant hotspot areas of nonautonomy on decision regarding contraceptive utilization. However, this study has limitations of the cross-sectional nature of the study, which may not indicate true causality.

Public health interventions targeting significant hotspot areas are essential to enhance the autonomy of women on contraceptive utilization. Moreover, the government should promote women's autonomy on contraceptive utilization as an essential component of SRH with particular attention for adolescent women, women living in the poorest households, and those residing in rural settings of the country.

The findings of this study have valuable policy implications for health programme design and interventions. High-risk areas for nonautonomy on contraceptive utilization can be easily identified to make effective local interventions. In general, these findings are of importance for the minister of health, regional health bureaus, and nongovernmental organizations when designing an intervention to reduce nonautonomy on decision on contraceptive utilization in hotspot areas identified by the study.

5. Conclusions

More than three-fourths of married reproductive-age women in Ethiopia were nonautonomous on decision regarding contraceptive utilization. A high (hotspot) proportion of women with nonautonomy was found in northern parts of SNNPR, southern parts of Oromia, and Benishangul-Gumuz regions of the country. Region, residence, age, age at first marriage, and wealth index were statistically associated with women's nonautonomy on decision about contraceptive utilization.

Abbreviations

DIC: Deviance information criterion
AOR: Adjusted odds ratio
DHS: Demographic and Health Survey
EA: Enumeration area

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EDHS: Ethiopian Demographic and Health Survey
ICC: Intraclass correlation coefficient
MCSE: Monte Carlo standard error
MCMC: Markov Chain Monte Carlo
PCV: Proportional change in variance
SD: Standard deviation
SNNPR: Southern Nations, Nationalities, and People's Region
SRH: Sexual and reproductive health.

Data Availability

Data are available online and can be accessed from https://www.measuredhs.com.

Conflicts of Interest

The authors declare that no conflicts of interest.

Authors' Contributions

SBA, KUM, MSM, and AWT had substantial contributions to the conception and design of this research, involved in the analysis and interpretation of data, and drafted the manuscript. SBA revised and finalized the manuscript. All authors read and approved the final manuscript.

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Supplementary Materials

Annex I: convergence-assessment plots for statistically significant parameters. (*Supplementary Materials*)

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Research Article

Nursing and Midwifery Students' Satisfaction with Their Clinical Rotation Experience: The Role of the Clinical Learning Environment

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Background. The clinical learning environment and clinical rotation experience of students are integral to nursing curriculum and are a crucial component of nursing education which helps transform theoretical knowledge to clinical practical skills. *Objective*. This study was aimed at assessing the role of the clinical learning environment on undergraduate nursing and midwifery students' satisfaction with their clinical rotation experience. *Method*. The study employed a quantitative cross-sectional survey design. Data was collected from a sample of 240 undergraduate nursing and midwifery students of the University for Development Studies, Tamale, Ghana, using a structured questionnaire. Ethical approval was obtained from the University of Cape Coast Ethics Review Board. Descriptive analysis was displayed as frequencies and percentages. Inferentially, Fisher's exact test, linear regression, and Spearman's correlation tests were used to test for and quantify associations between independent and dependent variables at $p \leq 0.05$. *Results*. The level of students' satisfaction with both clinical rotation experience and the clinical learning environment was high (65.6% and 63.5%, respectively). A statistically significant association of the students' satisfaction with their clinical rotation experience was found. There was a statistically significant relationship between the clinical learning environment (χ^2 (9, $N = 224$) = 80.665, $p < 0.001$), pedagogical atmosphere in the clinical area ($r_s = 0.379$, $p < 0.001$), the leadership style of the ward manager ($r_s = 0.340$, $p < 0.001$), the premises of nursing in the ward environment ($r_s = 0.501$, $p < 0.001$), and the students' satisfaction with their clinical rotation experience. *Conclusion*. These findings provide nurse educators and clinicians with meaningful understanding about areas to prioritise when planning clinical learning opportunities in such a way that skills learning and practice of nursing skills are successful and satisfactory for undergraduate student nurses and midwives.

1. Background

Clinical rotation experience is crucial in nursing and midwifery education as it helps student nurses and midwives to transform theoretical knowledge into clinical practice. Clinical rotation that exposes students to a supportive clinical learning environment (CLE) influences nursing and midwifery students' satisfaction, knowledge, skills, attitudes, and interest in their training [1–4].

Clinical rotation experience is a planned experience for a specific nursing educational course, and experiences gained by the students in hospitals, clinics, and health care centers and in the community [5, 6]. Clinical rotation is an important exercise because it offers students the opportunity to

combine cognitive, psychomotor, and affective skills that influence students' satisfaction, knowledge, skills, attitudes, and interest in nursing patients [5, 7].

Clinical rotation experience is achieved in a clinical learning environment, which consists of all the clinical environs of the nursing and midwifery students such as the clinical settings, the staff nurses and midwives, the patients, the nurse preceptors, and the equipment. Exploration of such environments provides insight into the educational functioning of the students in clinical areas and allows nursing tutors to provide opportunities for students learning in the clinical setting [8, 9]. Clinical learning environment is characterized by pedagogical atmosphere of the clinical environment, leadership style of the ward managers, premises of nursing, and the supervisory relationships between students nurses, clinical staff, and nurse educators [10].

The pedagogical atmosphere of the clinical environment can be positive or negative. A positive pedagogical environment is characterized by nonhierarchical structure, teamwork, good spirits, and interpersonal communications [10]. The positive pedagogical environment allows students to be motivated, feel involved in ward activities, have good relationships with other team members, and explore practices [7, 11].

The leadership style of the ward manager remains a crucial element of experiential learning in the clinical setting [12]. A good learning environment is characterized by a democratic leadership style, where the ward manager is aware of the physical and emotional needs of the nursing staff and students and stimulates participation in a wide range of experiences that promote learning [4, 13].

The premises of nursing, where nursing care and learning occur, consist of the culture and values of nursing in the ward, information flow related to patient's care, documentation of nursing care plans, recording of nursing procedures, and sufficient meaningful learning situations on the ward [14]. Cultural and organizational factors in the ward such as ethical principles, hospital etiquettes, empathy, caring, teamwork, and socialization within the profession often influence students' rotation experience and foster skills acquisition and independent critical thinking [15].

The most effective premises of nursing environment for clinical learning is one that is supportive, free from fear, and encourages openness and respect for the student as an individual [16]. Good premises also recognize students as younger colleagues rather than strangers and focus on student learning needs rather than only health care service [17, 18]. In such an environment, students can develop self-confidence, competence, good interpersonal communication, and problem-solving skills, which can enhance their clinical rotation experience [19].

Despite the importance of clinical learning environment (health facilities) in contributing to trainees satisfaction with clinical rotation, it can be a major source of anxiety and stress among nursing students worldwide [9, 20, 21]. The clinical environment can be very difficult to control and predict due to a number of stimuli [18]. Additionally, health facilities primary concern is patient care rather than student learning. This can compromise students' learning and satisfaction with their clinical learning environment.

As a result of the multifaceted nature of the clinical learning environment, students have difficulty identifying potential learning opportunities, and consequently, some student feel overwhelmed [18, 22, 23]. Ineffective communication, inadequate readiness, and emotional reactions among others are challenges nursing and midwifery students face in the clinical learning environment [24].

In some clinical environments, nursing and midwifery students are mostly treated unfairly and, in extreme cases, discriminated against. For example, Jamshidi et al. [24] concluded that discrimination in the clinical environment is apparent in the behaviour of some nurses towards nursing and midwifery students, where medical students are given preferential treatment against nursing students [24]. Similarly, lack of adequate teaching and learning support for nursing and midwifery students, theory-practice gap, and poor interpersonal relationships between students and nursing staff in the ward have been reported by Mabuda, Potgieter, and Alberts [25]. These are barriers to constructive learning in the clinical learning environments. As a result of these, students usually are not satisfied with their clinical rotation, and their learning objectives set by the nursing faculty are usually not met [26].

While several research works have been published on undergraduate nursing and midwifery students' satisfaction with their experiential or clinical learning and the clinical learning environment in the developed countries such as Australia, Finland, Canada, and other places like Iran [1, 27–31], there are relatively few studies on this subject in the developing world.

In Ghana, nursing and midwifery education has been reported to be experiencing many challenges since time immemorial such as poor working relations between clinical environment and health training institutions, poor clinical environment, inadequate preceptor preparation, and inadequate students' supervision among others during clinical placements in health facilities [32, 33]. This could partly be blamed on inadequate assessment of the clinical environment and its dimensions in order to ascertain areas that support experiential or clinical learning, and those which require improvement. Providing an effective clinical learning environment to nursing and midwifery students ensures practical skills acquisition and promotes the students' satisfaction with the clinical rotation experience, which can result in production of highly trained and clinically competent nursing workforce.

Despite the acknowledged importance of clinical learning environment and clinical rotation on the acquisition of clinical nursing skills during training of nursing and midwifery students, research on student satisfaction with their clinical rotation and the clinical learning environment has not been adequately addressed in most countries in the developing world like Ghana.

1.1. Aim of the Study. This article, therefore, sought to provide answers to the degree to which nursing and midwifery students at the University for Development Students,

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Tamale, Ghana, are satisfied with their clinical rotation experience, as well as the clinical learning environment's role in their satisfaction with their clinical rotation experience.

1.2. Hypothesis. To achieve the aim of the study, the following null and alternate hypotheses were formulated:

H_0: there is no statistically significant association between the clinical learning environment and students' level of satisfaction with their clinical rotation experience.

H_1: there is a statistically significant association between the clinical learning environment and students' level of satisfaction with their clinical rotation experience.

2. Methodology

2.1. Study Design. The cross-sectional survey with a quantitative approach was used for this study. Both independent and dependent variables were measured at the same time as recommended by Bhattacherjee [34].

2.2. Study Setting. The study was conducted at the School of Nursing and Midwifery of the University for Development Studies, Tamale, Ghana. The University for Development Studies was established in 1992 as a multicampus institution as the fifth public University to be established in Ghana. The Tamale campus houses the School of Nursing and Midwifery, School of Medicine, and other allied health sciences. This setting was chosen because it is a tertiary institution, and the students were observed to have some challenges in the clinical environment during their clinical rotation practices in the clinical area.

2.3. Population and Sampling. The target population for the study were 715 undergraduate nursing and midwifery students in the third and fourth years of the School of Nursing and Midwifery of the University for Development Studies, Tamale, Ghana. These students have had exposure to different clinical settings and experiences and could provide valuable information by responding to the research questions. The sample size used for the study was 240, arrived at using Yamane [35] formula sample size formula $n = N/(1 + N(e)^2)$, where "n" is the sample size, "N" is the population size (715), and "e" is the margin of error or level of precision (0.05).

A proportional stratified random sampling technique was used to determine the number of students from each year group based on their total numbers. This approach was necessary to ensure equitable distribution of respondents with general nursing and midwifery background in the sample. The participants were divided into two categories, general nurses and midwives. Then a number of student nurses in each category was chosen based on the proportion of nursing and midwifery students from that category in the total population. Thus, general nurses who constituted 70% of the total student population were 157 students, whiles midwifery students were 67 representing 30% of the total student population.

2.4. Inclusion/Exclusion Criteria. Both postdiploma and generic students, who were regular students and had satisfactorily completed a minimum of two clinical rotation experiences, were included in the study. Students excluded were those in first and second year, as well as those on the distant learning program. This was because these students might not have had enough clinical experience to provide valuable information needed in the study. Further, students who were on field placement in communities at the time of data collection were excluded from the study because they were not available for selection.

2.5. Data Collection Instrument. A structured questionnaire was used to collect data from the respondents. The instrument comprised three sections capturing information about the participants' demographic characteristics, their level of satisfaction with clinical rotation experience, and the clinical learning environment. Section A was designed to elicit information on demographic information of participants such as the age, gender, marital status, religion, ethnicity, financial support, category of nursing students, and the level of entry to the programme.

Section B measured student's satisfaction with clinical rotation experience, using a 22-item scale adapted from the Clinical Learning Environment Inventory by Chan [11]. Section C measured student's satisfaction with the clinical learning environment, using a 20-item scale drawn from Clinical Learning Environment Inventory and Nurse Teacher Evaluation Scale by Johansson et al. [36]. As the main dependent variables, clinical rotation experience, and clinical learning environment were primarily measured at ordinal level on Likert scale of 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree. Analysis of the pretest data of the instrument showed a Cronbach's alpha of 0.86, indicating a high validity [37].

2.6. Data Collection Procedure. Data collection was conducted among third- and fourth-year nursing students who met the inclusion criteria at the University for Development Studies, Tamale. The questionnaire along with the cover letters to introduce the study purpose and the rights of the participants were distributed to the participants by the researchers and two data collection volunteers with data collection experience. The information sheet contained clarification of ethical issues concerning confidentiality and anonymity and provided contact information for participants to reach out to for clarifications. Participants were contacted during break periods. Participants who agreed to participate in the study signed the informed consent form and were asked to complete the questionnaire within one week, on their own. The researcher and the volunteer data collectors retrieved the completed questionnaires from the students after a week in April, 2018.

2.7. Data Management. Of the 240 participants samples and given questionnaires to complete, 224 completed the survey, giving a questionnaire return rate of 93.3%. Upon retrieving

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the completed questionnaires, it was kept in separately labelled envelopes, based on the programmes of study of the respondents (general nursing and midwifery).

The questionnaires were then cleaned, coded, and entered into SPSS for Windows Version 23 for statistical analysis. On completing the entries, the questionnaires were placed into their labelled envelopes and locked in a cabinet, only accessible to the researchers. The SPSS data was passworded and a backed-up copy of it was kept on an external drive, which was also password protected for data security reasons.

2.8. Data Analysis. Analysis of the data was carried out in SPSS for Windows Version 23. For purposes of analysis and easy communication of findings, an average score of the results from the Likert scale items (1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree) measuring satisfaction with clinical rotation experience and the clinical learning environment in the questionnaire was calculated. The level of respondents' satisfaction with their clinical rotation experience and the clinical learning environment was determined by taking an average of their total satisfaction score to determine whether they scored very low (1 to 27), low (28 to 54), high (55 to 81), or very high (82 to 11). The results were then displayed in tables as frequencies and percentages.

Inferentially, Chi-square and Fisher's exact tests were used to determine the association between selected demographic variables (age, gender, student category, and level of entry) and respondents' satisfaction with the clinical rotation experience and clinical learning environment. Where statistically significant associations existed, variables were entered into a logistic regression model to determine the strength of association between satisfaction with clinical rotation experience and the respective demographic predictors at the 95% confidence interval. A p-value of less than or equal to 0.05 was deemed statistically significant.

Further, a Spearman's correlation test was conducted to predict the association between students' satisfaction with clinical rotation experience and dimensions of the clinical learning environment such as pedagogical atmosphere of the ward environment, leadership style of ward managers, and premises of nursing in the ward.

2.9. Ethical Considerations. This study was conducted at the in Tamale, Ghana, at the School of Nursing and Midwifery of the University for Development Studies. Ethical approval was obtained from the Institutional Review Board of University of Cape Coast (Reference number: 0990–4279), and permission for data collection was obtained from the School of Nursing and Midwifery, University for Development Studies. Access to the participants was gained through the heads of departments of nursing and midwifery.

Prior to the commencement of questionnaire distribution to sampled participants, all participants were informed about the objectives and purpose of the study. An informed consent was given to each respondent to read, seek clarifications, and consent. Issues of anonymity and confidentiality of information provided and participants were ensured as they were not required to provide their names. Information about the voluntary nature of the study and their right to withdraw at any stage without any consequence were also explained. No adverse event or effect was expected or anticipated from participating in this study.

3. Results

With a completed questionnaire return rate of 93.3% of the 240 respondents sampled, a sample size of 224 was finally realized and used for all statistical analyses under this section.

3.1. Demographic Characteristics of Respondents. Table 1 presents the demographic characteristics of participants including age, gender, marital status, religion, ethnicity, and financial support of the participants. Majority of the participants were in their 20s (mean age of 23.8 years). Female were more (58.5%) than males (41.5%). General nursing students were more (71.4%) than midwifery students (28.6%). Majority of students were generics (79%) and a small percentage were postdiploma nursing students (21%).

3.2. Respondents' Satisfaction with Their Clinical Rotation Experience. Statistics about the students' level of satisfaction with their clinical rotation experience is presented in Table 2. Most of the students (65.6%) rated their satisfaction with clinical rotation experience as high or very high, while 21% rated it as low or very low.

A Fisher's exact test was performed to determine the association between some selected demographic variables of respondents and their level of satisfaction with clinical rotation experience showing no statistically significant association as illustrated in Table 3.

3.3. Respondents' Satisfaction with the Clinical Learning Environment. Close to two-thirds (63.5%) of the respondents were in the category of those who said they had high levels of satisfaction with the clinical learning environment. Only a few (0.4%) of the respondents indicated that they had very low satisfaction with clinical learning environment. The details of these have been illustrated in Table 4.

3.4. Role of the Clinical Learning Environment in Respondents' Satisfaction with Their Clinical Rotation Experience. A Fisher's exact test showed that there was a statistically significant association between the clinical learning environment and respondents' satisfaction with their clinical rotation experience (χ^2 (9, $n = 224$) = 80.665, $p < 0.001$). As a result, we fail to accept the null hypothesis, which stated that "there is no statistically significant association between clinical learning environment and students' level of satisfaction with their clinical rotation experience" and accept the alternate hypothesis, which stated that "there is a statistically significant association between clinical learning environment and students' level of satisfaction with their

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Table 1: Demographic characteristics of participants.

Demographic characteristics	Frequency ($n = 224$)	Percentage (%)
Ages		
15–19	26	11.6
20–24	123	55.0
25–29	44	19.6
30–35	22	9.8
36–40	9	4.0
Gender		
Male	93	41.5
Female	131	58.5
Marital Status		
Single	176	78.6
Married	45	20.1
Devoice	3	1.3
Religion		
Christian	168	75
Moslem	50	22.3
Traditional	6	2.7
Ethnicity		
Mole Dagbani	88	39.3
Eve	17	7.6
Ga	21	9.4
Akan	62	27.7
Others	36	16.1
Nursing Category		
General nursing	160	71.4
Midwifery	64	28.6
Financial Support		
Self	67	29.9
Sponsorship	15	6.7
Parents	125	55.8
Guardian	17	7.6
Level of Entry		
Postdiploma	47	21
Generic	177	79

Source: Field Survey (2018).

Table 2: Respondents' level of satisfaction with clinical rotation experience.

Category	Frequency (224)	Percentage (100%)
Very low	1	0.4
Low	46	20.5
High	147	65.6
Very high	30	13.4

Source: Field Survey (2018).

clinical rotation experience". The result of this test is presented in Table 3.

Using a linear regression model, the strength of the association between the clinical learning environment and respondents' satisfaction with their clinical rotation experience was tested. The regression analysis results, presented in Table 5, show that R^2 was 0.422, which means that the clinical learning environment accounts for 42.2% of the variance in respondents' satisfaction with their clinical rotation experience at $p < 0.001$. Additionally, the "B" value

Table 3: Association between selected demographic characteristics, clinical learning environment, and respondents' satisfaction with their clinical rotation experience.

Independent variables	χ^2	*Df*	*p*-value
Demographic Characteristics			
Age	15.254	12	0.241
Gender	5.346	3	0.118
Nursing students' category	4.482	3	0.201
Level of entry	5.002	3	0.116
Clinical Learning Environment			
Clinical learning environment	80.665	9	0.001*

Dependent variable: clinical rotation experience, $\chi 2$: Fisher's exact test, $n = 224$, *significant at $p \leq 0.05$.

Table 4: Respondents' level of satisfaction with the clinical learning environment.

Level of satisfaction	Frequency (224)	Percentage (100%)
Low	37	16.5
Very low	1	0.4
High	142	63.5
Very high	44	19.6

Source: Field Survey (2018).

was 0.511, representing the amount of increment in respondents' satisfaction with their clinical rotation experience for every unit increase in respondents' satisfaction with the clinical learning environment.

Further analysis was conducted to quantify the relationship between the dimensions of clinical learning environment and respondents' satisfaction with clinical rotation experience using Spearman's correlation test (see Table 6). All three dimensions of the of clinical learning environment (pedagogical atmosphere of the ward, leadership style of ward manager, and premises of nursing in the ward environment) had statistically significant relationship with respondents satisfaction with their clinical rotation experience at $p \leq 0.05$. Pedagogical atmosphere of the ward environment had a moderate positive correlation (r_s (224) = 0.379, $p < 0.001$), and leadership style of ward manager also had a moderate positive correlation (r_s (224) = 0.340, $p < 0.001$), while the premises of nursing in the ward environment had a strong positive correlation (r_s (224) = 0.501, $p < 0.001$) with respondents' satisfaction with their clinical rotation experience.

4. Discussion

4.1. Respondents' Satisfaction with Their Clinical Rotation Experience. The findings from this study showed that nursing students generally have high levels of satisfaction with their clinical rotation experience. Many of them fell in the category of high satisfaction group, whereas a small number was in the category of very low satisfaction. This finding is similar to that of Chuan and Barnett [29], who found that nursing and midwifery students reported high levels of satisfaction with their clinical rotation. A similar study by Al-Sebaee et al. [1] also reported that majority of nursing students expressed high levels of satisfaction with

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Table 5: Strength of association between clinical learning environment and clinical rotation experience of respondents.

Independent variable	R^2	Unstandardized coefficients		Df	p-Value	95% C.I.	
		B	Standard error			Lower	Upper
Clinical learning environment	0.422	0.511	0.055	1.0	0.001*	0.404	0.619
Constant		1.374	0.169			1.042	1.707

Dependent variable: clinical rotation experience, $n = 224$, *significant at $p < 0.05$.

their clinical rotation experience, and only a minority were those who had low level of satisfaction.

Al-Sebaee et al. [1] explained that students' satisfaction with their clinical experience was mainly because they met their rotation objectives, enjoyed their time, and worked with a team who were willing and available to assist them in learning. Further, the students' needs were matched with their preceptors in the clinical area. This view is supported by Alspach [38], who indicated that an optimal satisfaction and orientation are best achieved when the needs of the nursing and midwifery students are matched with the competencies of the preceptors. Another study by Zilembo and Monterosso [39] also confirmed that learning from experienced, knowledgeable, and competent nurse preceptors exposes nursing and midwifery students to effective clinical experience, which directly enhances the students' satisfaction with the clinical rotation.

This study also found that when students were asked to indicate if the clinical rotation was a waste of their time, most indicated that it was not a waste of time. However, a small number indicated it was actually a waste of time. This finding is in line with findings by Perli and Brugnolli [40], who found in their study that nursing students overall rated their clinical rotation experience in the clinical learning environment high. Third-year students were extremely satisfied with activities done on the ward. All the students agreed that they were highly satisfied with the clinical rotation experience and deemed it as useful and not a waste of time.

4.2. Respondents' Satisfaction with the Clinical Learning Environment. Findings about nursing and midwifery students' satisfaction with the clinical learning environment show that close to two-thirds of the students were highly satisfied with the clinical learning environment. This finding is comparable to findings by Papastavrou et al. [4] in a study in Cyprus where nursing students were found to be highly satisfied with their clinical learning environment. The researchers attributed this finding to the level of motivation, the nursing care delivery, the supervisory relationship with the mentor, and nurse teachers' role in the clinical practice area.

The findings of this current study, which shows a high level of satisfaction by nursing students with their clinical learning area, are similar to findings by Nepal et al. [41] in a Nepalese study. The findings of this current study further confirm previous studies in Europe by Papastavrou et al. [4], Saarikoski et al. [42], and Saarikoski and Leino-Kilpi [10], despite the different nursing education systems and settings.

The high levels of satisfaction with the clinical learning environment by nursing students in this current study could

Table 6: Relationship between students' satisfaction with clinical rotation experience and dimensions of the clinical learning environment.

Clinical learning environment dimensions	Spearman's rho	p-value
Pedagogical atmosphere of the ward	0.379	0.000*
Leadership style of ward manager	0.340	0.000*
Premises of nursing in the ward environment	0.501	0.000*

Dependent variable: clinical Rotation Experience, *significant at $p \leq 0.05$.

be attributed to a number of reasons. This could be due to the presence of preceptors at Tamale Teaching Hospital, which is the main clinical learning environment for nursing and midwifery students of the University for Development Studies, more so, the clinical staff being well trained and ready to assist students, and the recognition of students as part of the health care team and being treated with utmost respect and appreciation. Another ground on which the students could demonstrate these high levels of satisfaction with the clinical learning environment has to do with effective levels of clinical nursing skills teacher guidance, constant feedback on student's clinical performance, and regular clinical conferences with clinicians and nurse teachers. Similarly, the degree of satisfaction also appeared to be influenced by the unique organizational atmosphere of the ward and hospital environment at Tamale Teaching Hospital, with well-structured clinical environment to support students' learning.

On the contrary, the findings of this study are at variance with an Iranian study by Hakim [43], who established that most nursing students had little satisfaction to the situations of their clinical learning environment. An earlier study in 2013 also reported low levels of students' satisfaction with their clinical learning environment [44].

Another finding from this study is that the clinical learning environment is found to have great influence on undergraduate nursing and midwifery students' satisfaction with their clinical rotation experience. Many studies have demonstrated the importance of the clinical learning environment in students' satisfaction with their clinical rotation. Perli and Brugnolli [40] as well as D'Souza et al. [45] all found that the clinical learning environment is considered an important influential factor for determining nursing students' satisfaction with their clinical rotation experience. Akta and Karabulut [46] further confirmed in a Turkish study that when nursing and midwifery students graduate without enough clinical rotation practice experience and with insufficient practical skills, then it may be attributed to poor and inadequate clinical learning environmental

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support to student learning. It is therefore obvious that student dissatisfaction with the clinical learning environment is one of the important factors that can hinder satisfactory clinical rotation experience of undergraduate nursing and midwifery student.

4.3. Association between Clinical Rotation Experience and Dimensions of Clinical Learning Environment. The findings from this current study generally show that students satisfaction with their clinical rotation experience was significantly related to all of the three dimensions of the clinical learning environment such as pedagogical atmosphere of the ward, leadership style of ward manager, and the premises of nursing in the ward environment. Our findings are similar to that of Papastavrou et al. [4] who found that nursing and midwifery students' satisfaction with clinical rotation experience was significantly associated to all of the three dimensions of the clinical learning environment.

One notable finding in this current study was that the premises of nursing in the ward environment had more influence on the nursing and midwifery students' satisfaction with their clinical rotation experience than pedagogical atmosphere and leadership style of managers. According to Skaalvik et al. [14], premises of nursing consist of the culture and values of nursing in the ward, information flow related to patients care, documentation of nursing care plans, recording of nursing procedures, and sufficient meaningful learning situations on the ward. In the nutshell, it is important that clinical nurses and midwives resist the temptations of shot-cuts to get the work done, since nursing and midwifery students may end up copying the wrong things.

However, this current finding differs from some findings of Papastavrou et al. [4] where they found that pedagogical atmosphere turns to have more influence on the students' satisfaction than the rest of clinical learning environment dimensions. The differences could be due to the differences in sample size as well as the study settings. Our sample size was lesser than that of Papastavrou et al.'s [30] study.

5. Conclusion

Based on the finding of this study, it can be concluded that the level of satisfaction of undergraduate nursing and midwifery students of the University for Development Studies, Tamale, Ghana, with their clinical learning environment was high. This could be due to the well-structured clinical learning environment, where the students obtain their clinical experience.

The clinical learning environment greatly influences nursing and midwifery students' satisfaction with their clinical rotation experience. The students indicated a high level of satisfaction with their clinical learning environment. This could be attributed to good institutional working relationship between University for Development Studies and Tamale Teaching Hospital, which is the major site where nursing and midwifery students obtain their clinical training.

In light of these findings from this study, it is clear that there are other factors influencing general satisfaction of undergraduate nursing and midwifery students' satisfaction with their clinical rotation experience. Such factors, according to the findings of this study, include supervisory relationship between supervisor and student, clinical learning environment, pedagogical atmosphere of the ward, leadership style of ward manager, and premises of nursing in the ward. Therefore, if the quality of these factors is maintained and improved upon, it could lead to a very high level of satisfaction with the clinical rotation of undergraduate nursing and midwifery students and hence improving nursing and midwifery clinical education in Ghana.

The findings of the study disprove the researchers initial thinking that student nurses and midwives have low levels of satisfaction with their clinical rotation experience and the clinical learning environment.

In summary, while all components of the clinical learning environment are important in determining students' satisfactions with their clinical rotation, nurses and midwives at the clinical sites should pay more attention to the premises of nursing in the ward. This has to do with the culture and values of nursing in the ward, information flow related to patients care, documentation of nursing care plans, recording of nursing procedures, and sufficient meaningful learning situations on the ward as recommended by Skaalvik et al. [14]. This is important because this study identified premises of nursing in the ward to be the most influential dimension of the clinical learning environment, which influences satisfaction with clinical rotation experience of undergraduate nursing and midwifery students. And it has been proven that satisfaction with clinical rotation experience enhances the students clinical skills acquisition, thereby making them better equipped when they graduate to offer quality nursing care to patients.

6. Limitations

The limitations of this study are that findings from this study could be peculiar to the study setting and may not be generalizable to other universities or jurisdictions. Moreover, due to the small number of the participants involved in the study, the study may have limited applicability. The study is also limited to third- and fourth-year nursing and midwifery students at one university. Therefore, the findings may not be generalized to all nursing and midwifery students in Ghana.

Data Availability

The data used to support the findings of this study have not been made available because of a confidentiality clause in our informed consent that participants signed prior to the study. Participants were made to understand that data from them

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will only be used for the study and publication and will not be available to a third party.

Disclosure

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Conflicts of Interest

The authors declare that they have no conflicts of interest concerning the research or publication of this article.

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Research Article

The Influence of Person-Environment Fit on the Turnover Intention of Nurses in Jordan: The Moderating Effect of Psychological Empowerment

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There is an acute shortage of nurses worldwide, including in Jordan. The nursing shortage is considered to be a crucial and complex challenge across healthcare systems and has stretched to a warning threshold. High turnover among nurses in Jordan is an enduring problem and is believed to be the foremost cause of the nurse shortage. The purpose of this study was to investigate the multidimensional impact of the person-environment (P-E) fit on the job satisfaction (JS) and turnover intention (TI) of registered nurses. The moderating effect of psychological empowerment (PE) on the relationship between JS and TI was also investigated. Based on a quantitative research design, data were collected purposively from 383 registered nurses working at private Jordanian hospitals through self-administered structured questionnaires. Statistical Package for Social Sciences (SPSS) 25 and Smart Partial Least Squares (PLS) 3.2.8 were used to analyze the statistical data. The results showed that there is a significant relationship between person-job fit (P-J fit), person-supervisor fit (P-S fit), and JS. However, this study found an insignificant relationship between person-organization fit (P-O fit) and JS. Moreover, PE was also significantly moderate between JS and TI of nurses. This study offers an important policy intervention that helps healthcare organizations to understand the enduring issue of nurse turnover. Additionally, policy recommendations to mitigate nurse turnover in Jordan are outlined.

1. Introduction

Nurses make up the largest section of healthcare professionals, and it is estimated that approximately 90% of direct patient care is provided by nurses [1]. This profession offers more than simply performing duty; instead, it requires self-sacrifice [2] and empathy [3]. It is estimated that there are 29 million nurses and midwives across the world, comprising approximately half of the global healthcare workforce [4, 5]. The nature of nursing requires the potential to understand the needs of others [6], which, in particular, positively affects patient care and the overall quality of the health delivery system. Despite nurses' critical and irreplaceable responsibilities in overall healthcare, the shortage of qualified nurses is a global concern. According to the World Health Organization, there is shortage of more than 9 million nurses, and this number is continuously rising [5], potentially threatening patient outcomes and compromising the overall health delivery system [7]. Specifically, research shows that approximately 4%–54% of nurses across the world intend to leave the profession [8], raising an important concern over healthcare organization practices that will potentially lead toward negative patient outcomes [9]. In this situation, it is imperative to take precautionary measures to prevent nurses from resigning from their professions [10]. Therefore, minimizing turnover is a

priority for healthcare organizations who are concerned about the survival of their entity, particularly with the current escalating nursing shortage [11].

The epidemic nature of nurse shortage is particularly affecting the Jordanian health sector. The Jordanian health sector is considered one of the most developed and modern healthcare systems in the Middle East region. The sector is equipped with the latest machinery used by internationally qualified and world-class doctors working in internationally accredited hospitals [12]. However, despite the attractiveness of the health sector [13], the high turnover of nurses is an enduring problem and is considered the foremost cause of the nurse shortage in Jordan [14]. Previous research [15, 16] extensively used the study of Hayajneh et al. [17] to address the nurse turnover in Jordan. This study indicated that the overall turnover rate among registered nurses in Jordanian hospitals was 36.6% in 2009. However, there are no data available stating the current turnover rate. Therefore, based on the latest statistics provided by the Jordanian Ministry of Health in 2019 [18], we calculated and found that there is a shortage of approximately 50,164 (61%) nurses in the country's healthcare system, whereas only 31,822 nurses are registered and assumed to be working in the hospitals. Furthermore, it is estimated that 81,976 nurses are required to cater to the needs of a population of over 10 million in the country. These figures show that Jordan's healthcare system is hurtling toward a severe nurse shortage. It is important to mention that Jordan is at risk of facing difficulties due to its increasing population that is expected to double by 2030, an increase in the prevalence of noncommunicable diseases (NCDs), and already existing Human Resource for Health (HRH) challenges such as retention and continuous training [19]. In addition, extensive research has revealed a link between nursing staff turnover and patient outcomes in terms of patient health [20], length of stay in the hospital [21], and quality of care [22]. In addition to the potential risk regarding the health of the general public, nurse turnover remains a serious and costly concern for most healthcare organizations. The high turnover among nursing staff severely impacts healthcare organizations in terms of substantial financial and nonfinancial costs [23], which is worrisome and needs immediate attention.

Although there are various factors that can influence one's decision to quit job [24], previous studies have shown the research on nurse turnover to be related to motivation [25], healthcare organizational climates [26], nurses wages [27], healthcare organizational characteristics [28], and coworker support for nurses with children [29]. Besides, Hayajneh et al. [17] determined the rate of nurse turnover in Jordanian hospitals to be 36.6% in 2009 and also identified that the intention of nurses was influenced by geographical regions, healthcare systems, and places of residence. Based on Hayajneh et al.'s [17] research, it is needed to carry out further investigation to examine the phenomena in broader sense.

With respect to the shortage of nurses, Neisner and Raymond [30] indicated unsatisfactory or low JS as a determinant factor. Similarly, Newman et al. [31] pointed out that nurses' satisfaction is a key factor for their retention, while dissatisfaction, in general, is the most important causal factor of nurses leaving practice. This dissatisfaction, and the resultant abandonment of nursing practice, is mainly determined by poor management [31]. In this way, research has shown that one of the important reasons behind nurses' intent to leave is their incompatibility or mismatch with the healthcare organization environment, which is termed P-E fit [32]. In other words, the fit between a person and the environment in which they work results in positive outcomes (e.g., JS), while a lack of a fit produces psychological, physiological, and behavioral strains (e.g., dissatisfaction and burnout) [32, 33]. As a result, the employee may decide to leave the workplace as a final step of withdrawal behavior. Current research is also attempting to study the moderating effects of PE on the TI of nurses. PE is considered a motivational orientation that comprises four cognitions (i.e., meaning, competence, autonomy, and impact) that reflect the feelings of individuals, i.e., the motivation and competency to actively achieve work expectations [34]. Combined, the four cognitions imply that employees find their work meaningful, they feel competent to perform work-related tasks, they feel that they have adequate autonomy at work, and they have belief that their actions can influence their work environment in a positive manner [34]. In addition, PE substantiates the positive influence on P-E fit perceptions, which, in return, restores the satisfaction level of individuals at work [35]. In the nursing profession, workplaces embedded with empowerment yield positive workplace behaviors and attitudes that are consistently linked to the retention of nurses (e.g., JS) [36]. Furthermore, the study of Greco et al. [37] validated the concept that when nurses feel empowered, they are more likely to experience and attain the fit between their expectations and the healthcare organization in which they work.

To better understand and prevent turnover, this study aimed to investigate (i) the main effects of P-E fit on the JS and TI of nurses and (ii) the moderating role of PE on the relationship between the JS and TI of nurses in Amman, Jordan.

2. Theoretical Background and Hypothesis Development

The management literature clearly shows that growing attention is being paid to the concept of P-E fit since it offers many insights into the link between an organization's policies and activities and the attitude and behavior of its employees [38]. Relying on P-E fit theory, organizations and their representatives have a fundamental concern regarding how well their individual employees' characteristics and the organization's environment suit each other. Organizations want to seek out people who will best meet the job requirements, adapt to professional development, change job requirements, and stay loyal and committed to the organization. Meanwhile, prospective employees want to find organizations that harness their specific skills and meet their specific needs [39]. Fit is recognized by comparing the internal aspects of a person, such as their values, personality, goals, and abilities, to conceptually related external environmental elements, such as the organization's or

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supervisor's values, personality, goals, and work requirements [40]. Ultimately, a key focus in virtually every P-E fit theory is that a better fit will lead to superior results, such as higher JS, better work transition, higher job performance, less stress, greater career achievements, and a greater likelihood of retention [41], as well as less TI [42]. Unfortunately, less research has focused on the possible intervening variables that may help to explain how the compatibility between a person and his/her corresponding environment (e.g., organization, job, and supervisor) comes to impact his/her attitudinal and behavioral outcomes.

Our proposed model emphasizes an examination of the nexus among the three dimensions of P-E fit, JS, and TI, as described in Figure 1. This research employed three types of fit—i.e., the compatibility of a person with his/her job, organization, and supervisor—to form the P-E fit as these dimensions have emerged as essential research fields [32, 40, 43]. To the best of the authors' knowledge, there is very scarce research about P-E fit—or any form of fit—in a Jordanian context. However, given the evidence stating that various forms of P-E fit have a unique impact on the result obtained [44], this study contributes to this knowledge by validating the P-E fit in Jordan, particularly in healthcare organizations that are operated privately. Simultaneously, this study contributes to the existing body of the literature in managing healthcare professionals by examining the moderating role of PE between JS and TI.

2.1. Person-Job (P-J) Fit and Job Satisfaction. P-J fit is characterized as the correspondence between a person's abilities and the demands of a job, or a person's needs/wishes and what a job provides [45]. That is, P-J fit is related to an individual's compatibility with an exact job [42]. In other words, it shows the degree of association between employees' skills and job tasks. Research has uncovered that JS drives many advantages for both employees and the organization [46]. The quality of service and the retention of key workers can be related to workplaces in which staff can achieve a sense of satisfaction [47]. Prior investigations have proclaimed a relationship between P-J fit and JS using multiple contextual settings [48, 49]. For instance, Lauver and Kristof-Brown's [42] investigation concluded that P-J fit has a unique impact on JS. Moreover, evidence from an Eastern context was provided about the existence of the relationship between P-J fit and JS, having studied university employees in Pakistan [50]. Based on the above substantive review, the following hypothesis was deduced.

Hypothesis 1 (H1). There is a positive relationship between person-job fit and job satisfaction.

2.2. Person-Organization (P-O) Fit and Job Satisfaction. P-O fit is amongst the most widely researched forms of P-E fit in the Human Resource Management (HRM) domain. P-O fit stimulates communication between employees, promotes employee identification with an organization, creates an environment of confidence, and encourages favorable attitudes and behaviors related to work [51, 52]. From the perspective of the organization, it is the means to retaining adaptable and loyal employees, which is crucial in a competitive business environment and a tight labor marketplace [43]. Meanwhile, P-O fit from an employee's point of view may be a means to display the level of fulfilment of their desires and expectations [53]. Kristof [54] described P-O fit as the compatibility between individuals and organizations that occurs when (1) at least one of the two parties offers what the other requires, (2) they share the same essential features, or (3) both. Compatibility may also encompass other factors such as ideals, attitudes, features, personality, or objectives [55]. In view of this, Kilroy et al. [55] proclaimed that the most correlated and effective predictor of employee outcomes is the uniformity between an individual's personal values and those of the organization, often known as "value congruence." Accordingly, it is reasonable to consider that P-O fit is the main cause of JS [56], leading to the following hypothesis.

Hypothesis 2 (H2). There is a positive relationship between person-organization fit and job satisfaction.

2.3. Person-Supervisor (P-S) Fit and Job Satisfaction. Another emerging dimension of P-E fit is P-S fit—the "fit between (an) employee and his or her direct supervisor characteristics." [44] One significant factor sourced from the P-E fit theory is value congruence within the P-S fit construct [57]. Currently, in terms of the diversity of social norms in the workplace, choosing a supervisor who can cope with this diversity is very critical. Meanwhile, having a supervisor with similar values can offer a stronger sense of fit, thereby improving employees' satisfaction [58]. Moreover, the compatibility between employees and their supervisor will facilitate the employee interaction with the surrounding "organization," [58] which may indirectly impact an individual's fit with their organization. In contrast, Van Vianen et al. [59] uncovered that supervisors and organizations may serve as fairly independent sources of reference to determine the fit of a person. This idea was upheld by a study that autonomously researched the impact of P-O and P-S on JS [41], which also supported the positive role of P-S fit in JS. The following hypothesis was deduced on the basis of the above substantive review.

Hypothesis 3 (H3). There is a positive relationship between person-supervisor fit and job satisfaction.

2.4. Job Satisfaction and Turnover Intention. JS, a concept that is widely studied in organizational behavior research, is commonly conceptualized as one's feelings or state of mind toward the nature of their work [60]. In simpler terms, JS is "the extent to which people like their jobs." [61] The research witnessed that JS has a stable and enormous connection with positive work outcomes. For example, when employees enjoy their work, they become more efficient and remain motivated which ultimately increase the service quality [62]. In addition, JS contributes to cost reduction in terms of less absence, work errors, and turnovers which are a noteworthy outcome. The employees who

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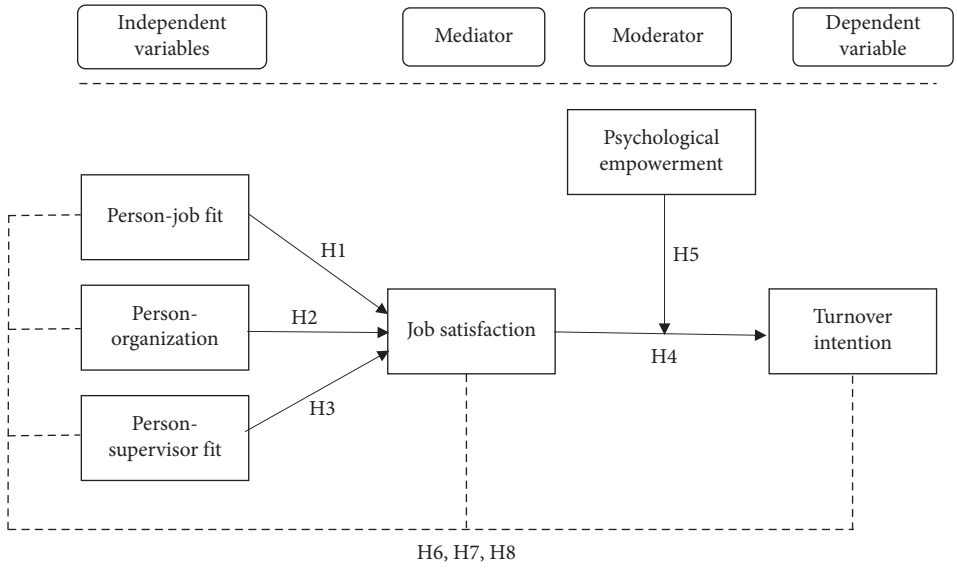

Figure 1: Research framework.

are satisfied with their jobs tend to be in their positions for longer time, whereas the dissatisfied ones possess higher level of intention to leave their workplace [63]. Based on the extensive research, we can reasonably assume that less JS may cause the TI.

Hypothesis 4 (H4). There is a negative relationship between job satisfaction and turnover intention.

2.5. Psychological Empowerment. Spreitzer [34] defines PE as motivational orientation consisting of four cognitions (meaning, competence, autonomy, and impact). PE can be depicted as an individual's perspective of his or her job role and capability to influence work-related outcomes [64, 65]. For instance, empowered employees enhance their performance by rapidly recovering from service delivery mistakes, enriching their knowledge from these recoveries, and creating and redesigning approaches and materials [66]. The literature shows considerable evidence that PE has a significant positive influence on various work-related outcomes such as increased organizational commitment [67, 68], innovative behavior [34, 69], job satisfaction, and performance [61, 62]. Based on the above positive related outcomes of PE, we used PE as a moderator between the relationship of JS and TI. We argued that nurses need to feel psychologically empowered, and when they are, they feel valued in the healthcare organizations, which keeps them satisfied and retained in the workplace. On the basis of the above argument, the following hypothesis is proposed.

Hypothesis 5 (H5). Psychological empowerment moderates the effect of job satisfaction on turnover intention.

2.6. The Mediating Effect of Job Satisfaction. There is a general understanding that P-J fit has major consequences on individual behaviors and work outcomes [49]. Employee satisfaction is strongly influenced by employees' assessments of the work and tasks they carry out, which are essential elements of the P-J fit [42]. Low levels of JS are viewed as an enormous reason for employee turnover in the medical services industry [70]. As a causal relationship, Chhabra [71] found that decreases in P-J fit, which resulted in decreases in JS, were more likely to contribute to higher TI. Accordingly, the following hypothesis was deduced.

Hypothesis 6 (H6). Job satisfaction mediates the link between person-job fit and turnover intention.

P-O fit is often conceptualized as a supplementary fit (i.e., matching the organization). In other words, P-O fit relies in the exchange relationship between a person and his/her organization. This exchange relationship can be seen by the organization as a "demands-abilities fit" happens when an employee's capabilities satisfy the demands of the organization. Meanwhile, the employee sees this relationship as "needs-supplies fit," which emphasizes the requirements and desires of the employee to be fulfilled by the organization [49]. In this sense, those with a high P-O fit will prosper more effortlessly compared to those with a low P-O fit because they can allocate and invest their resources in order to obtain more resources and thus maximize their fit within their environment [52]. Previous investigations have proclaimed that P-O fit leads to desirable employee outcomes (e.g., attitudinal outcomes); for instance, a positive role of P-O fit in evoking employees' JS was found by investigating employees from Eastern and Western contexts [72, 73]. Recently, an investigation by Jin et al. [52] uncovered a causal chain from the input (P-O fit) to attitudes (JS) and TI (employee behavior). Accordingly, the following hypothesis was deduced.

Hypothesis 7 (H7). Job satisfaction mediates the link between person-organization fit and turnover intention.

Employees do not perform in a social vacuum, but rather depend on others with whom they interact, especially their supervisor [74]. Employees regard supervisors as

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representatives of the organization, and supervisors' behaviors are therefore expected to reflect the organizational culture [40]. Meanwhile, supervisors are able to evaluate the alignment of employees' performance to the organization's values and goals [74]. P-S fit is commonly referred to as congruence or resemblance between an individual's and their supervisor's characteristics [40]. The compatibility between employees and their supervisor will increase the satisfaction level [58]. JS is considered to be a key issue for healthcare professionals all over the world [75]. Research among the nurses working in the U.K.'s National Health Service has shown that JS is negatively associated with TI [76]. Accordingly, the following hypothesis was deduced.

Hypothesis 8. (H8). Job satisfaction mediates the link between person-supervisor fit and turnover intention.

3. Materials and Methods

3.1. Study Setting and Sample. A quantitative, cross-sectional approach was adopted to conduct this study. A survey technique was used to collect the data from the nursing staff of private hospitals in Amman Governorate, Jordan's capital. Amman city has 43 hospitals that represents 67% of the private hospitals in Jordan. Prior to data collection, official permission was obtained. The data were gathered through self-administered structured questionnaires through purposive sampling. Prior to filling in the questionnaires, the nurses were requested to read the cover letter and to sign the consent form, which ensured them about the confidentiality of their responses. In total, 600 questionnaires were disseminated to the respective hospitals, of which 383 (63.8%) were filled in and returned to the researchers. Ethical approval for this research was obtained from the Research Ethics Committee of the Jordanian Ministry of Health under the approval code MOH/REC/2019/192.

The means, standard deviations, correlations, and reliabilities among the study variables are presented in Table 1. The Pearson correlations among the variables ranged from 0.21 to 0.66 ($p < 0.01$) which demonstrates an adequate level of reliability for the further tests.

Given the exploratory nature of the study, SPSS 25 was used to analyze the participants' demographic profiles, while hypothesis testing of the model was performed using SmartPLS version 3.2.8. The measurement model was tested in the first step to validate the questionnaire, and the structural model was tested in the second step to evaluate the hypotheses [77]. Table 2 shows the demographic profiles of the participants.

The sample of participants consisted of 227 (65%) female and 122 (35%) male nurses, of which 54% were married and 46% were single. More than half of the participants were aged between 30 and 39 years (51.1%), and almost 30% of the nurses were aged ≥40. In terms of work experience in their current healthcare organizations, 44.2% of the participants had been there for 1–5 years, 17.9% between 6 and 10 years, 17.2% between 11 and 15 years, and only 20.7% more than 15 years.

3.2. Measures and Variables. To assess TI, the six-item Turnover Intention Inventory Scale (TIIS-6) validated by Bothma and Roodt [78] was used. The content of TI included the intention to quit in the future and finding a new opportunity in the current market. The P-J fit was measured using the three-item scale of Cable and DeRue [79] for the needs-supplies fit. A measure of the P-O fit was adopted from Alniaçik et al. [80]. The scale consisted of four items and was slightly modified to match the context of hospitals by changing the word "organization" to "healthcare organization." To assess P-S fit perceptions, we used the three-item P-O fit perception scale developed by Cable and DeRue [79] and then adapted by Zhang et al. [81] to measure the P-S fit. To measure JS, a total of six items were adopted for this study, developed by Zeffane and Bani Melhem [82] from their original source [83]. An average summed score was calculated, with a higher score indicating higher JS. PE was measured with Spreitzer's [34] 12-item scale divided into four dimensions of three items each: meaning, competence, self-determination, and impact. In Hancer et al.'s [84] study, these scales were slightly modified and used for measuring the PE of service employees. In this paper, we used Hancer et al.'s [84] unidimensional version for the measurement of PE. Participants were asked to rate all of the items of the scale on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

4. Results

4.1. Measurement Model. Structural equation model (SEM) was used to test the proposed hypothesis. In this way, Smart PLS-SEM is one of the most appropriate and widely used methods to obtain the results for measurement and structural models [85]. It is based on two major steps for measuring a research model, i.e., reliability and validity of the research model. Reliability was tested through factor loadings, composite reliability (CR), and average variance extracted (AVE). In the present study, items with less than 0.5 factor loading were removed [86]. However, all of the measured CR (0.7) and AVE (0.5) values were acceptable.

Table 3 shows the factor loadings, CR, and AVE values, all of which were greater than the threshold values.

Similarly, the discriminant validity is shown in Table 4 through the heterotrait-monotrait ratio.

The measurement model of the current study is detailed in Figure 2.

Figure 2 reports two important observations that have a great significance on measuring the reliability of the latent variables, including the CR, AVE, and factor loadings. As per the rule of thumb, factor loadings should be greater than 0.50 [86]. In the present study, all of the loaded items greater than 0.5 for P-O fit (POF), P-S fit (PSF), P-J fit (PJF), job satisfaction (JS), psychological empowerment (PE), and turnover intention (TI) were acceptable. In addition, the item loadings forming the AVE should be greater than 0.5 [86]. In our study, the POF (0.598 > 0.50), PSF (0.599 > 0.50), PJF (0.632 > 0.50), JS (0.628 > 0.50), PE (0.624 > 0.50), and TI (0.621 > 0.50) were acceptable; thus, the measurement model was valid.

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Table 1: Summary of means, standard deviations, and correlations of all variables.

	Variables	M	S	1	2	3	4	5	6
1	Person-job fit	3.46	0.63	—					
2	Person-organization fit	3.74	0.66	0.66**	—				
3	Person-supervisor fit	4.27	0.64	0.27**	0.45**	—			
4	Person-supervisor fit	4.01	0.52	0.21**	0.39**	0.21**	—		
5	Turnover intention	3.82	0.46	0.28**	0.34**	0.26**	0.44**	—	
6	Psychological empowerment	3.77	0.39	0.31**	0.29**	0.31**	0.34**	0.23**	—

Notes: $**$, $p < 0.01$(two-tailed test); $N = 349$, the values on the diagonal.

Table 2: Demographic profiles of the participants ($N = 349$).

Characteristics	Range/category	Frequency (%)
Age (years)	20–29	66 (19)
	30–39	179 (51.2)
	40–49	73 (20.7)
	>50	31 (9.1)
Gender	Male	122 (35)
	Female	227 (65)
Marital status	Single	160 (46)
	Married	189 (54)
Work experience (years)	1–5	155 (44.2)
	6–10	61 (17.9)
	11–15	60 (17.2)
	Above 15	73 (20.7)

Table 3: Measurement model evaluation.

Latent variables	Factor loadings	CR	AVE
Person-job fit			
PJF1	0.825	0.837	0.632
PJF2	0.804		
PJF3	0.755		
Person-organization fit			
POF1	0.783	0.855	0.598
POF2	0.679		
POF3	0.790		
POF4	0.832		
Person-supervisor fit			
PSF2	0.522	0.733	0.599
PSF3	0.962		
Job satisfaction			
JS1	0.571	0.909	0.628
JS2	0.815		
JS3	0.858		
JS4	0.845		
JS5	0.854		
JS6	0.771		
Psychological empowerment			
PE1	0.801	0.943	0.624
PE10	0.775		
PE2	0.758		
PE3	0.808		
PE4	0.778		
PE5	0.789		
PE6	0.818		
PE7	0.756		
PE8	0.830		
PE9	0.783		
Turnover intention			
TI1	0.834	0.907	0.621
TI2	0.827		
TI3	0.738		
TI4	0.762		
TI5	0.776		
TI6	0.785		

Note. CR: composite reliability; AVE: average variance extracted. PSF1, PE11, and PE12 are deleted due to low factor loadings.

4.2. Structural Model. The results of the hypothesis are shown in Table 5.

Similarly, Table 6 reports the results of the indirect hypotheses.

Table 5 shows the *t*-values and path coefficients found for the dimensions of P-E fit as the independent variable and JS as the dependent variable. In addition, JS is the independent variable with TI being the dependent variable. In the present study, two out of three of the hypotheses were supported: P-J fit ($t = 2.743$; $\beta = 0.132$) and P-S fit ($t = 8.180$; $\beta = 0.423$) are positively related to JS. Meanwhile, P-O fit ($t = 0.467$; $\beta = 0.022$) was found to be insignificantly related to JS. Similarly, JS ($t = 6.234$; $\beta = 0.577$) is statistically negatively related to TI. In addition, PE had a significantly moderate relationship between JS and TI ($t = 2.478$; $\beta = 0.570$) among nurses in Jordan. These results reveal that the nurses in private healthcare organizations experience high PE, resulting in more satisfaction with their job and a reduction in TI due to psychological interventions. However, when the nurses experience low PE, they tend to be less satisfied with their jobs, leading to higher TI.

To determine whether JS indirectly mediates the relationship between the dimensions of P-E fit and TI, two-tailed results were generated by SmartPLS. Table 6 shows the indirect effect of JS on TI. It is postulated that JS is able to mediate a positive relationship between P-J fit and TI ($\beta = 0.076$; $t = 2.38$) and P-S fit and TI ($\beta = 0.244$; $t = 5.333$). In addition, JS does not mediate the relationship between P-O fit and TI ($\beta = 0.013$; $t = 0.448$). Therefore, Hypotheses 2 and 7 could not be accepted, while Hypothesis 5 could not be rejected. The aforementioned results are presented in Figure 3.

In addition, the current study found that PE weakens the negative effect of JS on TI (Figure 4). It was also shown that even if less-satisfied employees have a high level of PE, they will have a lower tendency to leave his/her healthcare organization.

Interestingly, the results revealed that PE has a significant moderating effect on the relationship between JS and TI. Thus, it was proven that those nurses who have strong PE are less likely

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Table 4: Heterotrait-monotrait (HTMT) ratio.

	JS	PE	PJF	POF	PSF	TI
JS						
PE	0.829					
PJF	0.213	0.17				
POF	0.175	0.195	0.159			
PSF	0.604	0.758	0.136	0.702		
TI	0.817	0.738	0.167	0.124	0.454	

Note. JS: job satisfaction; PE: psychological empowerment; PJF: person-job fit; POF: person-organization fit; PSF: person-supervisor fit; TI: turnover intention.

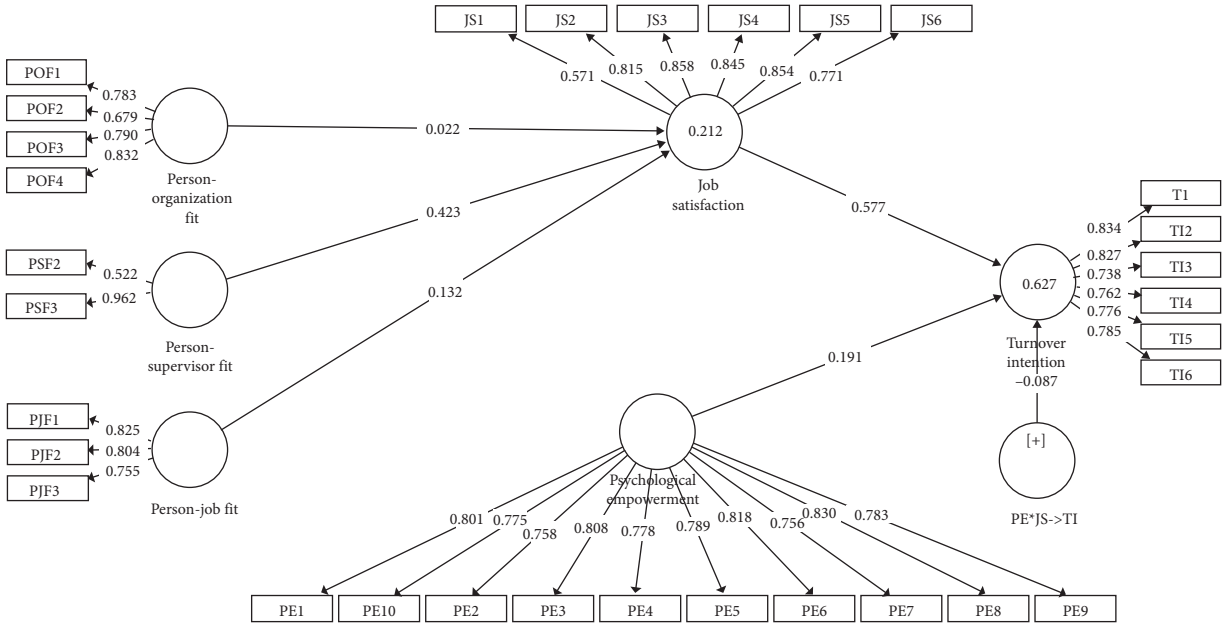

Figure 2: Measurement model.

Table 5: Path coefficients and hypotheses testing.

Hypotheses	Direct relationships	Path coefficient	*t*-value	*p* value	Results
H1	P-J fit - > JS	0.132	2.743	0.006*	Supported
H2	P-O fit - > JS	0.022	0.467	0.641	Not supported
H3	P-S fit - > JS	0.423	8.180	0.000***	Supported
H4	JS - > TI	0.577	6.234	0.000***	Supported
H5	PE*JS - > TI	0.570	2.478	0.013*	Supported

Note. $^{*}p < 0.05$; $^{***}p < 0.001$ (one-tailed).

Table 6: Mediating effect of job satisfaction.

Hypotheses	Specific indirect relationships	Path coefficient	*t*-value	*p* value	Results
H6	P-J fit - > JS - > TI	0.076	2.38	0.018*	Supported
H7	P-O fit - > JS - > TI	0.013	0.448	0.654	Not supported
H8	P-S fit - > JS- > TI	0.244	5.333	0.000***	Supported

Note. $^{*}p < 0.05$; $^{***}p < 0.001$ (two-tailed).

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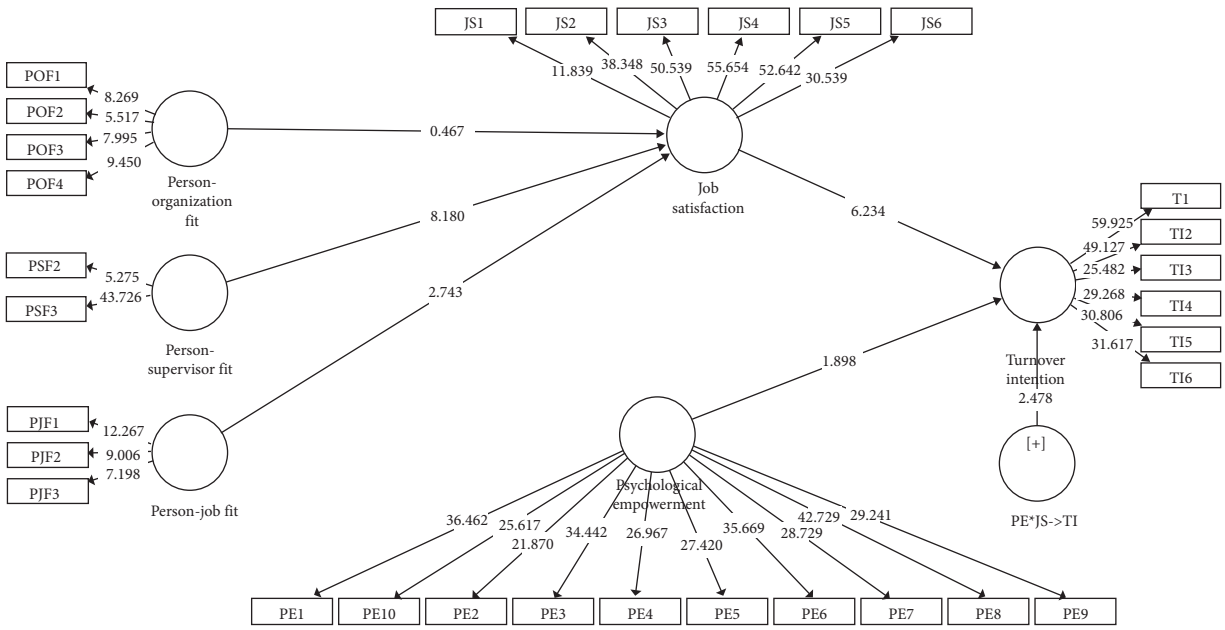

Figure 3: Structural model.

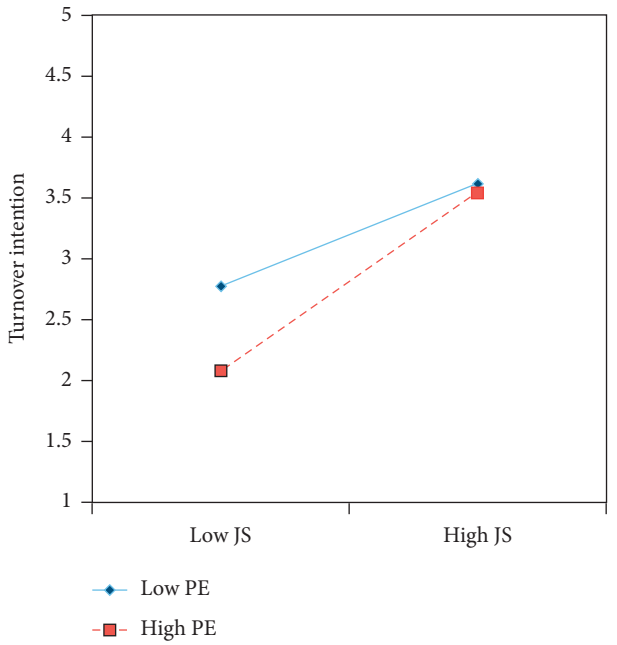

Figure 4: Interaction effect of job satisfaction and psychological empowerment on turnover intention.

to quit their job. The findings of this study endorse that JS can divert the intentions of nurses from leaving their jobs.

5. Discussion

Driven by P-E fit theory, the present study provided a novel insight into the constructs of and contributions to the TI of nurses. The current research contributes to findings regarding the identification of the relationship between the individual, i.e., nurses, and the organization, i.e., healthcare organizations, finding that it is substantially related to the process of TI. Therefore, the purpose of this study was to deepen our understanding of the role of the three dimensions of the P-E fit (i.e., P-J fit, P-S fit, and P-O fit) in the JS and TI of the nurses working in the hospitals of Amman, Jordan.

The findings indicated that P-J fit is significantly associated with nurses' JS. P-J fit refers to the ability of an employee to complete a specified job that matches the actual requirements of the job or to the match between an individual's wishes and needs and the characteristics of the job [87]. These results also seem to be consistent with a recent study [88] that affirmed that employees are satisfied and stay tuned into an organization when they believe that their jobs are in accordance with their knowledge, skills, and abilities. This belief may create harmony between the employee and the workplace, specifically with their jobs. In addition, Edwards [45] revealed that a high level of fit between a person and their job leads to high motivation in said person. Such individuals may have considerably increased performance in work, overall satisfaction, and attendance. Furthermore, P-J fit also initiates individuals to perform better in teams and to produce meaningful work [89]. Furthermore, we also found that the better the P-J fit is, the less likely the nurses were to quit jobs and the more likely to retain at their workplace. This result is consistent with a previous investigation [90].

Similar to previous findings, the present study also found a significant relationship between P-S fit and nurses' JS. These findings are consistent with a recent investigation, Andela and van der Doef [91], which confirmed that an appropriate match between an individual and their job and supervisors yields satisfaction at work, reduces burnout, and lessens the intention to leave their job. These findings also confirm the results of Chuang et al. [92], who showed a

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significant relationship among the P-E fit dimensions, JS, and TI. Moreover, research has shown that the role of nurses' supervisors significantly interacts with their JS and leads to an improved quality of patient care [93].

Contradictory with previous findings, this study found an insignificant relationship between P-O fit and JS. These findings are consistent with previous studies, i.e., [68, 94], which concluded that nurses distrust healthcare organizations' policies when they see a discrepancy in their common values and those of the host organization. This indicates that the individual goals and personal desires of nurses are not in tandem with the policies and culture of health organizations. The results of current research are in disagreement with previous studies that showed that when nurses perceive P-O fit, this has a positive impact on JS [91, 95]. It is also important to mention that individual P-O fit perceptions may change over a period of time during a nurse's tenure in a health organization [96]. Moreover, the study in the USA also found that a lack of a P-O fit can lead to decreased JS and increased TI [97]. Similarly, the study of Brown and Yoshioka [90] also witnessed that a better P-O fit decreases the intention to quit among employees.

In addition, the current study found that JS has a negative and significant impact on the TI of nurses. Evidence was found for the indirect effects of two out of the three P-E fit elements on TI through JS. It was only P-O fit that did not exert its effects on TI, neither directly nor indirectly via JS. In this way, JS was found to be a total mediator of the effects of P-J fit and P-S fit on TI. One possible justification is the age of the participants, the majority of whom were less than 40. These nurses could have been more likely to consider leaving their jobs in an attempt to achieve career advancement in a better organization or place. These findings are complementary and could be explained by the fact that as a healthcare worker gets older, they may become more adapted to their work and less ambitious. In contrast, younger workers are more active, problem-focused, and reactive to work strains and may have high ambitions to pursue wealth and status. The current findings suggest that nursing leaders should focus on cultivating nurses' values and improving their departments' culture. The high risk, workload, and pressure presented by nursing may leave nurses with insufficient time and energy to actively participate in organizational management and decision-making, which diminishes their perceptions of their impact [98].

This study found that PE weakens the negative and significant relationship between JS and TI. Nurses need to attain PE to reduce their TI. Our findings suggest that nurses tend to hold intentions to resign from their positions and eventually go on to quit their jobs, which could potentially exacerbate the nursing shortage. However, such TI may be reduced if nurses experience positive PE and confidence in their work role [99]. The results of this study support the concept that psychologically empowered employees will feel more empowered and that they will perceive higher autonomy to take decisions [100]. Empowered employees bring novel ideas to the organization [101]. In addition, the findings are interesting in light of previous research [102, 103] that suggests that psychologically empowered employees feel that their tasks are meaningful and intended to achieve the organizational objectives [102]. Furthermore, nurses may feel that that they are competent to perform their assigned tasks [69]; are confident that they can complete their assigned tasks [103]; and their work has a significant impact on the overall healthcare organizational objectives [100]. Consequently, nurses experiencing such a work environment seem to have greater retention in a healthcare organization.

6. Policy Interventions

The study has implications for nurses' leaders and healthcare organizations that how they preserve their nurse personnel satisfaction and retain them in the workplace. To address this issue, one effective way would be for the nurse's leaders and healthcare organizations to think carefully and honestly about their organizational values. In other words, the healthcare organizations should honestly articulate their values and overcome the potential conflicts through the dialogue. The congruence of nurses with the healthcare organization positively impacts individual productivity (i.e., patient care) and the overall quality of the service provided [68, 94]. Similarly, ambiguous values may lead towards the value incongruence as the P-O fit relationship may not be understood well enough to be articulated, thereby not being effectively addressed. To address these issues, nurses' leaders and healthcare organizations need not only to carefully recognize and align their mission and values in the hiring process but also make the applicants informed at the entry stage to avoid possible mismatch. Specifically, to combat the high turnover of nurses, it is important to note that the perceptions of applicants of their fit with a healthcare organization are a predictor of their job choice [32]. Therefore, the healthcare organization should provide an honest presentation of the workplace values, as well as the expectations of the work environment prior to taking nurses on board.

In addition, job demand includes shift duty timings, and related work protocols need to be carefully designed so that work must not be conflicted with nurses' personal and familial roles. In this context, clearly articulated values in the organizations help to attract and retain a homogenous workforce [104]. In the context of the current study, it seems that the surveyed nurses experienced value conflicts after entering the workforce. In this context, the study of Duchscher [105] revealed that the proper orientation programs during recruitment can prevent "transition shock" for new nurses.

For healthcare organizations, it is important to understand that improved retention leads to improved patient care, uplifts patient satisfaction, and reduces patient length of stay in the hospital [106], as well as financial benefits. For example, a previous estimate showed that it costs in excess of 150% of a nurse's annual salary to recruit, select, and train a replacement [107]. Healthcare organizations that improve retention could hence reap considerable financial benefits in a time of increasing budgetary constraints. In this context, this study offers PE as an effective tool to restore the satisfaction of nurses and to help them retain their positions in

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hospitals. In doing so, healthcare organizations should seek to impact nurses' JS with a practice that defines "empowerment over quality job results." The estimates show that JS is 2.23 times higher in hospitals where nurses feel encouraged after a failure (1.68 for PE over quality job results). Therefore, it is crucial to consider PE over job results, the influence of which also increases over time (age), suggesting that this strategy is also relevant for junior nurses. As such, healthcare organizations should tailor their human resource strategies in way that aligns their goals while keeping nurses satisfied at the workplaces.

7. Study Limitations

This study used a cross-sectional research design, which raises questions about causality. Our research was based on the logic that nurses usually form P-E fit during the employment period [108], but it is equally plausible that they can form P-E fit after a period of employment. Additionally, our data were collected from private hospitals in Amman, Jordan. Therefore, we are uncertain about the extent to which the findings may be generalized to nurses in the public healthcare sector. The turnover intention of the nurses can be examined by other potentially related variables such as emotional labor [109], role conflict [110], resilience [111], workplace violence [112], need for achievement, and work-life conflict [113]. In addition, findings could be enriched by adopting qualitative research design in which surveyed nurses could be interviewed to deepen our understanding of TI with studied variables.

8. Conclusion

The current study investigated the influence of P-E fit on the TI of nurses in Jordon with the moderating effect of PE. The results showed that there is a significant relationship between person-job fit (P-J fit), person-supervisor fit (P-S fit), and JS. However, this study found an insignificant relationship between person-organization fit (P-O fit) and JS. Moreover, PE was also significantly moderate between JS and TI of nurses. Based on the results, the policy intervention is also outlined to mitigate the nursing turnover issue in Jordon.

Data Availability

The underlying data from the results of this study reside with the corresponding author.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

S. A. and A. R. conceptualized the study. A. R. and S. M. provided the methodology. S. M. provided software. S. A., R. K. A., and M. A. validated the study. S. M. and R. K. A. were involved in formal analysis. S. A. and M. A. investigated the study. S. A. and R. K. A. contributed to resources. S. A. was involved in data curation. A. R., S. A., and S. M. wrote the original draft. A. R., S. M., and R. K. A. reviewed and edited the article. A. R. visualized the study. S. M. and A. R. supervised the study. S. A., M. A., and S. M. were involved in project administration. S. A., A. R., S. M., R. K. A., and M. A were involved in funding acquisition. All authors read and agreed to the published version of the manuscript.

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Research Article

Medication Administration Error Reporting and Associated Factors among Nurses Working in Public Hospitals, Ethiopia: A Cross-Sectional Study

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Background. Medication administration error is one of the most common errors that occur when a discrepancy occurs between the drugs received by the patient and the drug intended by the prescriber. A lot of studies were conducted on medication administration error. But there were a few studies on whether those medication administration errors are reported or not among nurses in Ethiopia. So this study is aimed at assessing the magnitude of medication administration error reporting and the associated factors among nurses. *Objectives*. To assess the magnitude of reported medication administration error and associated factors among nurses working in public hospitals, Ethiopia. *Methods*. An institutional-based cross-sectional study design was employed from March to April 2019. Simple random sampling technique was used. A structured self-administered questionnaire was used to collect the data. Data were entered using EpiData version 3.1 and descriptive analysis, bivariate, and multivariate logistic regression analyses were carried out using SPSS version 21 software. *Results*. The magnitude of medication administration error reporting was found to be 37.9%. Being female [adjusted odds ratio (AOR) = 2.91; confidence interval (CI) (1.45–5.85)]; belief that errors should not be reported [AOR = .3; CI (.15–.61)]; having work experience of greater than 15 years [AOR = 3.4; CI (1.11–13.85)]; having bachelor science degree [AOR = 3.27; CI (1.61–6.66)]; and caring for greater than 10 patients [(AOR = .4; CI (.16–.96)] were factors associated with nurses medication administration error reporting. *Conclusion*. The magnitude of medication administration error reporting among nurses was found to be low. To increase medication administration error reporting, efforts should be made to change the attitude of nurses on the belief that errors should be reported, retaining staffs that have longer experience, upgrading staffs educational status, and limiting the number of patients cared by a single nurse.

1. Background

According to World health organization (WHO) 2017 report, globally the cost associated with medication errors has been estimated about 42 billion US dollars annually [1]. The United States National Coordinating Council for medication error reporting and prevention defines a medication error as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patients, or consumer." Such events may be related to professional practice, health care products, procedures, and systems including prescribing, order communication, product labeling, packaging, nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use [2].

Medication administration error (MAE) is one of the most common errors in the medication error process and occurs when a discrepancy occurs between the drugs received by the patient and the drugs intended by the prescriber [3]. To improve patient safety and reduce the incidence of MAE, nurses should intercept medication errors before reaching the patient by adhering to the six rights of medication administration. The six rights of medication

administration are the right patient, right drug, right time, right route, right dose, and right documentation. Reporting of MAEs is fundamental to error prevention. Reporting reduces the adverse effects of errors and effectively helps to avoid future errors that can cause patient harm. In addition, reporting of MAEs reduces the number of future errors, diminish personal suffering, and decrease financial costs [4].

Voluntary reporting is a critical strategy to detect MAEs. A critical strategy to reduce MAEs is to use error detection, which comprises error recognition and reporting. MAE reporting requires professionals to recognize the occurrence of MAEs and to report them through official channels. MAE reporting is an effective way used to identify the root causes of MAE and to prevent repeating them in future [5]. When MAEs occur, their effects can be mitigated by facilitating correct actions, use of antidotes, and use of appropriate guidelines. Additionally, further education and training will be provided to improve work competencies [6].

A study conducted in North Carolina, Philippines, and Saudi Arabia showed that about 37.9%, 52%, and 28.6% of study participants were reporting MAE, respectively [7–9].

A study conducted in Ethiopia indicated that the proportion of MAE reporting among nurses was found to be 57.4% [10]. Another study conducted in University of Gondar Referral Hospital, Ethiopia, revealed that the estimated MAE reporting was found to be 29.1%. The perceived rates of MAEs reporting for non-intravenous-related medications ranged from 16.8% to 28.6% and for intravenous-related medications from 20.6% to 33.4% [11].

There are a lot of studies done on MAE [12–17], but to the knowledge of the researcher, there are only a few studies [10, 11] reporting whether those MAEs are reported or not among nurses in Ethiopia. In developing countries like Ethiopia, educational, economic, and trained manpower problems, the issue is primarily one of the least investigated and neglected health problems [18]. So, this study is aimed at answering the research questions, what is the magnitude of medication administration error reporting among nurses? And what factors are associated with nurses' medication administration error reporting?

2. Methods

2.1. Study Area, Period, and Design. The study was conducted in public hospitals of North Shoa Zone, Amhara region, Ethiopia. North Shoa is one of the 10 zones in Amhara region. In North Shoa Zone, there are 9 public hospitals. This study was conducted on three hospitals from March to April. An institutional-based cross-sectional study design was employed.

2.2. Source Population and Study Population. All nurses working in public hospitals of North Shoa Zone were used as a source population. Nurses that work in selected public hospitals of North Shoa Zone were used as a study population.

2.3. Inclusion and Exclusion Criteria. All nurses who have a minimum of diploma qualification in nursing and involved in direct patient care, those who have at least six months of work experience, and those who are full time workers were included. Those nurses who were on annual leave, maternal leave, seriously ill, and attending external training courses off-site at the time of the data collection were excluded.

2.4. Sample Size Determination and Sampling Procedure. The sample size was determined using single population proportion formula with the assumption of 95% confidence interval with margin of error of 5%, 10% non-response rate and 57.4% of prevalence of medication administration error reporting from a study conducted in Addis Ababa [10]; the sample size becomes 376. Since the source population is 472 which is less than 10,000, using finite population correction formula and adding 10% non-response rate, the final sample was 230.

To select 230 nurses from the total of nine hospitals, three hospitals were selected by using simple random sampling. Then, the sample size was proportionally allocated to the number of nurses in each hospital. Finally, study participants were selected by using simple random sampling technique.

2.5. Data Collection Method and Procedures. The instrument used for data collection was a structured self-administered questionnaire. The questionnaire was adapted and modified from a previous study [10]. It contains 48 questions arranged into six sections.

The first section deals with the sociodemographic characteristics of the participants; the second section contains work-related aspects of nurses; the third section is regarding knowledge on MAEs; the fourth section is about the reason why MAEs occur; the fifth section is the reason why MAEs are not reported; and the six section deals with the percentage of each type of error reported. The questionnaire that is used in this study is available as a supplementary file.

To assess the validity of the instrument, face validity and content validity were done by five experts. Content validity ratio (CVR) and content validity index (CVI) were measured and were 0.2 and 0.83, respectively, which shows that the instrument is valid. The reliability of the instrument was checked using Cronbach's alpha and was 0.8 which showed that the instrument was reliable. The questionnaire was pretested on 5% of the sample size at the nearby hospital and appropriate amendment was done on it.

Data were collected by three diploma holder nurses. Training was provided for data collectors about the overall objective of the study, content of the questionnaire, and how to collect the data. The questionnaire was given to the randomly selected participants. Confidentiality of the information was kept by excluding the names of the respondents and names of the hospitals in the questionnaire.

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Table 1: Socio-demographic characteristics of nurses working in public hospitals of North 53 Shoa Zone, Amhara, Ethiopia, 2019 ($n = 224$).

Variables	Responses	Frequency ($n = 224$)	Percentage (100%)
Sex	Male	104	46.5
	Female	120	53.5
Age	20–24	15	6.7
	25–29	104	46.4
	30–34	48	21.4
	≥35	57	25.5
Marital status	Single	96	42.9
	Married	117	52.2
	Others	11	4.9
Educational status	Diploma	93	41.5
	BSc	120	53.5
	MSc	11	5.0
Educational degree attained	Government institution	195	87.1
	Private institution	29	12.9

2.6. Data Analysis. The returned questionnaires were checked for completeness, cleaned and entered into EpiData 3.1, and analyzed using SPSS (Statistical Package for the Social Sciences) version 21. Descriptive analysis was done and presented using tables and texts. Bivariate and multivariate logistic regression analysis was used to identify factors associated with medication administration error reporting. Variables with $p < 0.02$ in bivariate logistic regression analysis were entered to multivariate logistic regression analysis [13]. The adjusted odds ratio was used to interpret the strength of association at 95% CI and those variables with $p < 0.05$ in multivariate logistic regression analysis were considered as significant predictors of the outcome variable.

3. Results

3.1. Sociodemographic Characteristics. This section gives an overview of the sociodemographic characteristics of nurses working in public hospitals of North Shoa Zone, Amhara, Ethiopia, 2019. From the survey, information about sex, age, marital status, educational level, and educational degree attained of the respondents was analyzed.

Out of 230 proposed study participants, 224 nurses participated in this study indicating a response rate of 97.4%. More than half (120) (53.5%) of respondents were females, 117 (52.2%) of them were married, 104 (46.4%) of nurses were in the age group of 25–29 years old, 120 (53.5%) of nurses had Bachelor of Science in Nursing and received their degree from a governmental institution, 195 (87.1%) (See Table 1).

3.2. Work-Related Characteristics of the Respondents. From the participants, 106 (47.3%) had a work experience of ≤4 years, 157 (70.1%) nurses worked in the inpatient department, 143 (63.8%) nurses worked in the day duty shift, and 119 (53.1%) of them worked for 3–6 months on their unit. Regarding average patient care, 81 (36.2%) of the participants provided care for 1–6 patients. The majority of the participants or 189 (84.4%) nurses responded that there is no MAE reporting system in their hospital (see Table 2).

3.3. Magnitude of Medication Administration Error Reporting among Nurses. The proportion of MAE reporting in the last six months that was committed or witnessed among nurses in this study was found to be 85 (37.9%). Out of the reported MAEs ($n = 85$), about 59 (69.4%) of medication administration error reporting was found among female nurses as compared to male ones (26) (30.6%).

More than half (132) (58.9%) of the participants perceived that MAEs should be reported as they occur. Out of the total participants ($n = 224$), majority (205) (91.8%) of the study participants communicate with other nurses when they faced doubt during medication administration and 210 (93.8%) of the participants believed that the 6 rights in medication administration would avoid errors in medication administration (see Table 3).

Among the reasons for MAEs, about 122 (54.5%) of the respondents said that physician orders were not clear/legible, 133 (59.4%) said change of physician orders frequently, 127 (56.7%) said failure of pharmacists to label the medication correctly, 133 (59.4%) of them said the situation in which many patients are on the same or similar medications, 130 (58.0%) of them said the situation in which unit staff do not receive enough service training on new medications, and 136 (60.7%) of them responded that inadequate unit staffing was identified as a reason for MAE.

Regarding the reasons why medication administration errors were not reported, 142 (63.4%) of respondents expressed their disagreement with hospital's definition of a medication error, 121 (54.0%) sampled nurses did not think the error is important enough to be reported, 143 (63.8%) participants believed the expectation that medications should be given exactly as ordered is unrealistic. Another reason for not reporting MAEs is that about 132 (58.9%) nurses have fear of adverse consequences from reporting medication errors and 145 (64.7%) of respondents believed nursing administration focuses on the individual rather than looking at the system as a potential cause of the error.

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Table 2: Work-related characteristics of nurses in North Shoa Zone public hospitals 56 Amhara, Ethiopia, 2019.

Variables	Response	Frequency	Percentage
Working experience	≤4 years	106	47.3
	5–10 years	71	31.7
	11–14 years	27	12.1
	≥15 years	20	8.9
Working unit	Medical ward	59	26.3
	Surgical ward	50	22.3
	Pediatrics ward	23	10.3
	Obstetrics and gynecology ward	9	4.0
	Emergency	28	12.5
	Intensive care unit	16	7.1
	Outpatient department	18	8.0
	Others	21	9.4
Duration on present unit	≤3 months	15	6.7
	3–6 months	119	53.1
	≥6 months	90	40.2
Current duty shift	Day shift	143	63.8
	Night shift	61	27.2
	Alternative shift	20	8.9
Average patient care	1–6 patients	81	36.2
	7–10 patients	76	33.9
	>10 patients	67	29.9
Presence of MAE reporting system	Yes	35	15.6
	No	189	84.4

Others = NICU, OR, TB.

Table 3: Magnitude of MAE reporting among nurses working in public hospitals of North Shoa Zone, Amhara, Ethiopia, 2019 ($n = 224$).

Variables	Response	Frequency	Percentage
Report MAE	Yes	85	37.9
	No	139	62.1
Should medication errors be reported	Yes	132	58.9
	No	92	41.1
Communicate with another nurse when facing doubt during medication administration	Yes	201	89.7
	No	23	10.3
Following 6 rights of medication administration avoids MAE	Yes	205	91.5
	No	19	8.5

3.4. Percentage of Each Type of Error Reported. The types of medication administration errors reported among nurses were measured by the frequency of wrong route, wrong time, wrong patient, wrong dose, wrong drug, and medication is omitted; out of the sampled 224 nurses, 155 (69.2%) of them responded wrong route of administration, 126 (56.3%) of the respondents opt wrong time of administration, 167 (74.6%) of respondents responded wrong patient administration, 99 (44.2%) respondents provided wrong dose, 162 (72.3%) of them administered wrong drug, and 121 (54.0%) respondents were not given prescribed medications (see Table 4).

3.5. Factors Associated with Nurses' Medication Administration Error Reporting. Binary logistic regression analysis was done to identify factors associated with nurses' MAE reporting. Sex, educational status, educational award, nurses work experiences, average patients care per shift, belief that errors should be reported, the names of many medications being similar/look alike, not agreeing with hospital's definition of a medication error, and fear of adverse consequences from reporting medication errors had an association with MAE reporting in bivariate logistic regression analysis. All variables that have an association with the outcome variable at $p < 0.2$ in bivariate logistic regression analysis were included in the multivariate logistic regression analysis model. In multivariable logistic regression analysis, factors that were significantly associated with nurses' MAE reporting were sex, educational status, working experience, belief that errors should be reported, and average patient care.

The proportion of MAE reporting was higher among female nurses as compared to male ones. Female nurses were almost three times more likely to report MAEs than male nurses [AOR = 2.91; CI (1.45–5.85)]. Similarly, educational status was an important predictor of MAE reporting. BSc nurses were more than three times more likely to report medication administration errors as

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Table 4: Types of medication administration errors reported among nurses working in public hospitals of North Shoa Zone, Amhara, Ethiopia, 2019 ($n = 224$).

Variables	Value	Frequency	Percentage
Wrong route	1–20	155	69.2
	21–30	43	19.2
	31–40	16	7.1
	41–50	7	3.1
	>50	3	1.3
Wrong time	1–20	126	56.3
	21–30	55	24.6
	31–40	21	9.4
	41–50	12	5.4
	>50	10	4.5
Wrong patient	1–20	167	74.6
	21–30	32	14.3
	31–40	14	6.3
	41–50	7	3.1
	>50	4	1.8
Wrong dose	1–20	99	44.2
	21–30	73	32.6
	31–40	25	11.2
	41–50	17	7.6
	>50	10	4.5
Wrong drug	1–20	162	72.3
	21–30	36	16.1
	31–40	15	6.7
	41–50	8	3.6
	>50	3	1.3
Medication is omitted	1–20	121	54.0
	21–30	52	23.2
	31–40	23	10.3
	41–50	15	6.7
	>50	13	5.8

compared to those who are diploma nurses [AOR = 3.27; CI (1.61–6.66)]. And MSc nurses were more than six times more likely to report MAEs than Diploma nurses [AOR = 6.4; CI (1.02–40.3)].

Regarding with working experience, participants who worked greater than 15 years were almost four times [AOR = 3.93; CI (1.11–13.85)] more likely to report MAEs than those who work less than than or equal to four years. Participants who gave care for greater than 10 patients were 0.4 times less likely or 60% times more likely to report than those participants who gave care for less than or equal to 6 patients (AOR = .4; CI (0.16–.96)). Participants who believed an error should not be reported were 0.3 times less likely or 70% times [AOR = .3; CI (.15–.61)] more likely to report MAEs than those participants who believed that errors should be reported (see Table 5).

4. Discussion

This study was carried out with the aim of determining the magnitude of MAE reporting and the associated factors. In this study, the proportion of MAE reporting was low. This was in line with the finding in North Carolina which indicated that 37.9% of the participants reported all types of medication errors that occurred on their unit [7] and in a study in Canada, 42.9% ($n = 506$) have reported a near miss to the resident safety program, 45.7% ($n = 539$) have reported a minor error, 21.3% ($n = 141$) have reported a serious error, and 11.9% ($n = 141$) have never reported an error [19]. However, the finding of this study was lower than a study done in Addis Ababa federal ministry level hospitals, Ethiopia (57.4%) [20]. This implies that the habit of reporting MAEs is low. Hence, that all types of errors should be reported. This may be due to lack of readily available reporting system among the hospitals under the study. Additionally, there is also variation in the type of hospitals for the study in which the study done in Addis Ababa federal ministry level hospitals was conducted in three specialized hospitals, whereas this study was done in one referral hospital and two primary hospitals [10].

The finding of this study was slightly high as compared to studies in Saudi Arabia and University of Gondar Referral Hospital in which 28.6% and 29.1% of MAEs were reported, respectively [11, 20], and higher than a study in tertiary hospitals in Addis Ababa in which 13.4% of MAEs were reported [10]. The possible reason for the difference may be due to the differences in organizational medication administration error reporting systems and differences in the time frame that the studies were conducted. Additionally, they may fear legal issues, blame for the reported errors in the working environment, and fear lack of job following the reporting of errors [10].

In this study, the proportion of female nurses who reported medication errors was higher than the male nurses and was statistically significant. Female nurses were almost three times more likely to report MAEs than male nurses. The result was consistent with that of a study from Addis Ababa [10]. This difference may be due to the fact that in this study female nurses face more interruption 77 (64.7%) than male nurses. So, they may make more errors and report more.

Educational status was an important predictor of MAE reporting. BSc nurses are more than three times more likely to report MAEs as compared to those who are Diploma nurses. MSc nurses were more than six times more likely to report than Diploma nurses. The result was consistent with that of the study from Addis Ababa, Gondar [7, 10, 11] in which participants who had educational status of BSc and above were more than one times more likely reported MAE than those participants who had educational status of diploma. It is also in line with a study in Canada in which having a higher level of education is an independent predictor of disclosing more information about the errors. This is possibly due to the fact that those participants who had higher educational status may have higher knowledge, attitude, and practice toward the drug adverse effect, and know more about the code of ethics through their educational journey.

From the participants, 58.9% perceived that errors should be reported as they occur for the safety of patients and this is lower than the study from Addis Ababa. The possible difference may be due to lack of a readily available practice system of MAE reporting [10].

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Table 5: Bivariate and multivariable logistic regression analysis of factors associated with 278 nurses MAE reporting working in public hospitals of North Shoa zone, Amhara, Ethiopia, 2019.

Variables	Response	Medication administration error reporting		Odds ratio (95% CI)	
		Yes	No	Cor	AOR
Sex	Male	26 (24.8%)	79 (75.2%)	1.00	1.00
	Female	59 (49.6%)	60 (50.4%)	2.98 (1.68–5.28)	2.91 (1.45–5.85)*
Educational status	Diploma nurse	21 (21.9%)	75 (78.1%)	1,00	1.00
	BSc nurse	56 (47.5%)	62 (52.5%)	3.22 (1.76–5.90)	3.27 (1.61–6.66)*
	MSc nurse	8 (80.0%)	2 (20.0%)	14.28 (2.81–72.42)	6.40 (1.02–40.30)*
Working experience	≤4 yrs	38 (35.8%)	68 (64.2%)	1.00	1.00
	5–10 yrs	28 (39.4%)	43 (60.6%)	1.35 (0.64–2.81)	1.17 (0.51–2.70)
	11–15 yrs	11 (40.7%)	16 (59.3%)	5.17 (2.40–11.13)	2.11 (0.84–5.30)
	>15 yrs	8 (40.0%)	12 (60.0%)	9.78 (3.47–27.54)	3.93 (1.11–13.85)*
Educational award	Gov't institution	81 (41.5%)	114 (58.5%)	1.00	1.00
	Private institution	4 (13.8%)	25 (86.2%)	0.22 (0.07–.67)	0.38 (0.10–1.40)
Average patient care	1–5	41 (50.6%)	40 (49.4%)	1.00	1.00
	6–10	28 (36.8%)	48 (63.2%)	.56(,30–1.07)	0.66 (0.30–1.48)
	≥11	16 (23.9%)	51 (76.1%)	.30(.15–.62)	0.40 (0.16–.96)*
Errors should be reported	Yes	64 (48.5%)	68 (51.5%)	1.00	1.00
	No	21 (22.8%)	71 (77.2%)	0.31 (0.17–.57)	0.30 (0.15–.61)*
Agree with hospital definition on MAEs	Agree	29 (59.2%)	20 (40.8%)	1.00	1.00
	Disagree	56 (32.0%)	119 (68.0%)	3.08 (1.60–5.90)	1.40 (0.60–3.23)
Fear adverse Consequence from MAE reporting	Agree	58 (44.6%)	72 (55.4%)	1.00	1.00
	Disagree	27 (28.7%)	67 (71.3%)	0.50 (0.28–.88)	0.97 (0.47–1.99)

NB: variables having a p value ≤ 0.2 in bivariate analysis included in the multivariable analysis. *Statistically significant at p value < 0.05.

Participants who say medication administration errors should not be reported were 70.1% times less likely to report MAEs than those who say medication administration errors should be reported.

This result is lower than the previous study conducted in Addis Ababa [10].

Pertinent to work experience, participants who worked greater than fifteen years were almost four times more likely to report medication administration errors than those who worked less than or equal to four years. This result is consistent with the study conducted in Saudi Arabia [20]. This is possibly due to the fact that nurses who work longer may be concerned about the improvement of quality of service rather than the consequence of reporting medication administration errors on their career but if the nurses are new and have a short period of experience, they may be concerned about loss of their career and fear blame of their errors.

Participants who gave care for greater than 10 patients were 60.4% times less likely to report medication administration errors than those who gave care for less than or equal to 6 patients. This result is contradicted with a study conducted in Saudi Arabia [20]. This might be due to difference in time frame in which the study was conducted and difference in organizational (hospital) type.

The result of this study shows that medication administration error reporting among nurses was low. This implies that there is a problem in nursing practice. So, each hospital should create and apply a reporting system and nurses should practice the documentation and reporting of errors through the reporting system.

As a limitation, since the study was done by cross-sectional study design, it does not determine cause effect relationship. The number of the participants might have contributed to the absence of a significant association between some of the factors and MAE reporting, as well as to the generalizability of the findings.

5. Conclusion

The magnitude of MAER among nurses was found to be low. Being female, belief that errors should be reported, working experience, educational status, and average patient care were factors significantly associated with nurses' medication administration error reporting. To increase medication administration, error reporting efforts should be made to change the attitude of nurses on the belief that errors should be reported, retaining staffs that have longer experience, upgrading staff educational status, and limiting the number of patients cared by a single nurse.

Abbreviations

DBRH: Debre Berhan Referral Hospital
DBU: Debre Berhan University
ENA: Ethiopia Nursing Association
FDA: Food and Drug Agency
ICU: Intensive care unit
IV: Intravenous
MAEs: Medication administration errors
MAER: Medication administration error reporting

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MOH: Ministry of Health
MSc: Master of Science
NICU: Neonatal intensive care unit
OPD: Outpatient department
OR: Operation room
SPSS: Statistical Package of Social Sciences
TB: Tuberculosis
UGRH: University of Gondar Referral Hospital
US: United States
WHO: World Health Organization.

Data Availability

All the data are available from the corresponding author on reasonable request.

Ethical Approval

Before starting the data collection process, the study protocol was approved by Debre Birhan University Institute of Medicine and Health Science with approval number IHRERC-650/2019. Official letter of co-operation was written to all hospitals and concerned bodies in the region to obtain their co-operation in facilitating the study.

Consent

Written informed consent was obtained from each study participant. Confidentiality of information was ensured by excluding names and identification from the questionnaire.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

KK was involved in title selection, critical review of the design, literature, analysis, and report writing. DD was involved in literature search and review, data collection and analysis, data interpretation, and report writing. KK was also involved in the preparation of the draft manuscript. WN was involved in reviewing the full document and the draft manuscript. KK, DD, and WN were involved in critically reviewing the manuscript and edited and approved the final manuscript. All authors read and approved the final manuscript.

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Research Article

A Multisite Study on Knowledge, Perceived Motivators, and Perceived Inhibitors to Precepting Nursing Students within the Clinical Environment in Ghana

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Background. Preceptorship constitutes an important component of the educational process of training nursing students. The purpose of this study was to assess the knowledge, perceived motivators, and perceived inhibitors to precepting nursing students at the clinical placement sites in the Cape Coast Metropolis of the Central Region of Ghana. *Methods*. A descriptive cross-sectional study was conducted among 442 nurses and midwives aged 27–56 years with at least three years of work experience. Data were collected with a questionnaire and analyzed using frequency counts, percentages, exploratory factor analysis, and point biserial correlation. *Results*. The results indicate that the participants had a high knowledge of preceptorship of up to 91.2% ($n = 404$). A significant proportion of up to 88.2% ($n = 390$) had an intention to precept nursing students in the near future. The three important perceived motivational factors to precepting nursing students were the learning and professional needs of students, helping students to develop skills, and experience and formal recognition of the role of preceptorship. The main perceived inhibitors to engage in a preceptorship role were lack of preparation for the role, lack of support from faculty and nurse managers, and additional work burden. The results further indicate a significant strong positive correlation between experience and professional recognition of preceptorship and the intention to precept nursing students in the near future ($r = 0.99$, $p = 0.037$). *Conclusions*. The nurses and midwives who participated in the study are knowledgeable about preceptorship and have the intention to precept nursing students. Having enough experience on the job and being formally recognized as a preceptor may motivate these professionals to precept nursing students. However, there are critical perceived barriers that need to be addressed, to enable more nurses and midwives with the desire to precept students to engage in the preceptorship role.

1. Background

Preceptorship has been traditionally perceived to be a relationship in which a senior colleague who has a supervisory role grooms a novice colleague to achieve the needed competencies [1]. This process allows the preceptee to seek support and guidance on specific areas of weakness from the preceptor. Previous studies demonstrate precepting to be highly beneficial to nursing students [2, 3]. It is known that preceptorship challenges preceptors to develop skills in their areas of expertise which also facilitates the acquisition of leadership skills and roles [1]. Previous studies have affirmed that precepting involves skills in mentoring, which encompasses formal and informal counseling, guiding, supervising, networking, teaching, advocating, coaching, supporting, sharing, and role modeling [4]. The preceptor is viewed to be skillful and offers training and guidance to newer colleagues who may be less knowledgeable. The process requires a long-term relationship between the preceptor and the preceptee who is often a novice student

with much expectations and uncertainties about the nursing profession [1].

The Nursing and Midwifery Council (NMC) in the United Kingdom defined a mentor/preceptor as "a nurse, midwife or specialist community public health nurse who facilitates learning and supervises and assesses students in a practice setting" [5]. Although this definition is from a western country, it fits the description of a preceptor within the Ghanaian context. A representative from the Nursing and Midwifery Council of Ghana (N&MCG) in an earlier study explained that the preceptor's role is expected to focus on collaboration between clinical agencies and training institutions in clinical teaching, organization of clinical conferences, and provision of feedback to students, although there was uncertainty about the extent of implementation [6]. Consequently, preceptors have a responsibility to offer guidance and support to nursing students in the practice setting by creating an environment that enables students to make sense of their experience by applying theory to practice; providing constructive feedback; and facilitating and enhancing reflection on experiences, performance, and practice [7].

Preceptorship in nursing could be described within the framework of Patricia Benner's novice to expert learning theory whereby individuals commence as novices with limited experience but with the needed support, progress to the stage of an advanced beginner. When individuals gain mastery of the expected skills, they become competent and gradually become proficient in recognizing what is important and establishing priorities. Later, they could become experts when they are highly skilled [8]. With this process, nursing students are viewed as novices needing support from faculty and preceptors to achieve competence. Later with experience, they develop more skills in clinical reasoning and judgement to gain mastery and be more proficient and become future experts. In addition, this study was conceptualized within Albert Bandura's Social Learning Theory. The constructs of this study is explained within the intrinsic reinforcement and cognition aspects of the theory [9]. Intrinsic reinforcement considers factors such as motivation and satisfaction. It also emphasizes on cognition and internal thought process, making it suitable for explaining the knowledge, perceived motivators, perceived barriers, and support preceptors required for performing the preceptor role. Consequently, for the novice to attain the desired expertise, preceptors should be knowledgeable, motivated, and supported to function in the preceptor role. It is important that systems are put in place to remove the numerous challenges preceptors might encounter in the performance of the role.

The period of transitioning from a nursing student to an autonomous registered nurse has been described as a stressful time [10]. It is a period where the new nurse needs to be supported by a highly skilled preceptor to enhance critical thinking, refine skills, and develop confidence and autonomy [11, 12]. Preceptors play vital roles in nursing education by helping shape the skills of students and also socialize them into professional nursing roles, thereby facilitating their transition from novice to experts [8]. They also assist the student to link theory to practice. Preceptors serve as a teacher, mentor, leader, and evaluator, as they assist students to integrate into the new work environment. By doing so, students are motivated to stay in the profession, and this increases retention of nurses [3]. The importance of the role of the preceptor cannot be over emphasized.

In Ghana, most nursing schools seem to be operating the preceptorship model in the training of nurses, but this has not been well implemented [13]. In the clinical setting, there is some form of student-preceptor interaction albeit very minimal, and this is mainly undertaken by nurses and midwives who are willing or personally motivated to help students learn. Although the N&MCG expects every professional nurse and midwife to be involved in precepting nursing students, some nurses and midwives decline to be involved in how students learn in the clinical setting. Moreover, in situations where preceptors are available, they are often few and may be overwhelmed and overburdened with the increasing student numbers as well as the competing demands of their daily routines at the workplace. This leads to situations where students either have minimal contact with preceptors during periods of placement or contact with these preceptors may be nonexistent thereby affecting their professional development.

Empirical studies have reported high knowledge of nurses and midwives on preceptorship in developed settings [14, 15]. However, an Ethiopian study found that few nurse educators were knowledgeable about preceptorship [15] although they had good attitudes towards it. Regarding nurses and midwives' motivation for precepting students, willingness to share knowledge, being internally motivated, professional experience [16], and "giving back to the profession" have been cited in the literature [17]. Other important intrinsic motivators include supporting students' learning and professional development [17]. Despite the desire to precept students, some factors including reduced productivity [18] and lack of skills [19] could hinder the process. This study, therefore, sought to assess the knowledge, perceived motivators, and perceived inhibitors to precepting nursing students at the clinical placement sites in the Cape Coast Metropolis of the Central Region of Ghana. Specifically, the study was guided by the following research questions: (1) What is the level of knowledge of nurses and midwives on preceptorship? (2) What are the perceived motivators to precepting nursing students? (3) What are the perceived inhibitors to precepting nursing students? and (4) What support do preceptors need to successfully perform their roles?

2. Methods

2.1. Study Design and Setting. A descriptive, cross-sectional survey was conducted among 442 nurses and midwives aged 27–56 years working in the Cape Coast Metropolis in the Central Region of Ghana. The Central Region is known as the citadel of education in Ghana. Cape Coast is the capital town of the region, with a host of educational institutions. In the area of nursing and midwifery, three public training institutions run nursing programmes-the School of Nursing

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and Midwifery of the University of Cape Coast, Cape Coast Nursing and Midwifery Training College, and Ankaful Psychiatric Nursing Training College. Students from these institutions gain clinical learning experience from nurses and midwives working in health facilities within the Cape Coast Metropolis.

2.2. Population. The population comprised professional nurses and midwives working in all clinical placement sites in the Cape Coast Metropolis of Ghana. The rationale for including nurses and midwives is that both professionals' precept nursing students in the practice settings. Likewise, in Ghana, some registered nurses have also studied midwifery to be registered midwives. This category of nurses and midwives has dual professional backgrounds. Therefore, this study included both nurses and midwives without clearly delineating the two professions. The population size was estimated to be 1,241 nurses and midwives. Specifically, 806 from the Cape Coast Teaching Hospital [20], 210 from the Ankaful Psychiatric Hospital [21], 79 from the University of Cape Coast (UCC) Hospital [22], 91 from the Metropolitan Hospital, and 55 from the Ewim Polyclinic [23]. Nurses and midwives with at least three years of work experience and working in any of the clinical placement sites were included in the study. These nurses and midwives were assumed to have sufficient knowledge and clinical competence to engage in clinical teaching. Nonetheless, nurses and midwives with less than three years of work experience and those pursuing their national service were excluded because they may not have the required competencies and knowledge to be involved in clinical teaching or precepting students. Again, those on any form of leave did not participate in the study. It is worth mentioning that the study participants had different levels of education and experience, but they were all included in the study because we were also interested in their intention to precept nursing students as well as the perceived motivators and perceived barriers to precepting nursing students.

2.3. Sample and Sampling Procedure. The study employed total population sampling by involving potentially every member of the accessible population eligible for inclusion in the study. All the clinical placement sites–Cape Coast Teaching Hospital, Cape Coast Metropolitan Hospital, Ankaful Psychiatric Hospital, University of Cape Coast Hospital, and Ewim Polyclinic were included in the study. At the time of the study, information gathered at the human resource and nursing administration of all the institutions showed that the following number of nurses and midwives met the eligibility criteria for inclusion in the study. These are Ankaful Psychiatric Hospital-165, University of Cape Coast Hospital-52, Metropolitan Hospital-35, Cape Coast Teaching Hospital-282, and Ewim Polyclinic-19. Although the study anticipated a total of 553 nurses and midwives for inclusion in the study, those who actually participated were 442, with a response rate of 79.9%. The reasons for non-participation included lack of general interest and busy schedules both at work and home as few participants had the option to complete the questionnaires off-site.

2.4. Data Collection Instrument. A questionnaire was developed based on literature on preceptorship in nursing [14, 15, 24–26]. The questionnaire comprised the following subscales; knowledge about preceptorship, perceived motivators for performing the preceptor role, perceived inhibitors to precepting nursing students, and the support preceptors need to effectively engage in the preceptorship role. In this study, knowledge was defined as the information or understanding that nurses and midwives have regarding preceptorship. Perceived motivators referred to things that nurses and midwives' perceived as factors that encouraged them to take up the preceptor role. Perceived inhibitors referred to nurses and midwives' perception of the factors that discouraged or impeded their participation in the preceptor role. Support referred to the availability of the desired resources for effective performance of the preceptor role.

The knowledge subscale comprised ten items on what preceptorship is or the definition of preceptorship adapted from literature [14, 27] and the participants were asked to indicate their knowledge of preceptorship by responding either "Yes," "No," or "Don't Know." Also, the participants responded to the question, "what are the perceived motivators to precepting nursing students?" The perceived motivators subscale comprised 17 items adapted from literature [28] and was measured on a four-point Likert scale. The participants were asked to indicate their level of agreement or disagreement to the statements constituting the subscale by either responding strongly agree (SA), agree (A), disagree (D), or strongly disagree (SD).

The participants also responded to the question, "what perceived factors will hinder you from performing the preceptor role?" The perceived barriers subscale comprised 15 items, all measured on a four-point Likert scale. These items were adapted from previous studies [24, 25]. The participants were asked to indicate their level of agreement or disagreement to the statements constituting the subscale by either responding strongly agree (SA), agree (A), disagree (D), or strongly disagree (SD).

The support subscale had eight items adapted from literature [29]. The participants responded to the question, "what support do preceptors need to effectively perform their roles?" The participants were required to state their level of agreement or disagreement to the items on the subscale by responding either agree or disagree.

The study considered the following sociodemographic information of the participants; gender, age, professional rank, work experience, and duration of precepting nursing students.

Face validity was ensured by careful review by two experts in the field of nursing with in-depth experience in preceptorship. These experts were nurse leaders who had extensive experience in precepting nursing students for over two decades. Also, efforts were made to ensure that the questionnaire items reflected the objectives of the study. A pretest was conducted

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with 30 nurses in a nearby health facility to ensure that the questions were clear and understandable. The negatively worded items were reverted and the Cronbach's coefficient of reliability was used to determine the reliability of the Likert-scale items while Kuder and Richardson's statistics (KR-20) was used to assess the internal consistency of the items with dichotomous options. Therefore, KR-20 statistics was used to determine reliability of the items on the knowledge and support subscales. Cronbach's alpha was used for the items on the perceived motivators and perceived barrier subscales because these were on a Likert scale. The study yielded the following reliability coefficients for the different subscales; knowledge- = 0.714, perceived motivators = 0.810, perceived barriers = 0.825, and support = 0.720. According to Bryman [30], reliability coefficient of 7.0 is acceptable for new measures.

2.5. Data Collection. Five graduate nurses were recruited and trained as research assistants to collect relevant data for the study. The training covered how the items on the questionnaire should be answered. In the various wards, eligible participants were approached and those willing to participate were included in the study. A thorough explanation about the study was provided and written informed consent was obtained from each participant. To ensure privacy, participants were allowed to answer the questionnaires at the nurses' lounge/room after they had finished their day's activities on the ward. The questionnaires did not capture any personal identifying information on the participants thereby ensuring anonymity. Consequently, the data obtained could not be linked to any of the participants. Also, 12 participants who were unable to fill the questionnaire in the ward were allowed to complete it off-site, and they returned it to the research assistant within the period of data collection. The data collection exercise took approximately six weeks from November to December, 2019. In all, 442 nurses and midwives participated in the study.

2.6. Data Analysis. The data were analyzed using the Statistical Package for Social Sciences version 21.0. The statistics used included frequency counts, percentages, exploratory factor analysis, and point biserial correlation. Prior to the analysis, scores for negatively worded items were reversed. Specifically, to assess the knowledge level of nurses and midwives on preceptorship, the aggregate score for knowledge test was determined and categorized into low, moderate, and high with the following scores. Scores of 59% and below constituted low knowledge, between 60% and 79% were categorized as moderate knowledge, and above 80% categorized as high knowledge. Exploratory factor analysis was used to elucidate how the different items on the perceived motivator and inhibitor subscales relate to one another and to determine the main perceived motivators and inhibitors to precepting nursing students within the Cape Coast Metropolis. The support preceptors needed to effectively engage in the preceptorship role subscale was analyzed using frequency counts and percentages. The relationship between perceived motivators, perceived inhibitors, and the intention to precept nursing students in the near future were determined using point biserial correlation.

3. Results

3.1. Sociodemographic Characteristics of the Participants. The results show that 62.7% ($n = 277$) of the participants were females while 37.3% ($n = 165$) were males. The age of the participants ranged from 27 to 56 years, with a mean of 32.48 and a standard deviation of 5.11. Furthermore, 12.0% ($n = 53$) of the participants were staff nurses/midwives, 47.3% ($n = 209$) were senior staff nurses/midwives, 27.1% ($n = 120$) were nursing officers/midwifery officers, 8.1% ($n = 36$) were senior nursing/midwifery officers/, 5.0% ($n = 22$) were principal nursing/midwifery officers, and 0.5% ($n = (2)$ were deputy directors for nursing services. The involvement of senior nurses, midwives, and managers in preceptorship is expected in the Ghanaian context since they have vast experience in mentoring novice nurses and midwives.

3.2. Training, Intention, and Duration of Practicing Nursing and Preceptorship. The majority of the participants, 91.9% ($n = 407$), indicated that they had not been trained to precept nursing students while 8.1% ($n = 36$) have had training. Nonetheless, 88.2% ($n = 390$) had the intention to precept nursing students in the near future while 11.8% ($n = 52$) did not have any intention to precept students. Regarding how long the participants had practiced nursing/midwifery, the results indicate that participants had experience ranging from 3 to 30 years, with a mean of 6.71 and a standard deviation of 4.47. Also, some of the participants had been precepting students from 3 to 19 years with a mean of 4.61 and a standard deviation of 3.03.

3.3. Knowledge of Participants about Preceptorship. Regarding the level of knowledge of the participants on preceptorship, 91.2% ($n = 404$) had high knowledge of preceptorship, 8.4% ($n = 37$) had moderate knowledge, and only 0.4% ($n = (2)$ had low knowledge. Specifically, Table 1 shows that 97.1% ($n = 429$) opined that preceptorship is about teaching students while on clinical placement. Significant proportions of the participants, 96.8% ($n = 428$), viewed preceptorship as helping students meet the objectives for the placement while 96.8% ($n = 428$) also viewed it as helping students to demonstrate current knowledge during placement. Furthermore, 94.6% ($n = 418$) viewed it as helping students to manage their clinical hours effectively. However, 25.8% ($n = 114$) of the participants conceptualized preceptorship to mean encouraging the student to obey the preceptor all the time while 48.9% ($n = 216$) indicated that preceptorship focuses on allowing students to perform preferred tasks without interference.

3.4. Perceived Motivators for Precepting Nursing Students. Table 2 presents the descriptive statistics on the various items on the perceived motivators subscale. A high

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proportion of the participants, 56.3% ($n = 249$) strongly agreed and 43.0% ($n = 190$) agreed to the statement that their perceived motivation for precepting the nursing students were to enhance student skills. Again, 56.3% ($n = 249$) strongly agreed and 41.9% ($n = 185$) agreed to the assertion of building students' confidence. However, 23.1% ($n = 102$) disagreed to the assertion of helping students to acquire resources for clinical learning as a perceived motivator for precepting them. Also, 18.3% ($n = 81$) and 13.8% ($n = 61$) disagreed to the assertion accounting for students from diverse backgrounds, and helping nursing students' network effectively as perceived motivators for engaging in the preceptorship role, respectively. Fourteen-point three percent ($n = 63$) disagreed to the assertion of precepting students to gain professional recognition while 15.8% ($n = 70$) disagreed to the assertion that they precept students because they had a similar experience.

Furthermore, the results in Table 3 present the perceived motivational factors to precepting nursing students with exploratory factor analysis. Three perceived motivator factors had eigenvalues greater than 1 so the final factor solution represented 49.27% of the variance in the data. The three important perceived motivator factors to precept nursing students were the learning and professional needs of students, helping students to develop skills, and experience and professional recognition of preceptorship with eigenvalues of 5.84, 1.44 and 1.09, correspondingly that accounted for 34.36%, 8.47% and 6.44%, of the variance in the data, respectively.

Specifically, items such as opportunity to help students set career goals, stimulate creativity at the workplace, establish life/work balance, account for students from diverse backgrounds, and acknowledge nursing students' contributions were dominant in explaining the learning and professional needs of students as a perceived motivator factor for precepting nursing students.

With regards to helping students develop skills as a perceived motivator factor, items such as the opportunity to meet the objectives of the students, establish a healthy relationship with the students, listen to students effectively, and provide constructive feedback were more pronounced. Moreover, regarding the experience and professional recognition of preceptors as perceived motivator factor, the opportunity to gain professional recognition was a more distinct factor.

3.5. Perceived Inhibitors for Successfully Performing the Preceptor Role. Table 4 presents the descriptive statistics on the various items on the perceived inhibitors to successfully performing the preceptor role subscale. From the table, 26.0% ($n = 115$) strongly agreed and 39.4% ($n = 174$) agreed to the assertion that they do not get support from faculty when students are on placement. Almost a quarter, 24.2% ($n = 107$), strongly agreed and 42.3% ($n = 187$) agreed to the assertion that they have a primary responsibility to provide patient care. Nonetheless, 48.9% ($n = 216$) strongly disagreed and 24.0% disagreed with the assertion that they are not well prepared to precept nursing students. Similarly, 47.5% ($n = 210$) strongly disagreed and 24.7% ($n = 109$) disagreed to the assertion that they are not confident enough to precept students.

The results in Table 5 present the perceived inhibitors to successfully performing the preceptor role from the exploratory factor analysis. Three perceived barriers had eigenvalues greater than 1, and the final factor solution represented 51.56% of the variance in the data. The main perceived barriers to engaging in the preceptorship role were lack of preparation for the role, lack of support from faculty and managers, and additional burden with eigenvalues of 5.21, 1.33, and 1.19 that accounted for 34.75%, 8.84%, and 7.95% of the variance in the data, respectively.

Furthermore, items including "I am not confident enough to precept nursing students," "I am not well prepared to precept nursing students, and "I see precepting as a challenging task" were dominant in explaining the lack of preparation for the preceptorship role. Similarly, items such as "I do not get support from my manager," "I do not get support from faculty when students are on placement," and "I do not have enough teaching and learning resources to teach students were more dominant in explaining the lack of support as a perceived barrier. In the same way, items including "I have a primary responsibility to provide patient care," and "I see precepting as an additional demand" were more distinct in explaining the additional burden as a perceived barrier to performing the preceptor role by the participants.

3.6. Support Preceptors Need to Successfully Perform Their Roles. Table 6 presents the results on the items on the support preceptors needed to successfully perform their roles. From the table, the majority of the participants, 98.4% ($n = 435$), agreed to the assertion that in-service training on preceptorship should be organized for preceptors. Also, 95.7% ($n = 423$) and 95.0% ($n = 420$) agreed to the assertions that training on clinical teaching and support from experienced preceptors on how to manage role, respectively. Again, 76.2% ($n = 337$) agreed that the preceptorship role should be recognized as a criterion for promotion while 23.8% ($n = 105$) disagreed with this assertion.

3.7. Relationship between Perceived Motivators, Perceived Inhibitors, and Intention of Precepting Nursing Students in the near Future. Regarding the perceived motivators, the results of the correlation show a significant weak positive relationship between helping students to develop skills and intention to precept nursing students in the near future ($r = 0.161$, $p = 0.001$). There was also a significant weak positive correlation between learning and professional needs of students and intention ($r = 0.102$, $p = 0.032$). The results further indicate a significant strong positive correlation between experience and professional recognition and intention to precept nursing students in the near future ($r = 0.99$, $p = 0.037$). With regard to the perceived inhibitors, there was no statistically significant relationship between additional burden ($r = -0.034$, $p = 0.470$), lack of support ($r = -0.005$, $p = 0.916$), and lack of preparation ($r = -0.059$,

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Table 1: Descriptives on the knowledge of nurses and midwives on preceptorship ($N = 442$).

Knowledge statement	Yes frequency (%)	No frequency (%)	Don't know frequency (%)
Helping students meet their objectives for the placement	428 (96.8)	8 (1.8)	6 (1.4)
Teaching students while on clinical placement	429 (97.1)	9 (2.0)	4 (0.9)
Helping students demonstrate current knowledge during placement	428 (96.8)	3 (0.7)	11 (2.5)
Focusing on the learning needs of the students	407 (92.1)	28 (6.3)	7 (1.6)
Creating a conducive environment to facilitate learning at the placement site	404 (91.4)	23 (5.2)	15 (3.4)
Helping students manage their clinical hours effectively	418 (94.6)	17 (3.8)	7 (1.6)
Coaching and training competence in a life-long perspective	388 (87.8)	30 (6.8)	24 (5.4)
Assigning tasks to students while on clinical placement	395 (89.4)	43 (9.7)	4 (0.9)
Allowing students to perform preferred tasks without interference	216 (48.9)	211 (47.7)	15 (3.4)
Encouraging students to obey the preceptor at all times	114 (25.8)	304 (68.8)	24 (5.4)

Table 2: Descriptives on the perceived motivators to precepting nursing students ($N = 442$).

Perceived motivators	SA *f* (%)	A *f* (%)	D *f* (%)	SD *f* (%)
The opportunity to help students set career goals	156 (35.3)	239 (54.1)	44 (10.0)	3 (0.7)
The opportunity to stimulate creativity at the workplace	165 (37.3)	257 (58.1)	19 (4.3)	1 (0.2)
The opportunity to build confidence in nursing students	249 (56.3)	185 (41.9)	7 (1.6)	1(0.2)
The opportunity to acknowledge nursing students' contributions	149 (33.7)	267 (60.4)	24 (5.4)	2 (0.5)
The opportunity to account for students from diverse backgrounds	113 (25.6)	242 (54.8)	81 (18.3)	6 (1.4)
The opportunity to help nursing students acquire resources for clinical learning	84 (19.0)	243 (55.0)	102(23.1)	13 (2.9)
The opportunity to help nursing students network effectively	123 (27.8)	255 (57.7)	61 (13.8)	3 (0.7)
The opportunity to help nursing students establish a life/work balance	116 (26.2)	274 (62.0)	50 (11.3)	2 (0.5)
The opportunity to enhance the skills of nursing students	249 (56.3)	190 (43.0)	3 (0.7)	—
The opportunity to engage with students while on placement	180 (40.7)	232 (52.5)	27 (6.1)	3 (0.7)
The opportunity to develop strategies to meet the objectives of the students	218 (49.3)	212 (48.0)	12 (2.7)	—
The opportunity to establish a healthy relationship with students	174 (39.4)	254 (57.5)	13 (2.9)	1 (0.2)
The opportunity to listen to students effectively	187 (42.3)	233 (52.7)	19 (4.3)	3 (0.7)
The opportunity to provide constructive feedback	182 (41.2)	229 (51.8)	29 (6.6)	2 (0.5)
The opportunity to develop a trusting relationship with students	148 (33.5)	251 (56.8)	38 (8.6)	5 (1.1)
The opportunity to gain professional recognition through preceptorship	148 (33.5)	223 (50.5)	63 (14.3)	8 (1.8)
The opportunity to precept students as I had a similar experience	121 (27.4)	242 (54.8)	70 (15.8)	9 (2.0)

$p = 0.216$), and intention to precept nursing students in the near future.

4. Discussion

4.1. Knowledge of Participants about Preceptorship. Nurses and midwives engage in complex and multifaceted roles in undergraduate nursing education [30]. Effective performance of these roles requires adequate knowledge of preceptorship to assist students in acquiring the expected competencies. The findings of this study indicate that the nurses and midwives sampled had a high knowledge of preceptorship even though the majority had not been formally trained on preceptorship. A plausible explanation could be that knowledge test basically focused on the definition of preceptorship. It could also be due to the fact that the test items had few diverters, which might have influenced the participants to obtain high scores. In addition, they may have read about preceptorship, have had an experience with a preceptor, or even functioned as a preceptor. A study conducted in Kenya found the preceptors to be knowledgeable on preceptorship though most of them acquired this knowledge from experience and role modeling [14]. It is worth noting that over 90% of the participants viewed preceptorship as teaching students while on placement, helping students meet their objectives, creating conducive environment to facilitate learning, and helping students manage their clinical hours effectively. A previous study affirmed that the preceptor facilitates the development of practical skills, professional socialization, report and documentation, prioritization, communication, and planning of daily activities [28]. Surprisingly, 48.9% of the participants stated that preceptorship is "allowing students to perform the preferred task without interference" while 25.8% viewed preceptorship as "encouraging the student to obey the preceptor at all times." These findings demonstrate critical gaps in knowledge as these approaches to preceptorship may not encourage critical thinking among students. Preceptorship demands that students practice under direct supervision at all times. The preceptor also shares experience and knowledge with students to facilitate the acquisition of clinical competencies and critical thinking skills [12].

4.2. Perceived Motivators for Precepting Nursing Students. The findings further suggest that the important perceived motivational factors for precepting nursing students were the learning and professional needs of students, helping

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Table 3: Exploratory factor analysis on the perceived motivators to precepting nursing students.

Scale items	Loadings	Perceived motivator factors
Component 1		
The opportunity to help students set career goals	0.575	Learning and professional needs of students
The opportunity to stimulate creativity at the workplace	0.557	
The opportunity to acknowledge nursing students' contributions	0.523	
The opportunity to account for students from diverse backgrounds	0.582	
The opportunity to help nursing students acquire resources for clinical learning	0.582	
The opportunity to help nursing students network effectively	0.690	
The opportunity to help nursing students establish a life/work balance	0.622	
Component 2		
The opportunity to build confidence in nursing	0.576	Helping students to develop skills
The opportunity to enhance the skills of nursing students	0.660	
The opportunity to engage with students while on placement	0.647	
The opportunity to develop strategies to meet the objectives of the students	0.720	
The opportunity to establish a healthy relationship with students	0.711	
The opportunity to listen to students effectively	0.672	
The opportunity to provide constructive feedback	0.652	
The opportunity to develop a trusting relationship with students	0.502	
Component 3		
The opportunity to gain professional recognition	0.762	Experience and professional recognition of preceptorship
The opportunity to precept students as I had a similar experience	0.724	

Table 4: Descriptives on the perceived barriers to successfully perform the preceptor role ($N = 442$).

Perceived barriers	SA *f* (%)	A *f* (%)	D *f* (%)	SD *f* (%)
I do not have time to precept students	48 (10.9)	106 (24.0)	200 (45.2)	88 (19.9)
I see precepting as an additional demand	68 (15.4)	154 (34.8)	174 (39.4)	46 (10.4)
I have a primary responsibility to provide patient care	107 (24.2)	187(42.3)	121 (27.4)	27 (6.1)
I often have little time to work with students at the clinical setting	53 (12.0)	165 (37.3)	172 (38.9)	52 (11.8)
I feel overwhelmed with my role as a preceptor	47 (10.6)	112 (25.3)	223 (50.5)	60 (13.6)
I am not well prepared to precept students	31 (7.0)	89 (20.1)	216 (48.9)	106(24.0)
I do not get support from faculty when students are on clinical placement	115 (26.0)	174(39.4)	123 (27.8)	30 (6.8)
I do not have enough teaching and learning resources to teach students	90 (20.4)	171 (38.7)	129(29.2)	52 (11.8)
I do not get the necessary support from my manager	60 (13.6)	133 (30.1)	197 (44.6)	52 (11.8)
I have to precept too many students at the same time	77 (17.4)	165 (37.3)	166(37.6)	34 (7.7)
I am not able to plan for the precepting process	44 (10.0)	154 (34.8)	204 (46.2)	40 (9.0)
I have not been selected to precept students although I have the desire for it	92 (20.8)	143 (32.4)	167 (37.8)	40 (9.0)
I am not confident enough to precept students	16 (3.6)	58 (13.1)	210 (47.5)	158(35.7)
I see precepting as a challenging task	32 (7.2)	115 (26.0)	186 (42.1)	109(24.7)
I have not been trained to precept nursing students	86 (19.5)	173 (39.1)	124 (28.1)	59 (13.3)

students to develop skills, and experience and professional recognition of preceptorship. The desire of the nurses and midwives in this study to precept nursing students could be that they had similar experiences. Findings also suggest that preceptors are concerned with equipping the next generation of nurses and midwives with the requisite competencies to enable them to function effectively. They are also interested in gaining professional recognition from performing that role which is consistent with a study conducted in Ghana [13]. An earlier work reported the need to give back to the profession as the main motivating factor for performing the preceptor role [17]. Nonetheless, a study conducted among nurse practitioner students in a high-income country found relationships with faculty, adjunct faculty status, and access to free continuing professional development programmes as the most important motivators for preceptors [31]. Other incentives that could persuade professional nurses and midwives to precept students include gaining credit for recertification, professional responsibility, opportunities to learn, and forming relationship with faculty or students [13, 32]. It is evident that by engaging in their assigned role, preceptors tend to gain personal rewards of being role models, develop knowledge and reenergize self in nursing practice, and even develop interest in a stimulating career in nursing education in other settings [32]. A well-motivated preceptor will, therefore, build students' confidence and facilitate the achievement of clinical competencies in line with the learning needs of the students [33].

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Table 5: Exploratory factor analysis on perceived barriers to successfully perform the preceptor role.

Scale items	Loadings	Perceived barriers
Component 1		
I am not confident enough to precept students	0.809	Lack of preparation for role
I am not well prepared to precept students	0.706	
I see precepting as a challenging task	0.695	
I am not able to plan for the precepting process	0.569	
Component 2		
I do not get the necessary support from my manager	0.678	Lack of support
I do not get support from faculty when students are on clinical placement	0.659	
I do not have enough teaching and learning resources to teach students	0.629	
I have not been selected to precept students although I have the desire for it	0.609	
I have to precept too many students at the same time	0.581	
I have not been trained to precept nursing students	0.470	
Component 3		
I do not have time to precept students	0.534	Additional burden
I see precepting as an additional demand	0.635	
I have a primary responsibility to provide patient care	0.729	
I often have little time to work with students at the clinical setting	0.590	
I feel overwhelmed with my role as a preceptor	0.599	

Table 6: Support preceptors need to successfully perform their roles $N = 442$.

Type of support	Agree *f* (%)	Disagree *f* (%)
In-service training on preceptorship	435 (98.4)	7 (1.6)
Training on clinical teaching	423 (95.7)	19 (4.3)
Training on reflective practice and clinical reasoning	414 (93.7)	28 (6.3)
Support from experienced preceptor on how to manage the role	420 (95.0)	22 (5.0)
Remuneration for the preceptor role	401 (90.7)	41 (9.3)
Higher education opportunities to equip preceptors	392 (88.7)	50 (11.3)
Recognition of role as a criterion for promotion	337 (76.2)	105 (23.8)
Recognition of role as evidence for renewal of professional license	372 (84.2)	70 (15.8)

4.3. Perceived Inhibitors to Successfully Performing the Preceptor Role. Furthermore, the study identified lack of preparation for role, lack of support from faculty and managers, and additional burden as the main perceived barriers to engaging in the preceptorship role. The findings imply that these impediments need to be overcome by nurses and midwives to effectively perform the preceptor role. Since preceptorship is pivotal in the educational development of nurses, adequate preparation is essential for the smooth transition into the preceptor role. Many nurses and midwives are unwilling to undertake the role due to perceived lack of skill to manage students [19]. From this study, additional factors that explained the lack of preparation from the perspectives of the nurses and midwives sampled were lack of confidence, readiness, planning, and perception of preceptorship being a challenging task. Distress accompanying the teaching role was cited as a major barrier in an earlier study [19]. This demands some flexibility in the selection and training of preceptors to ensure that nurses and midwives with the desire and clinical competence for the role are trained and supported to enhance students' learning outcomes and bridge the theory-practice gap. Again, the training will enable preceptors to acquire more information and skills about the concept of preceptorship, approaches to clinical teaching and learning, reflective practice and clinical reasoning [15].

Similarly, the participants sampled reported a lack of support from faculty and managers when students are on clinical placements. In addition, lack of teaching and learning resources and training were cited as perceived inhibitors to successfully performing the role. These findings require faculty to closely collaborate and establish a healthy relationship with preceptors by communicating the learning outcomes of the students to preceptors. Also, it is imperative that clinical nurse managers or leaders support preceptors to perform their fundamental responsibility of caring for patients in addition to precepting students. A phenomenological study conducted in Iran also reported a lack of support for preceptors [16]. This suggests that the problem of preceptors demanding support is cross-national in nature, which requires attention of nurse educators and managers. However, in a high-income setting like Texas, nursing faculty provides extensive support to preceptors to guide students' learning by orienting students and preceptors to the course guide and policies as stated in the curriculum. They also clearly state the role the preceptor is supposed to

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play for the specific course, establish means of communication to discuss students' progress, and assign a grade for the course [32].

Furthermore, the nurses and midwives who participated in this study viewed preceptorship as an additional burden. A possible explanation is that some of the participants felt they had a primary responsibility to provide patient care and as such they either have little or no time to precept students while others felt overwhelmed with the preceptor role. Currently, the method of preceptorship whereby the preceptors are fully engaged by a healthcare agency and thus have a fundamental role to play in the agency does not allow them to have sufficient time for students during clinical placement. Also, students' numbers keep on increasing across nursing programmes, yet there are only limited clinical sites for placements. Consequently, preceptors end up experiencing burnout and students too may not meet their clinical objectives [15]. This calls for other approaches to precepting nursing students to ensure the acquisition of clinical competencies and delivery of quality nursing care.

4.4. Support Preceptors Need to Successfully Perform Their Roles. The findings further indicate that over 90% of the nurses and midwives sampled reported that in-service training, training on clinical teaching, and support from experienced preceptors on how to manage will facilitate effective performance of the preceptor role. These findings affirm the need for potential preceptors to have adequate training on preceptorship to sharpen their knowledge and skills. This is essential as not all professional nurses and midwives are good clinical teachers. Even those with a strong desire to coach nursing students need to be trained on the whole process of preceptorship, clinical teaching and reasoning, as well as reflective practice to enable them adopt evidence-based strategies that could maximize the learning experiences of nursing students [14, 32]. Likewise, healthcare organizations, educational institutions, and managers need to support preceptors and preceptees by providing adequate resources for clinical training and show keen interest in the training of preceptors. It is imperative that experienced preceptors also assist the novice ones to successfully transit into the preceptor role.

Also, some of the nurses and midwives in this study agreed that preceptorship should be recognized as a criterion for promotion. It is believed that when the professional bodies and healthcare organizations and agencies view it as one of the criterion for promotion to a higher rank in the nursing profession, more nurses and midwives will be extra committed to functioning in the role, thereby shaping and transmitting appropriate culture and values of the nursing profession into the next generation. In achieving this, a component of the annual appraisal for nurses and midwives could focus on preceptorship to enable those with the desire to gradually work at accomplishing that competency.

4.5. Relationship between Perceived Motivators, Perceived Inhibitors, and Intention of Precepting Nursing Students in the near Future. The findings further show a strong positive relationship between experience and professional recognition and intention to precept nursing students in the near future ($r = 0.99$, $p = 0.037$). This suggests that when the preceptorship engagements of nurses and midwives with experience are recognized professionally, they will have the intention to precept nursing students in the near future. This recognition will serve as a form of incentive for their role. Hence, there should be formal ways of evaluating and certifying preceptorship activities to enable them gain recognition for their actions. It is interesting to note that in Malawi and Texas, there are well-established guidelines for preceptorship that allow preceptors to gain some rewards toward their professional development [32, 33]. This study observed a weak positive relationship between helping students to develop skills, and learning and professional needs of students, with intention to precept students in the near future. More empirical work is necessary to clarify this relationship. In relation to the perceived inhibitors, the current study did not find any relationship between the additional burden, lack of support, and lack of preparation and intention to precept nursing students in the near future. This means that as long as these impediments hinged around preceptorship, participants may not have the intention of precepting nursing students in the near future. It is, therefore, crucial that health training institutions and all important stakeholders in nursing education become intentional about these perceived inhibitors so as to curtail them. The findings of this study can be generalized to the study setting and beyond.

5. Conclusions

Preceptorship is integral in nursing education programmes. This study has highlighted the fact that most nurses and midwives are knowledgeable about preceptorship and have the intention of precepting nursing students in the near future. The underlying perceived motivation that will enable these professionals to engage in the preceptorship role include the learning and professional needs of the students, the ability to help students to develop skills, and experience and formal recognition of preceptorship. It is important to note that experience and formal recognition of preceptorship may enable more nurses and midwives to have the intention of precepting nursing students in the near future. However, certain factors could inhibit these professionals from effectively performing the preceptorship role which need to be addressed by identifying context-specific solutions to maximize the experiences of nursing students.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical Approval

Ethical approval was sought from the Institutional Review Board of the University of Cape Coast (UCCIRB/EXT/2019/17) and the Ethical Review Committee of the Cape Coast Teaching Hospital (CCTHERC/EC/2019/082). Permission

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was obtained from the management of the health facilities involved in the study.

Consent

Informed consent was sought from the participants before engaging them in the study. The participants voluntarily participated in the study and the study did not cause any risks or result in harm.

Disclosure

The cross-sectional nature of the study did not allow cause and effect relationships to be established.

Conflicts of Interest

The authors have declared that no conflicts of interest.

Authors' Contributions

The study was conceptualized by NIEE. NIEE, SAA, and CB designed the instrument. NIEE, SAA, PFD, and DS contributed to the methodology. NIEE analyzed and interpreted the data. NIEE and SAA wrote the initial manuscript, which was revised by all the authors for important intellectual content.

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Research Article

Preceptorship of Student Nurses in Ghana: A Descriptive Phenomenology Study

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Background. Preceptorship plays an integral part in the clinical training of nursing and midwifery students, especially in high-income countries where it is a well-accepted concept. However, in Ghana, most nurses and midwives do not view preceptorship as part of their role. *Aim*. The aim of this study was to explore the lived experiences of preceptorship of student nurses and the challenges confronting the preceptorship role. *Methods*. A descriptive phenomenological study was conducted with 22 purposively selected preceptors aged 34 to 56 years from five clinical placement sites in the Cape Coast Metropolis in the Central Region of Ghana. Most of the participants had been preceptors for two to 18 years. In-depth interviews were conducted with the aid of a semistructured interview guide and analysed by qualitative thematic analysis inspired by Braun and Clarke's description of the method. *Results*. The essence of the phenomenon has been captured in three main themes: (1) being excited about the role as it offered opportunities to learn and build relationship with students. (2) Encountering challenges including student's unwillingness to learn, absenteeism, and disrespect and also lack of interest of staff to assist students, time constraints, workload, burnout, parallel schedules of preceptors, and large student numbers, and (3) the need for effective collaboration between educational institutions and hospitals. *Conclusions*. Though preceptors were excited about precepting student nurses, the challenges associated with it are multidimensional which requires effective collaboration between educational institutions and clinical placement sites.

1. Background

Preceptorship constitutes an integral part in the clinical training of nursing and midwifery students, especially in high-income countries where it is a well-accepted concept. The process of preceptorship is conceptualized as a developmental relationship in which an experienced and knowledgeable individual assists the less experienced or novice person to acquire certain competencies through constructive guidance and support [1]. Preceptorship in this context refers to a registered nurse supporting student learning in practice. Clinical preceptorship enhances the development of shared responsibility for education, training, and increased job satisfaction [2]. Several studies conducted in developed economies have highlighted the effectiveness of preceptorship in improving a competency-based profession like nursing [3–5]. According to Horton et al. [5], it is imperative that preceptors are well trained and resourced to function effectively in the preceptorship position. These, they believe, will empower the preceptors to deliver on their mandate. The lack of guidelines defining professional responsibility as a preceptor and support for preceptors with resources, information, and recognition affects their ability to effectively work in the preceptor role [6]. Madhavanpraphakaran et al. [7] and Paton [8] added that preceptors need to be acknowledged, supported, and guided in performing their unique professional teaching practice, which is different from their role as clinically competent professional nurses. In supporting preceptors to effectively manage their roles, the cognitive learning theory emphasizes experience as a critical factor in learning and development. Therefore, learners construct knowledge based on their experience and social interaction [9].

Precepting has been adopted by the nursing and midwifery professions as a critical intervention to prepare nursing and midwifery students for practice to effectively cope with various roles in nursing, midwifery, and the environment in which they practice [10]. Therefore, attempts to precept and instill the culture of nursing including caring, commitment, critical thinking, and compassion into these novice nurses should be the responsibility of every practicing nurse. Additionally, sustainable development goal four focuses on quality education which suggests the need for innovative measures to enhance nursing and midwifery education in Ghana [11].

In Ghana, it is assumed that most nurses and midwives do not view precepting as part of their role. Rather, it is perceived as an extra burden or responsibility which requires some rewards. Nursing and midwifery students are the future of the nursing and midwifery professions and efforts to inculcate the culture of the profession and socialize them to develop right attitudes are necessary in enhancing their skills and attitudes and to shape the image of the profession. A narrative review conducted by Atakro and Gross [12] identified inadequately prepared preceptors, lack of qualified nurses, and midwives for the preceptor role and inadequate supervision from nursing faculty as the main challenges faced by preceptors. However, the studies involved in the review were mainly conducted in advanced settings and their applicability to the Ghanaian context may be unclear. Again, a previous study using the ethnographic approach to describe the experiences of nurse educators, students, and preceptors in Ghana reported that the clinical teaching strategy being used was not consistent with the concept of preceptorship [13]. In Ghana, many nursing schools that run the 4-year bachelor's degree in nursing programme introduce their students to clinical nursing practice in their second year, while students enrolled in the 3-year diploma in nursing programmes start undertaking clinical nursing in the first year. Though clinical nursing practice in hospitals requires the assistance of preceptors, there has not been a well organised preceptorship programme to enable both faculty and preceptors to effectively collaborate in training students [13]. The current practice in Ghana is that every nurse is assumed to be a preceptor, therefore when undergraduate students are assigned to the wards, they report to the ward in-charges/managers, who either supervise these students themselves or assign them to other nurses to supervise their activities in the ward. Some schools have identified and partnered with some experienced nurses to precept their students during clinical practice. In their absence, students are left on their own with no proper supervision. In some African settings including South Africa and Botswana, there are well established preceptorship programmes [14, 15], where final year students closely work with preceptors to achieve the objectives of clinical placement [14]. This is not the case in Ghana; with no proper training and a clear definition of what their responsibility towards students is, some preceptors are ill prepared to carry out the preceptor role. This study, therefore, sought to explore preceptors' understanding of preceptorship of student nurses and the challenges confronting the preceptorship role in the Cape Coast Metropolis of Ghana.

2. Methods

A descriptive phenomenology study was conducted in the Cape Coast Metropolis in the Central Region of Ghana to explore the lived experiences of preceptors. Phenomenology aims at describing a specific phenomenon as lived experience [16]. Lived experience provides a meaning to how an individual perceives a particular phenomenon, presenting the reality of the experience in the individual's life [17]. Phenomenological analysis seeks to clarify the essence of the phenomena [17]. Preceptors go through varied experiences as they closely work with nursing students. Although precepting nursing students can be rewarding, it is not without challenges [18]. The descriptive phenomenological approach was suitable in exploring the subjective experience of preceptors. Additionally, there is paucity of research on the lived experience of preceptors within the Ghanaian context and, as a result, the need for research exploring the lived experience in order to clearly understand the phenomenon. Professional nurses and midwives who have ever precepted within the Cape Coast Metropolis constituted the population for this inquiry. The selection of this design helped in exploring the phenomenon of preceptorship as it has not been rigorously researched within the Ghanaian context. Therefore, the design facilitated a deeper understanding of the concept of preceptorship from the perspectives of these preceptors.

With the help of the nurse managers, participants were drawn from five health facilities that offered clinical placements for nursing and midwifery students in the Cape Coast Metropolis. The maximum variation technique of purposive sampling was adopted to select preceptors who have ever precepted a nursing student before registration with the Nursing and Midwifery Council of Ghana. A semistructured interview guide was developed by the first and third authors to facilitate the data collection. The guide covered the following questions: which part of being a preceptor do you find enjoyable or rewarding? What challenges confront the preceptorship role? Based on your experience, how do you think the preceptor's role can be improved? These were followed by probing questions to solicit thorough information from the participants. The questions were based on gaps in knowledge found by reviewing the literature. The demographic information collected from participants included their age, gender, educational level, number of years work experience, and number of years having served as a preceptor. The semistructured interview guide was pretested on four nurse preceptors in a facility that did not form part of this study, responses participants gave indicated that the questions asked were understood, therefore the interview guide was not altered. The participants who met the criteria in the varied health facilities were identified and interviewed.

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The first and third authors interviewed participants face to face. Arrangements were made to meet the selected participants at work and they were interviewed at their nurses room in the ward after they had closed from work. The interviews were in-depth and lasted between 30 to 45 minutes for each participant. Field notes were taken and interviews were audio recorded with permission from the participants. The data were transcribed after each interview session. The members of the research team reviewed the interviews for richness of information and variations. When no new data were emerging from the interviews, it was stopped after interviewing the 22nd participant. Those who participated were aged 34 to 56 years with at least two years of experience in preceptorship.

Data collection and initial analysis were done simultaneously to examine the data for new information. The data were transcribed verbatim by the second and third authors and the transcript cross-checked with the tapes to determine the accuracy of the information. The data analysis followed Braun and Clarke's [19] procedures for thematic analysis. Sundler et al. [20] affirmed the use of qualitative thematic analysis in descriptive phenomenology. Before coding the data manually, we immersed ourselves in the data by reading through transcripts repeatedly to familiarise ourselves with the data. This process helped shape ideas about the possible meanings and patterns in the data. The data were thoroughly coded by using numbers and letters to represent the participants and efforts were made to ensure inclusiveness of all the data. Also, individual extracts from the data were coded into the most appropriate themes. After identifying the different codes across the dataset, the many different codes were examined and sorted to form a broader theme. The identified themes were reviewed against the organised extract for coherence in the pattern.

A reflexive journal was maintained and rigor attained by ensuring that credibility, transferability, dependability, and confirmability were strictly adhered to [21]. Transferability was ensured through description of the setting and characteristics of the sample. Techniques to achieve dependability and confirmability include verbatim exemplary quotations to support the results and detail description of the methodology. The second and third authors separately analysed the data and conferred to agree on the themes. Differences were resolved through discussion. The researchers engaged with the preceptors in a manner that facilitated thick and rich description of the phenomenon of preceptorship which could lead to sound conclusions. Member checking was employed by sharing the preliminary findings with the participants, asking them for feedback and incorporating their feedback into the conclusions drawn. The researchers engaged in peer debriefing by discussing study with an expert to provide a thoughtful critique about the methodology and subject content. Furthermore, procedures instituted to ensure that the findings were dependable include the use of an inquiry audit as proposed by Guba and Lincoln [21]. Consequently, an audit trail was maintained by keeping records of the field notes, tape recordings, data analysis products, coding schemes created, coded data, themes emerged, and interpretations made. The findings of this study will be applicable to clinical placement sites within the Cape Coast Metropolis of Ghana. It could also be extrapolated in similar clinical settings across the region.

3. Results

Twenty-two preceptors participated which consisted of six males and 16 females with an age range of 34 to 56 years. Of the 22 participants, eight held graduate/postgraduate and 14 held undergraduate degrees. The participants had been working as nursing professionals for 10 to 21 years. Eighteen of the participants had been preceptors for two to 18 years. However, four of them could not recollect when they became preceptors, as presented in Table 1.

Three main themes and several subthemes emerged that reflected the lived experiences of the preceptors (Table 2). Theme one reflected participants being excited by the preceptorship role; theme two described challenges confronting the preceptorship; and theme three described the views of participants on ways of improving preceptorship based on their experience.

3.1. Being Excited by the Preceptorship Role. Nursing is a practice-oriented profession and nursing students require assistance in the clinical setting to help them link theory to practice; this is where the role of the preceptor becomes invaluable. This theme relates to the factors that motivate participants to partake in the preceptorship programme. According to the participants, they were motivated by the opportunity to continuously read/study and teach, the opportunity to build a relationship with students, and acknowledgement or recognition they receive from students. Other participants were motivated when they see the students' progress to become competent professionals. These motivational factors are indicated in the following quotes:

> *"The reading and then getting the students around and teaching them are something that I like (P1)."*
>
> *"Seeing my students doing well, coming out successfully as professional nurses and. . .they also putting up their best in their work give me that joy to keep on training them to assist in the work that we are doing (P3)."*
>
> *"It's about relationship with students. Anytime you see them, you walk around the point at you and say "this is sir moving." Sometimes they give you fans. That is the most exciting aspect of it (P2)."*
>
> *"Sometimes when I meet people that have gone through my hands, the respect they give me and the fact that I see that they are also good and I go somewhere and they say this guy is a very good nurse... Or I enter a particular facility, nurses come to me and say ". . .thank you for what you have done for me," I feel satisfied with that. I think money is not more than that personal acknowledgement that you have contributed to my success, it's good for me. There are times you go, you are looking for certain things and your students are*

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Table 1: Description of participants' characteristics.

Participants	Age	Gender	Work experience	Years of preceptorship	Educational level
1	34	F	10	4	Master of nursing
2	45	M	15	6	Master of nursing
3	41	F	17	6	BSc. nursing
4	56	M	19	Cannot remember	BSc. nursing
5	37	F	12	2	BSc. nursing
6	34	F	10	Cannot remember	MSc. nursing
7	41	F	17	10	Master of nursing
8	37	M	13	10	BSc. nursing
9	34	F	12	7	BSc. nursing
10	42	F	16	3	BSc. nursing
11	38	F	13	11	MSc. nursing
12	42	F	15	14	BSc. nursing
13	49	F	18	Can't remember	BSc. nursing
14	36	F	12	9	BSc. nursing
15	46	F	21	Can't remember	BSc. nursing
16	42	F	16	6	MSc. nursing
17	43	M	20	10	MSc. nursing
18	48	M	17	4	MSc. nursing
19	34	M	11	8	BSc. nursing
20	37	F	14	4	BSc. nursing
21	50	M	20	10	BSc. nursing
22	46	F	20	18	BSc. nursing

Table 2: Thematic table.

Main themes	Subthemes: code
Preceptorship being exciting or rewarding	Personal motivation (i) Learn (ii) Build relationship with students (iii) Novice to competent professionals Acknowledgement and recognition by students
Challenges confronting the preceptorship	Students' factors (i) Unwillingness to learn (ii) Students not obeying instructions/disrespect (iii) Absenteeism/truancy, idling (iv) Parallel schedules of students Preceptors' factors (i) Lack of interest of staff to help students (ii) Time constraint/workload (iii) Burnout of preceptors (iv) Parallel schedules of preceptors Institutional level factors (i) Large student numbers (ii) Lack of logistics/equipment/teaching materials/aids (iii) Lack of collaboration between school and preceptors (iv) Lack of remuneration (v) Lack of training specific to the preceptor role
Improving preceptorship	Effective collaboration between educational institutions and hospitals (i) Improve communication between schools and hospitals (ii) Preceptors should account for their stewardship through periodic reports to the schools (iii) Regular meetings of stakeholders (iv) Schools should select their own preceptors (v) Preparation for role Improve interdisciplinary approach to teaching Financial reward for preceptors Streamline preceptorship

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available to just help you to do it and within no time you are out of the facility it's good (P17)."

3.2. Challenges Confronting Preceptorship. Participants of this study identified a number of challenges confronting preceptorship which denotes three main subthemes. These challenges were students' factors, preceptors' factors, and institutional factors. The participants' highlighted students' unwillingness to learn. This is manifested in students' absenteeism/truancy and idling and students' not obeying instructions/disrespect. The participants also narrated some difficulties relating to preceptors' that have significantly impacted the preceptorship role which included lack of interest to help students, time constraint, increased workload, burnout, and parallel schedules. Other institutional level factors reported by the participants included large student numbers, lack of logistics/equipment (teaching materials/aids), lack of collaboration between academic institutions and preceptors, lack of remuneration, and lack of training specific to the preceptor role.

The following excerpts support this theme:

"Some of the students are not ready to learn. . .Another challenge is that. . .equipment to work with is sometimes a challenge. You need this, it's not available. . .so, you need to almost always improvise. . .(P1)."

"Some of the challenges are students not obeying instructions given to them; students not coming to work as they are supposed to and also being. . .disrespectful... When you give them instructions and they refuse to go according to the instruction given to them, it gives you a lot of work to do. Sometimes you assign them and they run away (P3)."

". . .the number [students] is large, it becomes difficult to be able to attend to every student, and within the time limit that we work, we are not able to (attend to students) because some come in the afternoon. So, supposing I work in the morning, there should be somebody in the afternoon... If we have more preceptors, I think it will help (P5)."

"...It is very very stressful. . .Some (students) are not really ready. . .I have forty students in the facility. . . Sometimes it becomes. . .just a few hands. . . (helping students) . . . You are not given anything (P1 2)."

3.3. Improving Preceptorship. The participants believed that preceptorship as practiced today needed to be improved if the full benefits of the preceptorship model are to be derived. The measures they suggested included effective collaboration between educational institutions and the hospitals, improved interdisciplinary approach to teaching, financial reward to preceptors, and the need to streamline the preceptorship role. Specific suggestions for effective collaboration were improved communication between schools and hospitals, preceptors' accountability for their stewardship through periodic reports to the schools, regular meetings of stakeholders, and preparation for the preceptor role. They also suggested that schools should select their own preceptors. These suggestions are captured in the following quotes:

"The schools should link up with the hospitals; communicate with the DNS, the nurse in-charge as well as some of the nurses on the ward (P1)."

"Organizing meetings, getting the feedback to the individuals, and knowing what must be done. Then, remuneration depending on the institution's ability (P4)."

The training institutions need to formally communicate to the people they want to be preceptors. Then, they may have to train. Let the people know what is expected of them as preceptors, and then there should be that involvement where they are made to feel part of the training school not as in going to teach but then they have an input to make when it comes to the clinical aspect (P9)."

4. Discussion

4.1. Being Excited about the Preceptorship Role. Preceptorship is highly beneficial to nursing as it facilitates the acquisition of skills and has the potential of transforming the profession. Strong preceptorship is also necessary for a practice profession as it helps bridge the theory-practice gap [22–24]. The findings revealed aspects of the preceptorship that the preceptors found enjoyable or rewarding to continuously function in that role. It was evident that preceptorship offered opportunities for the preceptors to learn, build relationship with students, and facilitated the progression of students from novice to competent professionals. An appreciative inquiry conducted highlighted the desire for reciprocal learning and friendship as some of the intrinsic benefits to functioning in the preceptor role [25]. Furthermore, preceptors' coach and guide nursing students thereby helping them acquire certain clinical competencies to gradually become proficient in their roles [26]. The role can be viewed as rewarding providing opportunities for inexperienced nurses to learn and build competence [27].

Participants reported that acknowledgement and recognition by students were additional sources of motivation. It is interesting to note that a similar finding was reported by Asirifi et al. [13] as the preceptors were interested in being recognised in the form of receiving a special pin that will distinguish them from those not functioning in that role. Latfrance [25] emphasised acknowledgement as one of the key factors that drive preceptors in performing their roles. The preceptor role is inherently satisfying [28]. However, the factors that motivated preceptors highlighted in this study are as well found in other studies which include incentive to teach [23] and facilitating the development of the novice nurses to competent professionals [23]. The background characteristics of the participants may be similar across the studies which might have accounted for the observed findings. Therefore, efforts to improve preceptorship of student nurses need to consider these factors to maximize the experiences of preceptors.

4.2. Challenges Confronting Preceptorship. The challenges with the preceptorship programme found in this study were

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multifaceted with some related to students and preceptors while others emanated from the educational institutions. Student-related factors including the unwillingness to learn, disobeying instructions, disrespect, absenteeism, and idling during clinical placement are a major worry to their professional development. A previous study reported the need to recognize and manage students who demonstrate inappropriate behaviours, supporting them to come out of those untoward behaviours and introducing evaluation systems to foster success at the clinical area [29]. This requires that effective collaboration between faculty and preceptors is necessary in instituting clinical policies to manage untoward behaviours at the clinical settings [18, 30]. Additionally, effective supervision of students on placement will deter them from exhibiting inappropriate behaviours as empirical evidence from a cross-sectional study conducted in South Africa involving preceptors and preceptees, and unit managers suggest that some nurses fail to support students during clinical placement [31]. This finding may be applicable to the Ghanaian context as similar attitudes have been observed in the clinical setting.

Challenges specific to the preceptors and educational institutions about the preceptorship programme reported in this study are consistent with other studies [27, 32]. These include lack of interest to assist students, time constraints, increased workload, burnout, parallel schedules, and lack of equipment. This suggests that problems preceptors encounter with nursing students are similar across different settings [18, 30, 33–35]. A previous study conducted in a high-income setting reported a feeling of unpreparedness as one of the reasons nurses do not want to participate in preceptorship [32]. Other challenges consistent with other studies included personality clashes, time constraint/increased workload and lack of motivation of students, lack of organizational support/collaboration, and student placement coinciding with preceptors' clinical duties [18, 30, 33–35]. An earlier study conducted among midwives in four African countries reported increased workload as a major factor impacting preceptorship [36]. Additionally, large students' numbers, lack of logistics/equipment, of remuneration and of training specific for preceptors emerged from this study which educational institutions need to critically examine to curtail the challenges and enhance preceptorship. Even, in an advanced setting, logistical elements were noted to have impacted precepting of students at the clinical sites [37].

4.3. Improving Preceptorship. The findings suggest that effective collaboration between educational institutions and healthcare agencies, improving interdisciplinary approach to teaching, financial reward for preceptors, preparation for the role, and streamline preceptorship are some of the strategies for improving preceptorship. The measures highlighted by participants necessary for improving preceptorship have been noted in the nursing literature. For instance, in the area of collaboration, improved communication, preceptors being accountable for their stewardship, regular meetings, and schools selecting their own preceptors emerged. These findings affirm a previous study conducted by Asirifi et al. [13] in Ghana. Effective collaboration between nursing educational institutions, healthcare agencies, and preceptors are critical in helping students achieve their learning outcomes and the overall educational goals. This calls for a redefining of the concept of preceptorship between stakeholders in the educational process to agree on a contextually relevant preceptorship model that can maximize students' learning [18]. A well-developed preceptorship model within the Ghanaian context will streamline its implementation in varied nursing educational institutions. Additionally, interdisciplinary approach to teaching also emerged. This requires nursing faculty to develop collaborative clinical teaching models that can offer nursing students the opportunity to present joint clinical case conferences with their interprofessional peers [38]. The collaborative process allows students to appreciate the expertise of other disciplines and prepare them for future clinical partnerships.

It is worth mentioning that preceptors can effectively engage with students if they are well prepared for the role. It is plausible to assume that some nurses' and midwives' function in the preceptor role without receiving any formal training or participate in continuing professional development programmes on preceptorship which can affect their ability to meet the demands of the role.

Therefore, there is the need for preceptors to receive educational preparation toward the preceptor role [39–41]. According to Burns et al. [40], developing individuals for the preceptor role, is beneficial to the student, preceptor, and faculty with more effective and less stressful clinical teaching. Also, the benefit of preceptors being accountable through periodic evaluation reports to the academic institutions and students identified in this study has been noted [23]. The role of the preceptor will benefit from formal educational preparation to better assist students in acquiring the necessary clinical skills and knowledge for effective nursing care [41].

Financial rewards for preceptors emerged as a strategy for improving preceptorship which has been cited by a previous study [18]. A possible explanation of this finding is that in Ghana most nurses and midwives perform the preceptorship role in addition to their regular clinical schedules at the varied hospitals. Some institutions renumerate them based on the agreed number of clinical hours they spend with the students. However, other training institutions may not have systems in place to recognize the efforts of the preceptors. Meanwhile, organizing free workshops or continuing professional development programmes for preceptors and issuing them with certificates to enable them renew their professional identification numbers can be a great source of motivation [18].

5. Conclusions

Preceptorship is central to enabling students to relate theory to practice. Preceptors play significant roles in students' acquisition of knowledge and competencies to transit from the role of student to that of a registered nurse or midwife. Though preceptors find their role as exciting, there are

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complex inherent challenges in the preceptorship role that educational institutions and healthcare facilities/agencies need to address to foster precepting, enhance the process, and improve the clinical learning experiences of students. This study highlights the preceptors' experiences of preceptorship and the challenges confronting preceptorship in a low-middle-income country.

Data Availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Additional Points

Limitations of the Study. A clear weakness in this study, however, is the lack of student voice. Therefore, the results should be interpreted with caution

Ethical Approval

Recruitment of participants and data collection were commenced after ethical board approval by the Institutional Review Board of the University of Cape Coast (UCCIRB/EXT/2019/17) and the Ethical Review Committee of the Cape Coast Teaching Hospital (CCTHERC/EC/2019/082). Permission was obtained from the Management of the Health Facilities involved in the study.

Consent

Participants were assured of confidentiality. Written informed consent was also sought from the participants. Again, privacy was maintained during the data collection stage of the research, and the study generally did not result in any harm to the participants.

Disclosure

The funding agency did not play any role in the design, collection, analysis, and interpretation of data.

Conflicts of Interest

The authors have declared that no conflicts of interest exist.

Authors' Contributions

The study was conceptualized by NIEE. NIEE, SAA, and CMB designed the instrument. NIEE, SAA, and CMB contributed to the methodology. SAA, NIEE, and CMB analysed and interpreted the data. NIEE and SAA wrote the initial manuscript which was revised by all the authors for important intellectual content.

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Research Article

Assessment of Knowledge, Attitude, and Practice of Skilled Assistance Seeking Maternal Healthcare Services and Associated Factors among Women in West Shoa Zone, Oromia Region, Ethiopia

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Background. This study aimed to assess women's knowledge, attitude, and practice towards skilled assistance seeking maternal healthcare services in West Shoa Zone, Oromia Region, Ethiopia. *Methods*. Cross-sectional survey design was conducted from 1 February to 23 March 2018 in West Shoa Zone, Oromia, Ethiopia. A simple random sampling technique was used to select the participants. The data were collected using a pretested and structured questionnaire. Data were entered using EpiData version 3.1, and descriptive analysis and bivariate and multivariate logistic regression analyses were carried out using SPSS version 20 statistical software package. *Results*. The study revealed that the knowledge, attitude, and practice towards skilled maternal health services were found such that 473.3 (72.4%) of the study participants had good knowledge, 180.7 (27.6%) had poor knowledge, and 400 (61.3%) had positive attitude, 254 (38.84%) had negative attitude, 460.3 (70.4%) had good practice, and 193.7 (29.6%) had poor practice towards skilled maternal health services. Factors that had a significant association with antenatal care utilization were planned pregnancy (AOR = 8.2, 95% CI = 3.39-19.78-0.87) and access to transport (AOR = 3.1, 95% CI = 1.46–6.61). Attending ANC at least once (AOR = 3.1, 95% CI = 1.13–8.41), women's education (AOR = 3.0, 95% CI = 1.18–7.84), and unplanned pregnancy (AOR = 0.3, 95% CI = 0.21–0.75) were factors associated with skilled delivery service utilization. Attending ANC at least once (AOR = 2.1, 95% CI = 1.1–4.2), birth complications (AOR = 2.2, 95% CI = 1.35–3.66), unplanned pregnancies (AOR = 0.3, 95% CI = 0.22–0.68), and awareness about skilled obstetric care (AOR = 3.7, 95% CI = 1.68–12.79) were factors associated with postnatal care utilization. *Conclusions*. This study found that the knowledge, attitude, and practice of skilled maternal health services among the study participants are low, showing less than three-quarters of the total sample size. Therefore, this study implied that interventions are required to improve women's knowledge, attitude, and practice of skilled maternal health services in the study area. Furthermore, women's education is significantly associated with skilled delivery service utilization. Accordingly, this study recommends that improving equity among the marginalized population is needed to increase maternal health service coverage.

1. Background

Access to skilled health services during pregnancy, childbirth, and postpartum is a crucial element that promotes the health and wellbeing of the mother and newborn. However, maternal mortality and morbidity remains a substantial concern. Globally, an estimated 303 000 mothers died due to maternal causes during pregnancy and childbirth and postpartum [1]. Developing regions account for 99% (302,000) of the global maternal deaths and sub-Saharan Africa accounts for two-thirds (201,000) [2]. Ending preventable maternal mortality by reducing the maternal deaths to less than 710 per 100,000 live births by 2030 requires rigorous improvements in skilled maternal healthcare [3]. However, only half of women in developing regions receive the amount of healthcare services they need. Currently, the

Ethiopian government has made considerable progress in reducing maternal mortality. According to the Ethiopian Demographic Health Survey report, maternal mortality ratio has declined from 676 in 2011 to 412 in 2016 per 100,000 live births [4]. Despite improvements in maternal healthcare, there are still significant barriers to access and low utilization of maternal health services. In Ethiopia, an estimated 2.9 million women give birth every year and of these only 62%, 28%, and 17% of women received skilled antenatal care, skilled birth attendants, and postnatal care, respectively [4]. It is evident that maternal healthcare services are the most important interventions to prevent maternal morbidity and mortality but access to care alone is not enough to improve maternal health outcomes. Poor infrastructure, low quality care, and inequality substantially downplay efforts to escalate maternity services in low- and middle-income countries [5]. There are several factors influencing skilled maternal health services utilizations. Previous literatures show that these factors can be assorted as individual (sociodemographic and obstetric factors) and structural level (Figure 1). At the individual level, maternal level of education and awareness about skilled providers are perpetual predictors of antenatal care [5–7, 11–13]. Conversely, unplanned pregnancy and women giving birth more than once (multiparous) were less likely to utilize antenatal care [14]. At structural level, shortage of basic infrastructures, such as transportation facilities and telecommunications networks, significantly affected access to antenatal care services [8–10]. Previous studies in sub-Saharan Africa have revealed that education, women giving birth once (primiparous), previous experience of antenatal care visits, and awareness about skilled providers significantly predictors of skilled delivery [5–7, 11, 12, 15–21]. On the other hand, other studies demonstrate that multiparous had a positive effect on institutional delivery [22, 23]. Furthermore, evidence indicates that antenatal care attendance, wanted pregnancy, and birth complications were strong determinants of postnatal care services utilization [17, 24–26].

The government of Ethiopia plans to reduce maternal mortality, infant mortality, and morbidity by strengthening maternal healthcare system interventions essentially increasing birth attendants at birth, meeting unmet needs of family planning, improving quality of care at childbirth, and increasing financing of the health system, but still, maternal mortality is an unfinished issue which needs more investigations [27]. Nonetheless, there are many studies conducted on the utilization of maternal health services in Ethiopia [6, 7, 11, 15, 18, 20], but few studies have substantially addressed the women's level of knowledge and attitude regarding skilled maternal health services. Moreover, scant studies were done at community level in the West Shoa Zone. Therefore, this study assesses the women's knowledge, attitude, and practice of antenatal care, skilled birth attendants, and postnatal care and the associated factors in the West Shoa Zone, Ethiopia.

2. Methods

2.1. Study Area, Period, and Design. The study was conducted in West Shoa Zone, Oromia Region, Ethiopia. West Shoa is among 18 zones in Oromia region. The administrative center for West Shoa Zone is Ambo city which is located 114 km west of Addis Ababa, the capital city of Ethiopia. The West Shoa Zone has a total population of 2,058,676 of whom 1,028,501 were men and 1,255,010 were women of reproductive age [28]. The zone has 92 health centers, 578 health posts, 3 general hospitals, 4 district hospitals, and one referral hospital. The study was conducted from 1 February to 23 March 2018. Cross-sectional survey design was employed.

2.2. Source Population and Study Population. All women who gave birth in the last 12 months in West Shoa Zone were source of population and all randomly selected women who gave birth in the last 12 months in West Shoa Zone were study population.

2.3. Sample Size Determination and Sampling Procedure. The sample size was calculated using single population proportion formula $[(n = (Z\alpha/2)^2\ p(1-p)/d^2)]$ using a proportion of mother's seeking behavior, $P = 73.8\%$ [29], with 5% of marginal error (d) and 95% confidence interval (CI), design effect of 2 to correct the design effect, and 10% nonresponse rate, yielding final sample size of 654. Simple random sampling technique was used to select the study participants.

The regions are divided into zones, woredas, and kebeles which are the lowest level of administration. The woreda is administrative divisions with an average 100,000 population residing, and kebeles are the smallest unit in the local government of Ethiopia [27]. According to the West Shoa administrative office, the West Shoa Zone is composed of 19 Woredas with 528 rural kebeles and 58 urban kebeles. First five woredas such as Cheliya, Toke Kutaye, Nono, Dire Enchini, and Ejerie were purposely selected from a total of nineteen woredas from the zone. Then the five woredas were stratified by residence (urban and rural kebeles), and then the kebeles of the five woredas were allocated proportionally. The list of eligible women was obtained from registration books of respective kebeles' administration offices. The sample size was distributed to the urban and rural kebeles proportionate to the size of their population (Figure 2).

2.4. Inclusion and Exclusion Criteria. Women of reproductive age of 15–49 years who gave birth one year before the survey and residing in the study area for at least six months were included in this study and women with physical and mental illness were excluded from the study.

2.5. Study Variables. The dependent variables in this study were antenatal care, skilled birth attendants, and postnatal care and the independent variables were sociodemographic, obstetric-related factors, and structural factors.

2.6. Operational Definitions. Knowledge of skilled maternal health services is defined such that women who scored above the mean of knowledge assessment questions were categorized as having good knowledge, and if they scored below the

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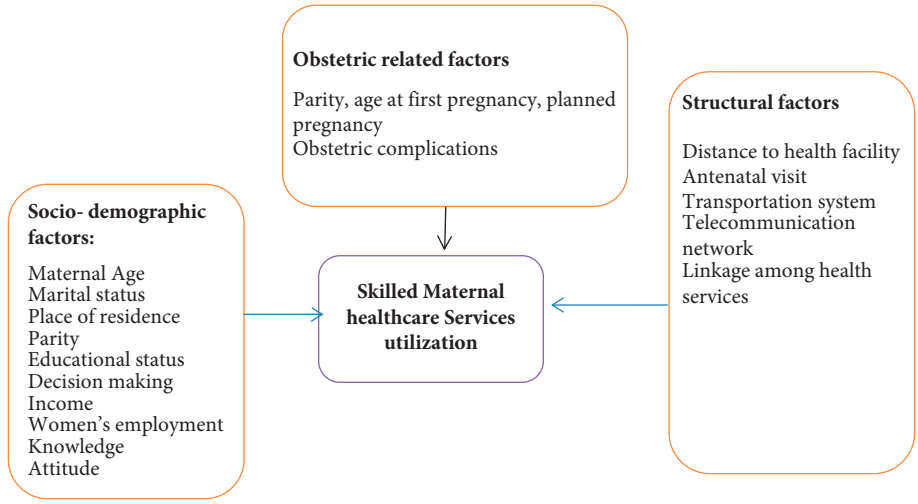

Figure 1: Conceptual framework adapted from different literature studies [5–10].

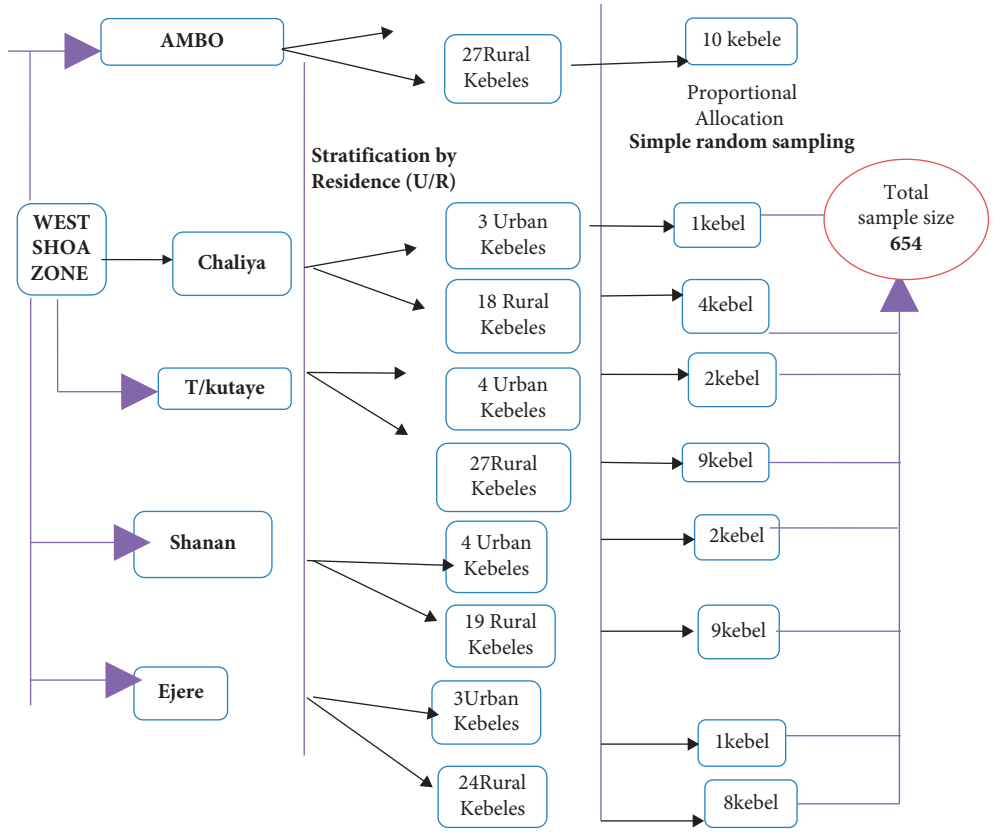

Figure 2: Schematic representation of women of reproductive age, West Shoa Zone, Ethiopia, 2018.

mean, they were considered as having poor knowledge. Attitude was measured by using Likert scale (1 = strongly agree, 2 = agree, 3 = disagree, and 4 = strongly disagree). Positive attitude was scored by participants who respond above the mean of the attitude assessment questions and if below the mean they were categorized as having negative attitude. Practice (antenatal care, skilled delivery, and postnatal care utilization) was measured such that participants who respond above the mean of the practice assessment question were considered as having good practice and if below the mean they were considered as having poor practice.

2.7. Data Collection Tools, Procedure, and Data Quality Assurance. A structured questionnaire was used to collect the data. The questionnaire consists of sociodemographic characteristic (mother's age, marital status, place of

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residence, income, occupation, women's education, and husband education), obstetric history (parity, age at first pregnancy, pregnancy planned, and antenatal care visit), and service-related factors (distance to facility, transport, and telephone access), and questions addressing the women's knowledge, attitude, and practice of skilled assistance seeking maternal healthcare services were items in the questionnaire. The following measures were undertaken to assure the quality of data. The questionnaire was initially prepared in English, translated to the local language Afan Oromo and back to English by different individuals to check for consistency of meaning. The questionnaire was pretested on 33 women of reproductive age who were not participants in this study and lived outside the study area. Cronbach's alpha coefficient was used to ensure the reliability of the tools [30] and was found to be 0.89. Content validity was ensured by measuring content validity ratio and was 0.2. Then authors confirmed all items measured the content they were intended to measure. Six BSc nurse/midwife data collectors were recruited. Training was given to the data collectors for two days about the aim of the study, sampling procedures, and collecting the questionnaire data. The structured questionnaire was discussed in detail going through every question and clarification was provided. Informed consent was obtained to ensure the willingness and confidentiality of all of the study subjects. Then the collected data was reviewed and cross-checked for completeness and consistency by the principal investigator on daily basis at the spot during the data collection time.

2.8. Data Processing and Analysis. Data were entered and cleaned using EpiData version 3.1 software and then exported to SPSS version 20.0 statistical software packages for analysis. Bivariate and multivariate analysis between dependent and independent variables were performed separately using binary logistic regression. Descriptive statistics such as mean, median, and standard deviation were computed. Bivariate and multivariate logistic regression analysis were employed to examine the statistical association between independent and dependent variables. Variables that have a statistical association in the bivariate logistic regression at P-value <0.25 at 95% CI were entered into a multivariate logistic regression at P-value <0.25 at 95% CI [31]. Finally, adjusted odds ratio (AOR) with 95% CI and value <0.05 were considered statistically significant. Lastly, the results were presented using tables, figures, and texts.

3. Results

3.1. Sociodemographic Characteristics and Obstetric History of Study Participants. A total of 654 participants were enrolled in this study. The mean age of the study participants was 26.12 years. The study found that 405 (61.9%) of the participants were living in rural areas. The dominant ethnicity in the study area was Oromo (568—86.9%).

Concerning the marital status of the participants, 583 (89.1%) of women were married. Most of the women's educational status was grade 1 up to grade 8 which was 266 (40.7%). Among occupations, 181 (27.7%) were farmers and 197 (30.1%) women were housewives. The median monthly income of the women was <500 Ethiopian birr. In regard to the number of children, 477 (72.9%) of mothers have 2–4 children. Regarding overall women's age during their last recent birth, 323 (49.4%) were at the age of 15–19 years and 139 (25.5%) were at the age of 20–24 years. Regarding pregnancy, 541 (82.7%) of the participants had planned their last pregnancy. In the case of history of pregnancy and intrapartum complications, 376 (57.5%) had experienced complications in their last pregnancy and 223 (34.1%) of the women had encountered at least one complication during labor, out of whom 112 (50.2%) had excessive vaginal bleeding (Table 1).

3.2. Knowledge of Skilled Assistance Seeking Maternal Healthcare Services of Study Participants. The study found that, with respect to the knowledge score towards skilled maternal health services, 473.3 (72.4%) of the participants had good knowledge and 180.7 (27.6%) had poor knowledge towards skilled maternal health services. Regarding maternal health services information, 632 (96.0%) of the study participants had heard about skilled maternal health services and 265 (40.5%) health professionals were their main sources of information. Considering safety, 550 (84.1%) knew institutional delivery was safe, while 104 (15.9%) mentioned home delivery was safe. Regarding the knowledge of identifying skilled providers, 558 (85.3%) participants mentioned that health professionals are skilled providers, 84 (12.8%) mentioned that traditional birth attendants are skilled providers, and 12 (1.8%) participants mentioned that relatives are skilled providers. Regarding the apprehensions of the importance of postnatal care services, 477 (72.9%) of the study participants knew that postnatal care was important, and 177 (27.1%) knew that postnatal care was not an important service (Table 2).

3.3. Attitude of Skilled Assistance Seeking Maternal Healthcare Services of Study Participants. Regarding the attitude score on the need for skilled maternal care, 400 (61.2%) of the study participants had positive attitude towards skilled maternal health services, and 254 (38.84%) had negative attitude (Table 3).

3.4. Practice of Skilled Assistance Seeking Maternal Healthcare Services of Study Participants. Based on practice score, 460.3 (70.4%) of the participants had good practice and 193.7 (29.6%) had poor practice towards skilled maternal health services. Regarding the utilization of antenatal care, 582 (89%) of the women had an antenatal checkup, of whom 249 (42.8%) participants had four and above antenatal checkups. Regarding the place of childbirth delivery, 416 (63.6%) of participants attended their recent childbirth in health facilities by skilled birth attendant, and 238 (36.4%) gave birth at home (Figure 3). Out of those women who gave birth at home, 95 (39.7%) were assisted by traditional birth attendants. Regarding the reason for home delivery, 101 (42.2%) experienced urgent labor, 92 (38.5%) had usual childbirth

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Table 1: Sociodemographic characteristics of study participants.

Variable	Category	Frequency	Percentage
Residence	Rural	405	61.9
	Urban	249	38.1
Age	15–19	21	3.2
	20–24	137	20.9
	25–29	262	40.1
	30–34	152	23.2
	35–39	69	10.6
	40–44	11	1.7
	45–49	2	0.3
Marital status	Single	15	2.3
	Married	583	89.1
	Divorced	37	5.7
	Divorced	19	2.9
Educational status of the mother	Unable to read and write	171	26.1
	Grade (1–8)	266	40.7
	Grade (9–12)	139	21.3
	College and above	78	11.9
Occupation	Farmer	181	27.7
	Housewives	197	30.1
	Daily worker	41	6.3
	Merchant	111	17.0
	Office worker	108	16.5
Income	1–500 birr	419	64.1
	501–1000 birr	141	21.6
	>1000 birr	87	13.3
	None	7	1.1
Number of children	1	97	14.8
	2–4	477	72.9
	≥5	80	12.2
Last pregnancy planned	Yes	541	82.7
	No	113	17.3
Pregnancy complication	Yes	376	57.5
	No	278	42.5

Table 2: Knowledge towards skilled maternal healthcare among study participants.

Variable	Category	Frequency	Percentage
Ever heard about skilled maternal health services?	Yes	628	96.0
	No	26	4.0
Source of information about skilled maternity care?	Friends	92	14.1
	HEW	160	24.5
	Media-radio/TV	31	4.7
	Families	80	12.2
	Health professionals	265	40.5
Know every pregnant mother should receive antenatal care?	Yes	632	96.6
	No	22	3.4
Which is safe for child delivery?	Health facility	550	84.1
	Home delivery	104	15.9
Which provider is skilled for delivery?	Health professional	558	85.3
	TBA	84	12.8
	Relatives	12	1.8
Know postnatal care is important?	Yes	477	72.9
	No	177	27.1

experiences, 27 (11.3%) had distant health facilities, 14 (5.9%) depended on presence of traditional birth attendants, 5 (2.1%) lacked transportation, and 376 (57.5%) encountered birth complications in their recent childbirth. Among those who gave birth at health institutions, 383 (58.6%) women had received postnatal care at health facilities (Table 4).

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Table 3: Attitude towards skilled maternal healthcare among study participants.

Variable	Strongly agree	Agree	Disagree	Strongly disagree
Do you agree the importance of skilled health providers for maternity care?	442 (67.6)	212 (32.4)	—	—
How do you agree that the need of having a plan on possible pregnancy complication?	214 (32.7)	432 (66.1)	8 (1.2)	—
Do you agree delays in seeking care for obstetric complication contribute to maternal death?	83 (12.7)	325 (49.7)	234 (35.8)	12 (1.8)
How do you agree to the importance of planning delivery place?	149 (32.8)	498 (76.1)	7 (1.1)	—

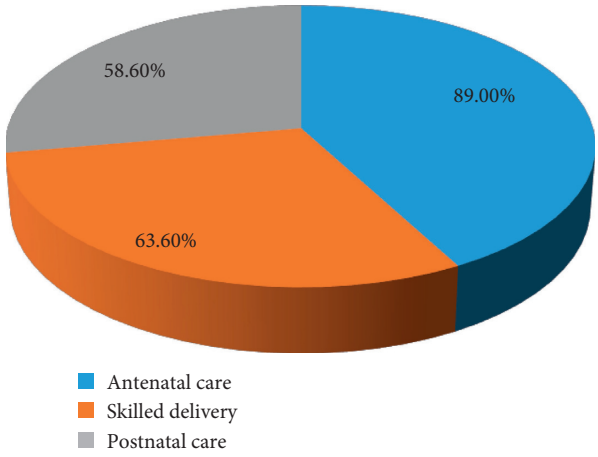

Figure 3: Practice of maternal health service utilization among women of reproductive age at West Shoa Zone, Ethiopia, 2018.

3.5. Factors Associated with Skilled Assistance Seeking Antenatal Care Services of Study Participants. On multivariate analysis, planned pregnancy and access to transport were found to be significantly associated with antenatal care utilizations. Women who had a planned pregnancy were eight times more likely to seek antenatal care than unplanned pregnancy (AOR = 8.2, 95% CI = 3.39-19.78-0.87), women who had access to transportation were three times more likely to seek skilled antenatal care than those who had no transportation access (AOR = 3.1, 95% CI = 1.46–6.61) (Table 5).

3.6. Factors Associated with Skilled Assistance Seeking Delivery Services of Study Participants. In multivariate analysis, women's education, wanted pregnancies, parity, antenatal care visit at least once, experiencing birth complications, and knowledge about skilled delivery were found to be statistically significant with skilled assistance seeking delivery services. The study found that education increases the probability of women utilizing skilled maternal healthcare services. Women with educational level of secondary and above (AOR = 3.0, 95% CI = 1.18–7.84) were three times more likely to have childbirth at the health facility as compared to those women who had no formal education, women whose previous pregnancies were unwanted had 70% lower odds of attending childbirth at the health facility as compared to those women with wanted pregnancies (AOR = 0.3, 95% CI = 0.21–0.75), primiparous women had 89% lower odds of attending childbirth at health facility than the multiparous women (AOR = 0.11, 95% CI = 0.05–0.24), women having at least one antenatal care in their recent pregnancies were about three times more likely to attend childbirth by a skilled provider compared with those who had no antenatal visit (AOR = 3.1, 95% CI = 1.13–8.41), women who had experienced birth complications were twice more likely to seek skilled provider than those who had not had complications (AOR = 2.3, 95% CI = 1.39–3.75), and women who had awareness about skilled obstetric care were three times more likely to have birth attendance by a skilled provider with their counterparts (AOR = 3.1, 95% CI = 1.13–8.41) (Table 6).

3.7. Factors Associated with Skilled Assistance Seeking Postnatal Services of Study Participants. In multivariate analysis, number of antenatal care visits, pregnancy complications, unwanted pregnancies, and having awareness about skilled obstetric care were significantly associated with postnatal care by a skilled provider. Women having at least one ANC in their recent pregnancy were twice more likely to attend postnatal care as compared with those who had no antenatal visit (AOR = 2.1, 95% CI = 1.1–4.2.), women who had experienced birth complications were twice more likely to seek postnatal care than those who had not had complications (AOR = 2.2, 95% CI = 1.35–3.66), women with unwanted pregnancies had 70% lower odds of attending postnatal care services as compared to women of wanted pregnancies (AOR = 0.3, 95% CI = 0.22–0.68), and women who had awareness about skilled obstetric care were four times more likely to attend postnatal care with their counterparts (AOR = 3.7, 95% CI = 1.68–12.79) (Table 7).

4. Discussion

This study assessed the women's knowledge, attitude, and practice of skilled assistance seeking maternal healthcare services. In this study, the proportion of antenatal care, skilled delivery, and postnatal care services utilization was low as compared to other studies [21, 22, 25]. Conversely, the institutional delivery in this study was found high as compared to other studies in Ethiopia and Kenya [7, 12, 13, 16]. The reasons for this variation could be explained by the different sample sizes, time gaps, and different socioeconomic conditions of the settings.

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Table 4: Practice towards skilled maternal healthcare among study participants.

Variable	Category	Frequency	Percentage
Attend antenatal care for last pregnancy?	Yes	582	89.0
	No	72	11.0
Number of antenatal care visits	1	20	3.4
	2–3	313	53.8
	4 and above	249	42.8
Place of delivery	Home	238	36.4
	Health facility	416	63.6
Delivery assisted by	Doctor	35	5.4
	Nurse	83	12.7
	Midwives	280	42.8
	Health officer	8	1.2
	I don't remember	9	1.4
Home assisted by	Traditional birth attendants	95	39.7
	Neighbours	88	36.8
	Relatives	51	7.8
	Health extension workers	5	2.1
	Usual experience	92	38.5
	Labor is urgent	101	42.2
Reasons for home delivery	Presence of traditional birth attendants	14	5.9
	Health facilities are far away	27	11.3
	Lack of transportation	5	2.1
Birth outcome	Live birth	630	96.3
	Still birth	24	3.7
Did you attend postnatal care from health facility for last pregnancy?	Yes	383	58.6
	No	271	41.4
Experienced obstetric problem the last pregnancy?	Yes	376	57.5
	No	278	42.5

Table 5: Binary logistic regression model to examine the association of antenatal care services among study participants.

Variable	Category	Seek ANC		Crude OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value
		Yes	No				
Age at last delivery	15–19	17	4	0.56 (0.01–44.49)	0.56	—	—
	20–24	131	6	0.04 (0.03–0.82)	0.04	1	—
Marital status	Single	9	6	1.2 (0.12–12.5)	0.8	—	—
	Married	536	47	0.06 (0.02–0.66)	0.000	1	—
Mother's education	No formal education	141	30	1.0 (0.59–17.15)	0.99	—	—
	Formal education	107	33	10.9 (1.46–81.1)	0.02	1	—
Husband's education	No formal education	107	17	2.0 (0.36–11.18)	0.42	—	—
	Formal education	203	30	0.09 (0.04–0.25)	0.000	1	—
Income	<500 birr	86	1	3.7 (0.11–121.75)	0.46	—	—
	>1000 birr	366	53	0.03 (0.002–0.38)	0.007	1	—
Planned pregnancy	Yes	513	28	0.1 (0.05–0.15)	0.08	8.2 (3.39-19.78)*	0.001
	No	69	44	—	—	—	—
Number of children	1	89	8	0.7 (0.14–3.96)	0.74	—	—
	2–4	440	37	0.1 (0.09–0.29)	0.000	1	—
Transport access	Yes	298	25	0.5 (0.3–0.85)	0.01	3.1 (1.46-6.61)*	0.003
	No	284	47	—	—	—	—
Knowledge about skilled maternity care	Yes	565	63	0.2 (0.09–0.49)	0.000	1.9 (0.04-0.87)*	0.01
	No	17	9	—	—	—	—
Attitude about skilled maternity care	Good	408	34	0.38 (0.23–0.63)	0.000	1	—
	Poor	174	38	—	—	—	—

Significant for *P* value <0.05; *statistically significant for *P* value ≤0.01.

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Table 6: Binary logistic regression model to examine the association of delivery services among study participants.

Variable	Category	Seek skilled delivery		Crude OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value
		Yes	No				
Residence	Rural	248	157	1.3 (0.94–1.83)	0.1	—	—
	Urban	168	81	—	—	—	—
Marital status	Single	9	6	0.1 (0.04–0.81)	0.025	—	—
	Married	384	199	0.1 (0.004–0.42)	0.001	—	—
Mother's education	Unable to read and write	88	83	6.4 (3.0–13.28)	0.000	—	—
	Grades 9–12, college	98	41	2.8 (1.3–6.06)	0.007	3.0 (1.18–7.84)*	0.02
Husband's education	Unable to read and write	76	48	0.5 (0.26–1.1)	0.09	—	—
	Grades 9–12	93	33	0.3 (0.14–0.64)	0.002	—	—
	College	110	22	0.1 (0.07–0.37)	0.000	—	—
Planned pregnancy	Yes	382	159	0.17 (0.11–0.28)	0.000	0.3 (0.21–0.75)*	0.004
	No	34	79	—	—	—	—
Number of children	1	13	7	0.04 (0.02–0.09)	0.00	—	—
	2–4	221	92	0.09 (0.05–0.17)	0.00	0.11 (0.05–0.24)*	0.001
Antenatal care attend	Yes	389	193	0.29 (0.17–0.49)	0.000	1	
	No	27	45	—	—	—	—
Number of antenatal care visits	At least once	13	7	2.7 (1.59–4.72)	0.000	3.1 (1.13–8.41)*	0.03
	2 and above	221	92	0.6 (0.48–0.97)	0.04	—	—
Experienced complication	Yes	205	171	2.6 (1.86–3.69)	0.000	4.7 (2.7–8.43)*	0.001
	No	211	67	—	—	—	—
Transport access	Yes	214	109	0.7 (0.58–1.09)	0.16	1	
	No	202	129	—	—	—	—
Knowledge about skilled delivery	Yes	407	221	0.28 (0.13–0.65)	0.003	3.1 (1.13–8.41)	0.03
	No	9	17	—	—	—	—
Attitude about skilled delivery	Positive	305	111	0.4 (0.35–0.69)	0.000	1	—
	Negative	137	101	—	—	—	—

Significant for *P* value <0.05; *statistically significant for *P* value ≤0.01.

Table 7: Binary logistic regression model to examine the association of postnatal care services among study participants.

Variable	Category	Seek PNC		COR (95% CI)	*P* value	AOR (95% CI)	*P* value
		Yes	No				
Number of children	2–4	385	92	0.34 (0.1–0.83)	0.01	1	—
Number of antenatal care visits	4 & above	184	65	0.44 (0.23–0.84)	0.01	2.1 (1.1–4.2)*	0.025
Transport access	Yes	249	74	3.3 (1.39–8.0)	0.007	1	—
Experienced pregnancy complication	Yes	256	120	2.2 (1.0–5.14)	0.04	2.2 (1.35–3.66)*	0.002
Source of information about skilled providers	Health professional	231	34	2.3 (1.03–5.07)	0.04	3.7 (1.68–12.79)*	0.003
Planned pregnancy	Yes	454	87	0.3 (0.14–0.66)	0.003	0.3 (0.22–0.68)*	0.001

Significant for *P* value <0.05; * statistically significant for *P* value ≤0.01.

Among the predisposing factors, access to transport and planned pregnancy were found to be associated with the use of antenatal care. Transport access is often reported readily available in the study settings which delays women's timely healthcare. The findings suggest that women who had access to transport were more likely to seek antenatal care service than those women who had no transport access. This implies that basic infrastructure inevitably has an effect on antenatal care utilization. This finding is consistent with the study done in Ghana, Kenya, and Malawi emphasising that the availability of vehicles such as public transport and taxis significantly determined the pregnant women's decision to seek antenatal care [10]. Furthermore, other studies in sub-Saharan Africa also ascertained that access to transport services plays a critical role in women's antenatal care attendance [8, 9]. Moreover, this study found that planned pregnancies were significantly associated with antenatal care utilization. However, this finding is congruent with a study in the Democratic Republic of Congo [14].

Regarding the predisposing factors to skilled delivery, women's education was significantly associated with skilled delivery utilization. Women with secondary school and above were more likely to deliver at a health facility as compared to women with no education. The findings of this study are similar with other studies in Africa [5–7, 11, 12] which highlighted that utilization of maternal health services

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increases consistently as the educational level increases. The higher utilization of skilled childbirth services among well-educated women may be attributed to their level of understanding, which may make women who are more concerned about their health and their illness need to seek appropriate healthcare services. Furthermore, women with unplanned pregnancies were 70% less likely to have childbirth at the health facility as compared to those mothers with wanted pregnancies**.** This finding is also supported by a study in the Democratic Republic of Congo [14]. This might be because the occurrence of unintended pregnancy is likely to reduce maternity care-seeking behavior of women, which is associated with discouragement and feeling less pregnancy experience.

Our finding showed that parity is significantly associated with a skilled birth attendant. Primiparous women were more likely to deliver in a health facility than the multipara. This finding is consistent with other studies done in Kenya and Ethiopia [16, 20]. This might be because the low parity women give more attention to childbirth experiences and might have fear of complications than high parity women. This finding is in contrast with the previous studies in Ethiopia and Nigeria [22, 23]. Women who had experienced birth complications were found to have a significant association with seeking skilled delivery. This finding is also supported by other studies in the Oromia region of Ethiopia [18]. Access to information on the importance of skilled maternal healthcare is also associated with the utilization of skilled birth attendants. This finding is similar to the study done in Ethiopia [13]. The number of antenatal care visits tended to increase the utilization of skilled delivery. This study has found that women who had to attend at least one antenatal care for their previous pregnancies were more likely to seek skilled delivery compared with those who did not have antenatal care visits. This finding is similar to that of studies in Ethiopia, Tanzania, South Sudan, and Nepal, respectively [15, 17, 19, 21]. This might be because antenatal care is a significant intervention in contributing women into contact with the health system, facilitating women's access to skilled childbirth and including postnatal care. This implies that undergoing constant antenatal care visits have predominant importance to increase the utilization of facility delivery services.

This study illustrates that having at least one antenatal care visit in women's recent pregnancies was a significant predictor of postnatal care services. This finding is supported by other studies in Nigeria [26]. Likewise, wanted pregnancies were significantly associated with the postnatal care utilization. Women of unwanted pregnancies were less likely to attend postnatal care services compared to women of wanted pregnancies. This is consistent with the study done in Tanzania [17]. This implies that unwanted pregnancy influences maternal healthcare services. The study found that experiencing obstetric complications was a significant predictor to seek postnatal care. For instance, women tend to visit the health facility for postnatal care only when they encountered complications. This implies that postnatal care services do not give much attention in the study area. This finding also agrees with a study conducted in Nepal and Tanzania [24, 25].

4.1. Limitation of the Study. The study has encountered certain limitations. The study used a cross-sectional study design that has considerable methodological limitations in drawing cause and effect relationships between the variables. The information obtained from the participants could be affected by social desirability due to recall bias; thus the study attempts to minimize this by including women who gave birth in the last year.

5. Conclusions

This study found that the knowledge, attitude, and practice of the study participants towards skilled maternal health services are low, which is less than three-quarters of the total sample size. Therefore, the findings of this study indicate that interventions are required to improve women's knowledge, attitude, and practice of skilled maternal health services in the study area. Moreover, unplanned pregnancy and lack of transportation were significantly associated with the non-utilization of maternal health services. Therefore, the study suggests that integrated family planning and maternal healthcare services should be reconsidered to assist women with unplanned pregnancies to utilize maternal healthcare services and improvement to infrastructures are needed to increase access to maternal health services. Likewise, women's education is significantly associated with skilled delivery services utilization. Accordingly, this study recommends that improving equity among the marginalized population is needed to increase maternal health services coverage.

Data Availability

The datasets used during the current study are available from the corresponding author upon reasonable request.

Ethical Approval

This study was approved by the College Research and Community Service Ethical Committee (CRCSEC) of Ambo University. Official permission to conduct the study was obtained from the respective district health offices. The purpose of the study, potential risks and benefits, and rights of participants were explained. The participants were assured about the confidentiality of the information they provided.

Consent

All study participants provided written informed consent. For participants whose age is <18 years, a written consent paper was obtained from their parents or guardians.

Disclosure

The authors acknowledge that the work was previously published in the preprint server.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Authors' Contributions

EG carried out the study, designed the study methodology, performed statistical analysis, interpreted the data, and prepared the manuscript. KM was involved in the conception of the study topic and data entry. BE contributed to the coordination of data collection. FW wrote the first manuscript. MM participated in the analysis. All authors read and approved the final manuscript.

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Research Article

Students' Perspectives on Learning Practical Nursing Skills: A Focus Group Study in Norway

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Practical nursing skills are complex and involve technical, theoretical, and practical aspects, caring perspectives adjusted to both patient and circumstances, as well as ethical and moral considerations. Patients' length of stay in hospitals is decreasing, and more advanced patient treatment is conducted in primary healthcare settings. Hence, education and nursing skills need adjustment in line with the rapidly evolving field of practice. Studies emphasize a need to uncover whether the technical aspect of nursing skills, in general, is challenging in students' learning. The aim of this study was to explore students' perspectives on practical nursing skills and how they can best learn these. Three focus group interviews were conducted with registered nurse students and intellectual disability nurse students in their last semester ($n = 11$). Conventional, inductive content analysis in line with recommendations from Hsieh and Shannon was used to analyze the data. Two main categories with subcategories were identified: (1) the content of practical skills, with subcategories (a) human-to-human relations, (b) organizational competence, and (c) technical mastering and (2) building competence, with subcategories (a) need for supervision, (b) planning the learning situations, and (c) relevance for practice. Students experienced that practical skills did not only include technical aspects but also the ability to establish a relationship to the patient and to organize their working day. Supervising was assumed as essential both when training in the simulation center and in clinical placement, as well as planning of the training, respectively. Students experienced that some skills learned in the university college were less relevant in clinical practice and that certain skills were difficult to perform in practice due to the type of clinical placement. Hence, there is a need to review the approach to and content of practical nursing skills' learning in healthcare undergraduate programs, to prepare students for clinical practice, and to ensure that they build the competence needed in healthcare services.

1. Introduction

As a consequence of increasing demands due to the demographic development, with an increasing number of older people and people with chronic illness, the organization of healthcare services and nursing competence needs are changing. Patients' length of stay in hospitals is decreasing, leading to more advanced patient treatment being conducted in primary healthcare settings. Hence, nurse education and nurses' competence need adjustment in line with the rapidly evolving field of practice [1–3].

To ensure quality in patient care, healthcare personnel must be qualified in practical procedure performance [4]. Research indicates that newly qualified nurses experience the nursing demands as complex and overwhelming. They wish for higher competence in concrete situations and better knowledge about procedures they are expected to master [5–7]. Consequently, it has been emphasized that the nurse education curriculum needs to be better oriented towards the healthcare service needs and include more practical procedure training [4, 6]. The performance of practical procedures is complex and involves technical and theoretical

aspects, caring perspectives adjusted to both patient and circumstances, as well as ethical and moral considerations [8].

It has been claimed that education of nurses should focus more on factors that influence students' practical skills' learning [9]. Performing practical skills on actual patients is assumed to be more efficient to reach an in-depth understanding than what students achieve through simulation or training in skill centres [10, 11]. Clinical placement is therefore considered a very important learning environment for the development of practical skill competence [8, 12]. Clinical placement is a major component of the nursing education curriculum but provides nursing students with varied opportunities to practice practical skills due to a high degree of specialization and the introduction of innovative medical technologies in healthcare services [13, 14]. Hence, which students have an opportunity to learn depends on where they have their clinical placement. Moreover, supervisors in the clinical placements experience challenges with balancing the responsibility for both patients and the student. In addition, they have limited time to supervise, and they request closer collaboration with the educational institution [15, 16]. Both supervisors and students experience a tension between theory and practice [17, 18]. As a consequence, it has been emphasized that policymakers should focus on improving the clinical environment, enabling for the professional development of students [19].

In Norway, two different bachelor programmes for authorized healthcare personnel with a defined medical competence exist: one for registered nurses (RNs) and one for intellectual disability nurses (IDNs). The defined medical competence for IDNs is related to patients with intellectual and/or physical disabilities, as well as patients with psychiatric illness or addiction. RNs' medical competence is related to patients in primary and specialist healthcare services with primarily somatic and psychiatric diseases. Practical nursing skills' learning across these undergraduate programmes is very much similar and includes both theory and practical skills' training in simulation centres and in clinical placement. Fifty percent of the RN education in Norway consists of supervised clinical placements, while it comprises thirty percent in the IDN education. As both RNs and IDNs are authorized healthcare personnel with competence in practical nursing skills, calls for positions often include both, especially in primary healthcare services.

A recent study found that supervisors perceive that students should learn most practical skills in the educational institution, while they should get further training in these skills when in clinical placements [20]. This may have an impact on supervisors' approach to, or facilitation of, students' learning of practical skills. A review of the literature concludes that the teaching of practical skills is a shared responsibility between nursing education at university-based settings and the training of nursing students during clinical practice [21]. Still, little is known about the ways in which students learn practical skills during their clinical placements [22]. A few studies have been conducted on RN students' learning and performance of peripheral vein cannulation both in university-based and in clinical settings [8, 11, 23]. One conclusion was that low-fidelity simulation was effective, providing familiarity with equipment used in the clinical setting, but also inadequate due to lacking opportunity to discern differences encountered in the clinical setting [11]. A need has been emphasized to uncover whether the technical aspect is challenging in students' learning of practical nursing skills in general [8]. Hence, researchers emphasize the need to explore RN students' learning and performance of technical aspects of other practical nursing skills [11, 24]. We are unable to identify research on IDN students' learning of practical nursing skills.

Consequently, the aim of this study was to explore RN and IDN students' perspectives on practical nursing skills and how they can best learn these.

2. Materials and Methods

A qualitative, explorative design was used. A focus group is an interview technique that uses purposive sampling to select participants, who are of a specific population, share similar characteristics, and have something to say about the topic [25]. Focus groups are appropriate when the aim is to explore areas that need improvement based on participants' perspectives and ideas [26, 27]. The participants' experiences are deepened and developed through discussions and dialogue between the participants [28]. Hence, this method was assumed appropriate for the aim of this study.

The authors consist of RN and IDN student educators ($n = 5$). The authors are also part of a research group that consists of an IDN working in the university college simulation center, three RNs working in a hospital, and three RNs working in primary healthcare services. The research group was included in the planning of the study, as well as in interpretation of the findings. The manuscript adheres to the Standards for Reporting Qualitative Research (SRQR) [29].

2.1. Study Setting. The university college is located in an area that covers 320,000 inhabitants. The clinical placement of students takes place in a hospital with two different geographical locations: one with elective services only and one with both acute and elective services. Primary healthcare services include, e.g., acute care wards, casualties, nursing homes, homes for people with intellectual or functional disabilities, and home-based nursing services. The students have six (RN) and three (IDN) periods of clinical placement, respectively, in different wards and healthcare levels, during a three-year undergraduate program. They receive theory and training in practical skills in the simulation center during their first and second year of education (RN students), and IDN students in the third year as well. Practical skills' learning includes many different skills, varying from simple to complex skills, and from, e.g., bed making to catheterization. Cardiopulmonary resuscitation is trained all three years in both programs.

2.2. Participants. We chose to include RN and IDN students in their last semester of education. As of 2020, this included 162 RN students and 59 IDN students. A purposive sampling

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method was used. All students from each educational program were invited to participate through e-mail. In total, 11 students responded and were consequently included.

2.3. Interview Guide. An interview guide was developed based on earlier research [15, 16, 18, 30] and informal feedback from supervisors in primary and specialist healthcare services, as well as several discussions between the participants in the research group, until consensus was reached. Feedback indicated that the guide was concrete, relevant, and understandable. The guide consisted of five different themes: practical skills, preparedness, self-assessed competence, mastering, and the educational program (see Supplement 1).

2.4. Procedure. The focus group interviews were conducted in a meeting room at the university college and lasted from 40 to 55 minutes. The focus groups were led by a moderator and an assistant moderator. We ensured that the RN educator participated in the IDN student interviews, and vice versa. The assistant moderators were two RNs not working in the university college. The assistant moderator observed the interaction in the group and noted down observations and nonverbal communication. The moderator focused on letting the participants freely discuss their experiences related to the themes presented. Participants were encouraged to exchange experiences and spontaneously comment on each others' views and statements. The interview guide was used as a support to ensure that all themes were covered in both the focus groups and the interview with two participants.

The interviews were digitally recorded. All records were transcribed verbatim by an external transcriber, who had signed a nondisclosure agreement. The recordings were deleted after transcription.

2.5. Ethical Considerations. The study was conducted in line with recommendations in the Declaration of Helsinki [31]. Students received oral and written information about the study purpose and delivered signed written consent to participate. Due to the nature of a focus group, it was not possible to withdraw from the study. Participation was voluntary. The study was approved by the Norwegian Center for Research Data (NSD, reference no: 95194). All the data were handled confidentially. It is not possible to recognize individuals in the transcripts or in the presentation of results. To ensure anonymity, students were given codes/numbers: RN 1–5 and IDN 1–6, respectively.

2.6. Analysis. We used a conventional, inductive content analysis in line with recommendations from Hsieh and Shannon [32]. The analysis followed four steps: (1) reading and rereading the transcripts to get an overall impression of the data (AGG, MTH, and ACL); (2) identification of keywords and meaningful units (coding): this included making notes of first impressions, thoughts, and initial analysis. Labels for codes emerged that were reflective of more than one key thought (the initial coding scheme) (AGG and MTH); (3) codes were then sorted into categories based on how different codes were related and linked. These emergent categories were used to organize group codes into meaningful clusters (AGG, MTH, and ACL). These were then presented and discussed between all authors; and (4) development of definitions for each category/subcategory, where examples for each category were identified from the data to prepare for reporting the findings.

In addition, a reflexive method was used to raise awareness among the researchers on factors that could have affected the interview process and dynamics [33]. Directly after each interview, the researchers noted down initial impressions and thoughts from the interview. The notes focused on student activity, own thoughts, and own experiences from many years of experience as educators and supervisors in clinical placement. This was included and discussed during the analysis process.

During the analysis, the transcripts were included in a table. Keywords were marked yellow. Meaningful units were then transferred to the next column (initial coding scheme), and collated categories were placed in the next column. This was an iterative process, moving back and forth from transcripts to codes to categories. The analysis consisted of several discussions between the researchers until consensus was reached. See Table 1 for an example of the analysis process.

3. Results

Three focus group interviews comprising five RN students (1 male) and six IDN students (2 males) were conducted in the period October to December 2018. The age range of the participants was from 25 to 35 years. Table 2 gives an overview of participants in different focus group interviews.

Through analysis, two main categories with subcategories were identified: (1) the content of practical skills, with subcategories (a) human-to-human relations, (b) organizational competence, and (c) technical mastering and (2) building competence, with subcategories (a) need for supervision, (b) planning the learning situations, and (c) relevance for practice. The difference between RN and IDN students was that IDN students talked more about competence in communication related to aggressive patients and clients. Otherwise, practical skills were described very much similarly by all participants.

4. The Content of Practical Skills

4.1. Human-to-Human Relations. All students experienced a need for competence in collaboration and communication and defined this as practical skills. In clinical placement, students found it necessary to be able to meet people in different situations. This was described as to "tune in on," "be aware," and "be sensitive" to the patients' situation and condition. They gave several examples of this, e.g., one of the IDN students described especially challenging situations:

> . . .aggressive actions, and how to treat people humanely, and at the same time limit their behavior (IDN 3)

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Table 1: Example of the analysis process.

Transcripts	Meaningful units (codes)	Categories
No 1: I think about communication...		
No. 2: To learn how to communicate with different patients, tune in on the patient, you talk different to different persons, children, adults... No. 4: Different conditions they have, be sort of aware, in relation to the situation...be sensitive to that...	Communicate and collaborate Be aware of different patients Be sensitive to different situations Allowed to do it in practice	Human-to-human relations
No. 4: I was allowed to do that in practice, take blood samples, and then I was taught how...But it was kind of...how many times did I try, maybe four patients or so...So you could not say I know how to do it. I have only done it four times...	Do not learn procedures by doing it only four times Need repetition and further training	Need for supervision
No. 3: You need to repeat it several times...		

Table 2: The three interviews.

	Focus group 1	Interview	Focus group 2
RN students ($n=$)	—	2 (1 male)	3
IDN students ($n=$)	6 (2 males)		

RN = registered nurse students. IDN = intellectual disability nurse students.

The students found it essential that they were able to treat the patient with dignity in such situations. Moreover, they were concerned about how to handle interaction appropriately, for the patients' as well as for their own sake. Students talked about being sensitive to the patients' vulnerability, for example, in care situations. One of the RN students stated that

> Care situations, it is a very vulnerable situation for the patient, and that is why we have to know something about that. Something I have learned from the skill training in school is how to act within the circle of intimacy (RN 2)

This was verified by nodding in the rest of the focus group.

Students emphasized that nurses always have to pay attention to the patient and that patients' needs always are in focus. This was also interpreted as an observation, giving an opportunity to adjust nursing practice accordingly. One of the IDN students prompted

> We continuously communicate with the patient, observing facial expressions all the time, we don't do anything without... we're not blind when we are there, we continuously adjust and change according to the patients' needs (IDN 1)

4.2. Organizational Competence. To the IDN students, the practice field seemed complex and requiring different kinds of competence. They talked about being able to guide clients, patients, and relatives in meeting different health and social services. One of the IDN students said that

> We need knowledge on how to guide the client through a quite complex system (IDN 4)

Organizational competence was described as "to know the organization," "be able to plan," and "to have an overview." One way to show this was to know the distribution of duties during both day and night shifts. One of the RN students said that

> I find it important to know who is meant to do what in daytime, evening, night... Then I have the overview... (RN 1)

Organizational competence also included being effective. One of the RN students prompted

> ... to be able to plan the actions without much extra work (RN 5)

Moreover, organization was also related to planning of collaboration between professionals. One of the IDN students gave an example of this:

> ... and during the doctors' visits, if you're not updated on patients' somatic health, then you cannot reach far ... both regarding procedures and tests before the visit starts, right ... (IDN 1)

4.3. Technical Mastering. All of the students talked about several practical procedures they needed to know. These varied from basic practical skills such as making a bed to procedures such as vein cannulation or blood sampling. Students claimed that they gained a basis for technical mastering when training in the simulation center. Moreover, they experienced that training in specific procedures was generalizable to other procedures, e.g., related to aseptic principles. One of the RN students said that

> ... many procedures need to be performed aseptically, for example catheter insertion or wound care...To know aseptic principles is essential ... (RN 4)

The IDN students more clearly described experiencing, not mastering, the same skills as RN students, even though they experienced the same relevance of these procedures in clinical placements. This was, for example, related to vein cannulation and blood sampling.

Mastering was experienced as a result of the combination of theory, training in school, and training in clinical placement. The IDN students experienced not getting the

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same preparedness in school as the RN students, even though they needed this competence in clinical placement. One of the IDN students described this:

> . . . for example related to handling medications. Of course, I could read about the drug, but still there are some basics you need to know . . . Can you give him this dose of paracetamol in relation to ibuprofen? There are several interactions with the most common drugs . . . We have not received any lectures or training in this, as far as I can recall . . . (IDN 2)

The rest of the focus group expressed agreement with this.

The students experienced mastering after clinical placement that gave them the opportunity to repeat practical skills. This was especially related to clinical placement in hospitals. One RN student said that

> It is mass-training, because you do it many times during a shift (RN 3)

One of the other RN students continued

> In the surgical ward we have done a lot of wound care. I would not say that I am 100 percent secure, but I feel that I know a lot about this . . . And I have also been in an observation ward, taking ECG daily. So, I feel secure in taking an ECG, but not in how to read it (RN 2)

5. Building Competence

5.1. Need for Supervision. The students had various experiences with supervision, and they wanted more supervision and different sorts of supervision. This was expressed differently, but all of the students in all of the three focus groups described "to be shown," "to be drilled," and "to be pointed out" as different approaches to supervision. All of them emphasized that healthcare services are hectic and that there is not always room for the supervision they need. In the simulation center, they experienced having more time and supervision available. At the same time, they emphasized that a teacher had to be present during practical skills' training to secure the quality before students practice on real patients.

In one of the focus groups, students stated that it was embarrassing when they did not know the skills and procedures before clinical placement. They wanted to be prepared to avoid discomfort or pain. One of the RN students stated that

> You can feel insecure yourself, but to be able to perform without the patient feeling this . . . (RN 4)

To be able to do so, students reported the need of a supervisor present in the situation and the need for concrete guidance and feedback. One of the IDN students said that

> One-to-one, I would say. It is best to be together with your supervisor in practice, and then he or she does it, and then you do it. . .While that person watches and tells if you are doing it right. That is a good way to make you feel safe, yet able to try out things (IDN 6)

5.2. Planning the Learning Situation. The university college requests a plan from the student for the whole placement period as a pedagogical tool. The students had ambivalent experiences regarding this. Several of both RN and IDN students found this disturbing during clinical placement. One IDN student said that

> It takes the focus away from other things that perhaps is more important (IDN 1)

Some students reported not understanding the purpose of the plan at first, but after a while, they thought the plan was useful. One of the RN students prompted

> Then you have something to work with, an agenda you should have learned throughout your placement. In addition to all, I believe it worked (RN 4)

Another advantage was that the plan committed and ensured quality at the placement ward. Several students had experienced that the supervisors' colleagues at the placement ward helped to look for learning situations according to the plan. Often, the situation was more important than following their supervisor, and the plan then made this possible.

5.3. Relevance for Practice. The students wanted more relevant clinical placement arenas and also more clinical practice. After training in the simulation center, several of them had not had an opportunity to train clinical skills on real patients. Moreover, the IDN students experienced that the periods between clinical periods were too long and that this resulted in insecurity for the students' own achievements regarding their learned practical skills. In addition, all of the students reported that they were not given the opportunity to try out things they had learned at the university college in clinical placement, even though they found it relevant, such as the IDN students' experience of behavioral therapy. One of the IDN students expressed that

> It is a basic thing, but is not a priority. I feel that I work in places where it could have been relevant, but it doesn't happen. . . Then they got people from the outside to do it (IDN 1)

All of the students had met procedures and practical skills in clinical placement that they had not learned in the university college. For example, one of the IDN students was given the responsibility to perform exercises with a patient with cerebral paresis and talked about this experience:

> I was supposed to do exercises with this patient. But how do I do that? It means to train someone who is completely

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> stiff, and then a nurse came and tried to show me how to do it. . .We have never learned about that . . . (IDN 3)

Another issue was that students experienced that techniques that were highlighted at the university college were not relevant in clinical placement, e.g., one of the RN students said that

> Because, if you're supposed to wash someone the way we learned in the simulation center, we would not have been finished in eight hours . . . It is not the way it is done. That is not how it is being practiced, so that in itself is interesting". . . . (RN 3)

6. Discussion

The aim of this study was to explore IDN and RN students' perspectives on practical nursing skills and how they can best learn these skills. Our findings show that students associated practical skills with the establishment of human-to-human relations, organizational competence, and technical mastering of practical procedures. To learn practical skills, students talked about building competence. Here, they emphasized the need to be supervised, the importance of planning the learning situations, and the importance of being able to train on skills in clinical placement and learning relevant practical skills in the university college.

Competence in building human-to-human relations was described by both RN and IDN students as an essential skill. In 1971, Joyce Travelbee developed the "Human-to-Human Relationship Model." [34] She believed nursing is accomplished through human-to-human relationships that begin with the original encounter and then progress through stages of emerging identities, developing feelings of empathy, and later feelings of sympathy [35]. Travelbee's model provides nurses with a foundation necessary to connect therapeutically with other human beings [36]. Globally, there are a relatively small number of studies dealing with this issue.

The importance of achieving a mutual understanding in creating interpersonal relationships, communication skills of nurses, and overcoming of nurse-patient stereotypes has been emphasized to be able to provide safe and quality healthcare services [37]. Additionally, in recent years, there has been an increasing focus on patient-centredness in healthcare. Ekman et al. distinguished between patient-centred care and person-centred care by which person-centred care refrains from reducing the person to just their symptoms and/or disease [38]. Conceptually, person-centred care is a model in which healthcare providers are encouraged to partner with patients to codesign and deliver personalized care. This provides people with high-quality care they need and also improves healthcare system efficiency and effectiveness [39]. Hence, this study shows that human-to-human relation building, or person-centred care, is an overarching concept also for students and is defined as a practical skill that needs to be learned.

Nurses need to perform different tasks during the course of day and to cope with time limitations and pressure. Good time management leads to greater productivity, less stress, improved efficiency, and more opportunities for professional advancement [40]. Students in our study emphasized the need for such organizational skills, which have also been emphasized as important in several studies [41–44].

Students in our study emphasized the need of both theory and simulation training and training on actual patients as important when learning to perform different practical skills. Ravik et al. requested more studies on technical aspects of nursing skills' learning [11, 23, 24]. Moreover, Ravik et al. distinguished between students "knowing that" and "knowing how" as a framework to guide development and competence in the practical skill vein cannulation. The researchers found that practicing the skill on a mannequin and on actual patients gave different learning opportunities. They concluded that low-fidelity simulation provides familiarity with equipment used in the clinical setting but that it is inadequate due to lacking opportunity to discern differences in clinical settings [11]. In 2000, Howanitz et al. [45] outlined four levels of competence: (1) what an individual "knows" measured by his or her general knowledge, (2) if an individual "knows how" to act, measured by his or her competence level, (3) if an individual "shows how" to act, as measured by his or her performance, and (4) what an individual "does," as measured by his or her action. Referred to our findings, students often "know" and "know how," but seldom get to "show how" or "do."

Both RN and IDN students emphasized the need for supervision, both in clinical placement and when training in the simulation center. This is in line with findings in a study, where students report that they seek, lack, and crave more instructions concerning what and how to learn clinical skill procedures [46]. A review of the literature from 2016 also showed that supervisory relationships, peer relationships, and clinical education structure had an impact on nursing students' learning of practical skills [47]. Researchers claim that nursing education must reexamine current methods to practical skill learning, to enhance supervisory relationships and the pedagogical atmosphere, and seek methods to better prepare future nurses [48–50]. Our findings indicate a need to review the education curriculum to increase the relevance in clinical practice. This is supported by studies indicating that nursing students report that the exercises in the university are a good way to prepare for clinical placement but that this does not resemble how it is conducted in clinical practice [51–53]. In addition, a lack of relevance makes students feel unprepared, and the responsibility is overwhelming when facing "reality." [51–53]

The importance of planning the clinical placement period, with using a plan, is supported by, e.g., Helgesen et al., who showed that students use the extra time filling out the plan reflecting on the procedures they had been observing. Through this reflection, students were able to focus less on technical aspects and more on the patient [54]. Planning also leaves more of the responsibility on learning on the students themselves and is not totally dependant on the supervisor-educator-student relationships.

Even though the undergraduate programs are different, both RNs and IDNs are authorized healthcare personnel meeting healthcare services' expectations of competence in

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practical nursing skills. Provision of learning opportunities, staff support and supervision, and better coherence in how skills are taught in the educational institutions as well as the clinical setting have been shown to promote learning of practical skills [52, 55]. This is in line with findings in the current study. RN students have more clinical practice than IDN students. Nevertheless, they also wanted more practice and more supervision and focus on more relevant practical nursing skills. This supports earlier research, indicating that practical skills should be learned in a clinical setting [18, 19]. Moreover, it supports the importance of clinical placement in addition to simulation and skills' training in simulation centres.

6.1. Limitations. One limitation of this study is the inclusion of few participants, and the inclusion of more participants might have provided additional data. In addition, one interview had only two participants. Even though there were a limited number of participants in this interview, rich data were provided. Furthermore, the students in all focus groups provided detailed accounts and also challenged each other's opinion. This indicates a sense of openness among the participants and demonstrates the generation of good-quality data. Of course, we could have chosen to include students from other semesters or another assembling strategy to include participants in the focus groups.

In this study, we included IDN and RN students. Both IDNs and RNs are authorized healthcare personnel with medical competence. Both groups include practical nursing skills as part of their responsibility in both primary and tertiary healthcare services. Hence, findings are transferable across educational programs, focusing on competence building in practical nursing skills.

The strength is that our findings are in line with recent studies on learning of practical skills and clinical placement in nursing students. Presentation of the analysis and results is transparent, and the researchers used a method of reflexivity to ensure awareness on own preconceptions and how these may have affected the process, which also increases the validity of the findings.

7. Conclusions

This study fills a knowledge gap regarding aspects that influence IDN and RN students' learning of practical skills and how they can best learn these. For students, practical skills included human-to-human relations, organizational competence, and technical mastering. When building practical competence, students emphasized the need for supervision and planning of relevant learning situations. Our findings indicate a need to review the educational curriculum comprising practical skills. Moreover, findings indicate a need to improve the collaboration between educational institutions and the clinical field to enhance the quality of practical learning situations for students.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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Supplementary Materials

The interview guide is provided as the supplementary file. (*Supplementary Materials*)

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Research Article

Knowledge on Newborn Life Support among the Healthcare Providers in a Tertiary Care Maternity Hospital in the Southern Province, Sri Lanka

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Introduction. The newborn life support (NLS) is a set of educational guidelines established by the academies of Paediatrics that outline the proper procedures for resuscitation of a newborn. The objective of this study was to determine the knowledge on NLS among the healthcare providers (HCPs) in a tertiary care maternity hospital in the Southern Province, Sri Lanka. *Methods*. A hospital-based cross-sectional study was carried out among doctors, nurses, and midwives, using a self-administered questionnaire. Comparison of knowledge among different categories was made using the chi-square test. Total sample of 191 consisted of 118 (61.8%) nurses, 33 (17.3%) midwives, and 36 (18.8%) doctors. The majority of HCPs (76.7%) had good knowledge of NLS; however, following guidelines on NLS among HCPs was poor (33%). According to the category, 91% of doctors and 78% of nurses had good knowledge, whereas only 48% of midwives had good knowledge. The difference of knowledge on NLS among different categories of HCPs was statistically significant ($p < 0.001$). Only 33% of HCPs had good knowledge of following NLS guidelines. Of them, 52% were doctors, 31% were nurses, and only 18% were midwives. The difference in adherence to NLS guidelines among different categories of HCPs was highly significant statistically ($p = 0.003$). *Conclusion*. The majority of the healthcare providers had good knowledge of NLS. There was a significant difference in the level of knowledge on NLS among different categories of HCPs. Gaps in the knowledge in following guidelines of NLS were noted in the majority. Newborn resuscitation has to be included in nursing and midwifery curricula, and training on NLS is essential in the orientation programs for newly recruited HCPs in maternity hospitals.

1. Introduction

Effective newborn resuscitation is essential for reducing the adverse outcomes of birth asphyxia [1]. Most newborn deaths are associated with birth asphyxia (40%), low birth weight and prematurity (25%), and infections (20%) [2]. The global average contribution of neonatal mortality to under-five mortality is 47%, of which 11% accounts for perinatal asphyxia [3]. Based on a recent systematic review, about one-third of all neonatal deaths occur during the first 24 h of birth, and close to three quarters die in the first week of life [4]. These findings suggest that focusing on the critical periods before and immediately following birth is essential to saving more newborn lives. In Sri Lanka, the neonatal mortality rate has declined to 7/1000 live births by 2019 [5]. Yet, it accounts for over 70% of under-five mortalities of our children [6].

Newborn resuscitation is an interventional procedure used to assist the airway, breathing, and circulation at birth [7]. Many medical professionals, especially those dealing directly with newborns, must complete the NLS course [8]. It has been shown that providing basic training on resuscitation of newborns can decrease neonatal deaths [1]. In the US, the Neonatal Resuscitation Program (NRP) is the primary educational mechanism used to teach healthcare providers (HCPs) to perform neonatal resuscitation [9]. The goal of the NRP is to help neonatal care providers (NCPs)

acquire the cognitive, technical, and behavioral skills needed for successful and efficient resuscitation of babies at the time of birth [9]. Sri Lanka College of Paediatricians (SLCP) developed newborn life support (NLS) and initiated a NLS course for the first time in Sri Lanka in September 2006 at the Lady Ridgeway Hospital for Children, Colombo, under the guidance of the Resuscitation Council of UK [7, 8]. Family Health Bureau (FHB) of Ministry of Health, Sri Lanka, SLCP, and Perinatal Society of Sri Lanka are conducting courses on NLS island-wide to train doctors, nurses, and midwives working in the maternity hospitals. Most of the HCPs working in the maternity units of tertiary care hospitals of Sri Lanka have undergone training on NLS.

Studies regarding the level of knowledge among healthcare providers on NLS are sparse in Sri Lanka. A study done at Kandy, Sri Lanka, by Ralapanawa et al. has demonstrated a good mean knowledge score of 67.6% on basic life support among doctors and medical students [10].

To the best of our knowledge, only limited studies have been published globally regarding the level of knowledge among healthcare providers on NLS [11–13].

This study aimed to determine NLS knowledge among the healthcare providers (HCPs) in Teaching Hospital Mahamodara (THM), Galle, Sri Lanka. Midwives and nurses are the first to come in contact with a newborn in the delivery suite. Therefore, assessing the knowledge among them and the doctors is important in improving neonatal care. The findings of this study could be used to identify the gaps in the knowledge of HCPs on NLS. It could provide important clues and insight to design evidence-based tailor-made interventions like training programs and workshops to improve the HCP's knowledge and practice of NLS. Aiming to reduce the neonatal mortality rate (NMR) is an objective of the millennium goals of the WHO. Birth asphyxia contributes to NMR [3]. Such intervention would help to reduce neonatal mortality and morbidity in the country.

2. Methods

This hospital-based cross-sectional study was carried out in THM, Galle, Sri Lanka. THM has an average birth rate of over 10,000 per year, and the number of HCPs involved in neonatal care was 191. HCPs consisting of medical officers, nursing officers, and midwives working for more than three months at THM were enrolled in the study.

Data collection was done using a self-administered questionnaire. It consisted questions to collect social demographic data and knowledge on NLS and its guidelines. The questions to assess the knowledge were prepared based on the NLS manual published by SLCP [8] and a questionnaire that has already been used at Teaching Hospital Peradeniya, Kandy, Sri Lanka, in a similar study [10]. Participants responded to the questionnaire individually during their free time while on duty, and one of the investigators was at the site when the participants answered the questionnaire, and discussions were not allowed among participants. The questionnaire comprised ten questions to check the knowledge and another six questions to determine whether HCPs follow the NLS guidelines laid down by SLCP.

Each question was followed by three responses to select, and a correct response was given +1 mark, and the wrong response was given a zero mark. The level of knowledge was categorized based on the cumulative score. Those who scored nine and above for questions on knowledge were considered to have very good knowledge, whereas scores from 6 to 8 were considered good, scores from 4 to 5 were considered as average, and scores from 0 to 3 were considered as having poor knowledge.

All data were coded and entered into a database created with Microsoft Excel. Data analysis was done using Statistical Package for Social Sciences (SSPS) version 20.0. The descriptive statistics such as mean and percentages (%) were estimated, and the chi-square test was used to compare the knowledge and adherence to NLS guidelines by different categories of HCPs. The level of significance was considered 0.05. Ethical clearance was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Ruhuna (Ref. No. 14.02.2018:033), and administrative clearance was obtained from the Director, THM. Informed written consent was obtained from all participants.

3. Results

All 191 employees attended the study (response rate was 100%). The majority of the study population (62%) were nursing officers, and the age ranged from 26 to 59 years (mean ± SD = 37.80 ± 7.98 years). The basic socio-demographic characteristics of the participants are presented in Table 1.

3.1. Training on NLS. The HCPs in the study sample were exposed to different training levels on newborn resuscitation, which are listed in Table 2. The majority (90%) of HCPs had been exposed to some form of training on newborn resuscitation. Only 34% of HCPs had followed the formal NLS course conducted by the SLCP. Out of 191 HCPs, 20 (10.5%) have not had any training on newborn resuscitation.

3.2. The Knowledge of NLS. The knowledge on NLS was good or very good in 76.5% of HCPs (very good: 14.14%, and good: 62.30%), while 25% of HCPs had average or below-average knowledge. The knowledge scores of the HCPs are demonstrated in Table 3. The majority of doctors and nurses had good knowledge, whereas midwives' knowledge of NLS was not as good as doctors and nurses. The knowledge scores of NLS among the different categories of HCPs are demonstrated in Table 4. The difference of knowledge on NLS among different categories of HCPs was statistically significant ($p < 0.001$).

3.3. Adherence to NLS Guidelines. The majority of HCPs (88.5%) thought that they were following NLS guidelines accurately. However, according to NLS guidelines, 67% of them did not score good marks on assessing the knowledge on resuscitation. The relationship between adherence to NLS guidelines and the category of HCPs is shown in Table 5. The

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Table 1: Socio-demographic characteristics of the HCPs ($n = 191$).

Characteristics	Frequency	Percentage
Position		
House officers	10	5.2
Medical officers	19	9.9
Registrars	4	2.1
Senior registrars	3	1.6
Nursing sisters	4	2.1
Nursing officers	118	61.8
Midwives	33	17.3
Gender		
Female	172	90.1
Male	19	9.9
Age		
34 years or less	68	35.6
35–50 years	90	47.1
51–65 years	14	7.3
Missing	19	9.9

difference in the level of knowledge of adherence to guidelines on NLS between categories of HCPs was highly significant statistically ($p = 0.003$).

The majority (72.8%) of HCPs perceived that they did not have adequate training on NLS. Only 14.1% of HCPs said that they had got adequate training on NLS during their undergraduate training. A large portion of the study population (94.2%) wanted to acquire further knowledge and skills on NLS to manage cases confidently.

4. Discussion

NLS is an essential component of neonatal care services and is an inexpensive intervention by which many newborn lives can be saved. This study assessed NLS knowledge among HCPs in a tertiary care hospital where proper neonatal and obstetrics care are available.

4.1. Knowledge on NLS. In the present study, the majority of healthcare providers had good knowledge of NLS. It may be due to the formal and informal training on NLS received by the HCPs from the workplace. The HCPs in our study population are working in a busy tertiary care centre where average daily deliveries are around 25 to 30, and they get adequate exposure on NLS. However, midwives' knowledge was not satisfactory, and only 48% of the midwives had good knowledge on NLS when compared to other categories of HCPs. Several factors would contribute to this finding such as less exposure to NLS during the midwifery training, difficulty in understanding when the NLS course is conducted in common to all HCPs, or less opportunities offered to them. Ralapanawa et al.'s study demonstrated a good mean knowledge score of 67.6% on Advanced Paediatric Life Support among doctors and medical students in Sri Lanka [10]. A significantly higher proportion of final year medical students had good knowledge than medical officers in that study. However, there are no studies found locally regarding assessment of knowledge on NLS among other healthcare providers. A similar result was found in a study done in Nigeria where nurses' knowledge and practice were assessed, and it was found that 78.8% of them had adequate knowledge of newborn resuscitation [11]. In contrast to the above findings, a study done in Kenya indicates that only 35.4% of the participants scored above the minimum knowledge competency level [12]. In two studies done in Ethiopia (knowledge score of 42.8%) [13] and Ghana (knowledge score of 38%) [14], it was found that the overall knowledge on neonatal resuscitation in health professionals was poor. This was thought to be due to lack of exposure to an adequate number of real resuscitation cases, simulation-based training, updating training, and certification process.

Medical officers were found to have better knowledge level regarding NLS than nursing officers and midwives in our study. The difference in the level of knowledge between categories of HCPs was statistically significant ($p < 0.001$). Undergraduate exposure to newborn resuscitation and training before the internship would be the reason for our study's better knowledge of NLS among doctors. The nursing officers and midwives do not receive such training before they enter the services at present. Once HCPs enter the service, all of them receive similar training on NLS irrespective of the category. In contrast to our results, there was no significant difference in the knowledge score of the participants in terms of the type of profession ($p = 0.847$) and qualification ($p = 0.055$) in a study done in Ethiopia on newborn resuscitation [13]. A cross-sectional study in Afghanistan revealed no significant differences in knowledge, clinical skills, or confidence in performing newborn resuscitation between doctors and midwives [15]. In Afghanistan, newborn resuscitation is considered an essential midwifery competency and has been part of the national midwifery curriculum since 2004 [15].

4.2. Training in NLS. Maintenance of resuscitation skills requires knowledge, ongoing practice, and periodic refresher training. Our study found that most HCPs had exposure to some training on NLS during their career, and one-third of HCPs had followed the NLS course. All the categories of HCPs get the similar NLS training after their graduation. One-third of the HCPs in our study group have been exposed to NLS course due to implementing a national program by the SLCP and the FHB of Sri Lanka to train the HCPs in the maternity hospitals on NLS. To the best of our knowledge, no study has been done locally to compare the findings. However, there is not much evidence in the literature that HCPs receive in-service training in NLS in other developing countries. In Tanzania, only 33% of staff reported receiving refresher training on newborn resuscitation [14]. A study conducted in the Philippines found that <50% of staff were trained in neonatal and paediatric resuscitation [16].

Only a very small proportion of HCPs said they had got adequate training on NLS before they started their career. This indicates that little emphasis is given to NLS training in the respective undergraduate curricula in Sri Lanka. The level of knowledge that HCPs received during their undergraduate education and their performance level would have contributed to the difference in perceiving the

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Table 2: Method of training on newborn life support received by the HCPs ($n = 191$).

Method of training	Frequency	Percentage
No training	20	10.47
By observing resuscitation done by a trained HCP	22	11.52
Following lectures	58	30.37
Following NLS course	65	34.03
Observing and following lectures	11	5.75
Following lectures and following NLS course	8	4.18
All of the above methods	7	3.66
Total	191	100.00

Table 3: Distribution of knowledge score of HCPs on NLS ($n = 191$).

Category of knowledge level	Number	Percentage
Very good (9-10)	27	14.14
Good (6–8)	119	62.30
Average (4-5)	41	21.47
Poor (0–3)	4	2.09
Total	191	100

Table 4: Comparison of knowledge on NLS among different categories of HCPs ($n = 191$).

Position	Level of knowledge on NLS				Total	Significance
	9-10 (very good) No (%)	6–8 (good) No (%)	4-5 (average) No (%)	0–3 (poor) No (%)	No (%)	
Medical officer	9 (4.7)	24 (12.5)	3 (1.57)	0 (0)	36 (18.8)	$\chi 2 = 18.43$
Nursing officer	17 (8.9)	80 (41.8)	22 (11.5)	3 (1.57)	122 (63.8)	df = 3
Midwives	1 (0.5)	15 (7.8)	16 (8.37)	1 (0.52)	33 (17.2)	$p < 0.001^*$
Total	27 (14.1)	119 (62.3)	41(21.4)	4 (2.09)	191 (100)	

* $p$value is significant at 0.05.

Table 5: Adherence to NLS guidelines by category of HCPs ($n = 191$).

Designation	Knowledge on adherence to NLS guidelines			Total	Significance
	5-6 (good) No (%)	3-4 (average) No (%)	0–2 (poor) No (%)	No (%)	
Medical officers	19 (9.9)	11(5.7)	6 (3.1)	36 (18.8)	$\chi 2 = 8.943$
Nursing officers	38(19.8)	65(34.0)	19(9.9)	122 (63.3)	df = 2
Midwives	6 (3.1)	16(8.3)	11 (5.7)	33(17.2)	$p < 0.003^*$
Total	63(32.9)	92(48.1)	36(18.8)	191(100)	

* $p$value is significant at 0.05.

adequacy of training among the HCPs. A large portion of the study sample wanted training on NLS to improve their knowledge and skills.

4.3. Knowledge on Adherence to NLS Guidelines. The majority of HCPs had perceived that they were following NLS guidelines accurately. However, according to the marks they scored in the questionnaire, only one-third of HCPs had good knowledge of following exact steps according to NLS guidelines. The majority were doctors. Only a very low proportion (<20%) of midwives has shown good knowledge on adherence to NLS guidelines. The difference in ability on adherence to NLS guidelines among the three categories of HCPs was highly significant. Although all three types of HCPs are trained on NLS guidelines similarly, there is a statistically significant difference in the knowledge of NLS guidelines among HCPs. This indicates that the method of training NLS guidelines would not suit every HCP category. The very poor knowledge on adherence to NLS in midwives may be due to a language barrier in gathering knowledge and skill of NLS during the training for all HCPs. This is very important because, as the first contact of a delivery suite, the midwives should be trained well to initiate NLS until help is sought from other HCPs. A further evaluation is necessary to conclude in this regard. According to their year of graduation, there is no statistical significance of the knowledge on adherence to NLS guidelines in HCPs. The majority of HCPs wanted to improve their understanding regarding NLS guidelines which shows their readiness to get new knowledge. The present study highlights the need for structured training of NLS for HCPs. In order to optimize newborn life

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support, adherence to the guidelines is essential. Thus, mortality and morbidity due to birth asphyxia can be brought down. However, the study has some limitations; it was a questionnaire-based study, and the skill of the individuals added to their intellect could not be measured. Hence, it is recommended to conduct further studies on a larger scale to get a better picture.

5. Conclusions and Recommendations

The majority of the healthcare providers in our study group had good knowledge of NLS. However, there was a significant difference in the level of knowledge among different categories of HCPs. There were gaps in the knowledge on NLS guidelines in the majority. Mandatory training on NLS needs to be included in the orientation programs of intern medical officers, newly recruited nursing officers, and midwives in maternity hospitals. We recommend incorporating newborn resuscitation in nursing and midwifery curricula as it is vital to train midwives as they are the first to come in contact with a newborn at delivery. Regular refresher training sessions are needed to improve the knowledge and skills of HCPs; thus, the newborn resuscitation process in the maternity units could be improved, leading to a reduction of neonatal morbidity and mortality. Large multicentre studies are needed to confirm the results of this type of preliminary study.

Data Availability

The raw data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Supplementary Materials

Questionnaire in English: this is the self-administered questionnaire used to collect data. (*Supplementary Materials*)

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Research Article

Assessment of Knowledge, Attitude, and Practice of Iranian Nurses towards Toothbrush Maintenance and Use

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Background. Since nurses are considered a role model in society, they should have sufficient knowledge, attitude, and practice in the field of oral hygiene. This study was aimed to assess the nurses' knowledge, practice, and attitude towards toothbrush maintenance and use. *Methods*. In this cross-sectional study, 325 nurses working in hospitals affiliated to Kermanshah University of Medical Sciences were randomly recruited. Data collection tools included a demographic information form and a researcher-made questionnaire on knowledge, attitude, and practice regarding toothbrush maintenance and use. Data were analyzed by SPSS software using descriptive and inferential statistics (Mann–Whitney *U* and Kruskal–Wallis H). *Results*. The mean scores of nurses' knowledge, attitude, and practice were 59.2 ± 16.4, 64.2 ± 20.6, and 51.4 ± 17.0 out of 100, respectively. There was no statistically significant relation between nurses' knowledge, attitude, and practice and their gender, age, level of education, and work experience. *Conclusions*. Nurses had moderate knowledge, attitude, and practice regarding toothbrush maintenance and use, which is not very desirable given their role model. Therefore, training courses are recommended to be held to increase the nurses' knowledge, attitude, and practice regarding toothbrush maintenance and use.

1. Background

Brushing is one of the most important and effective self-care methods which prevents oral diseases [1–3]. In addition, brushing reduces dental plaque and thus prevents decay and related diseases [4–8]. Therefore, it is highly important for nurses to have adequate knowledge about the correct brushing method and also toothbrush maintenance, replacement, and cleaning [9–12]. If the toothbrush is not properly maintained and used, it can cause oral infections and diseases [9–15]. Changing the toothbrush every 2.5–6 months and brushing for two minutes or more twice a day are some correct methods of toothbrush use [13, 16–22].

Today, as the largest group in the health sector, nurses have an important role in promoting health policies in the field of oral health [23–27]. Therefore, adequate knowledge and practice and positive attitude regarding toothbrush maintenance and use is of special importance for nurses [28–32]. Surveys in Europe and the United States show that nurses consider oral health one of the most important nursing practices [1, 33]. A study in Malaysia showed that despite the limited knowledge of nurses about oral health, they had a good attitude to it [34]. The results of a study in India (2018) on oral health showed that 70% of nurses had poor knowledge, 83% had a positive attitude, and 69% had poor practice [30]. A study also showed that 82% of Iranian nurses had poor oral care practice [35]. The results of a study in Norway (2012) showed that 80% of nurses considered oral health an important issue, while 9.1% found patient oral care unpleasant [36]. In another study, the knowledge of Nigerian

nurses and midwives regarding oral health was inadequate [37]. The results of a study on Australian nurses showed that 74.0% of them were aware of the important oral health practices [38].

Considering the educational role of nurses and the lack of information about the knowledge, attitude, and practice of the nurses of Kermanshah University of Medical Sciences regarding toothbrush maintenance and use, the current study was conducted to shed more light on this lacuna. This study sought to answer the following questions:

(1) What is the nurses' level of knowledge about toothbrush maintenance and use?

(2) What is the nurses' attitude and practice regarding toothbrush maintenance and use?

(3) What is the relationship between nurses' knowledge, attitude, and practice in toothbrush maintenance and use and their demographic variables?

2. Materials and Methods

2.1. Study Design. The present descriptive-analytical cross-sectional study was conducted from March to May 2019. The study was performed based on STROBE reporting criteria.

2.2. Sample and Sampling Method. The study population ($n = 2042$) consisted of nurses working in hospitals affiliated to Kermanshah University of Medical Sciences (7 hospitals). The sample size was estimated to be 325 using Cochran's formula and the results of the study of Sharif et al. with 95% confidence and the first type error equal to 5% [34]. The inclusion criteria consisted of employment in the field of nursing and consent to participation in the study.

2.3. Instruments. The study tools included a personal information form and a questionnaire on nurses' knowledge, attitude, and practice in toothbrush maintenance and use. The personal information form included 5 questions on gender, age, level of education, marital status, and work experience.

A valid and reliable questionnaire was used to assess the nurses' knowledge, attitude, and practice in toothbrush maintenance and use. This questionnaire was developed and validated by Janatolmakan et al. and had good psychometric properties. They examined the validity of the questionnaire by the qualitative and quantitative content validity method. In the qualitative section, the judgment of experts has been used, and in the quantitative section, the content validity index has been calculated, which has been equal to 0.87, 0.89, and 0.88 for the sections of knowledge, attitude, and practice, respectively. The reliability of the instrument was also tested and confirmed by the test-retest method. The correlation coefficients for the scales of knowledge, attitude, and practice were 0.87, 0.88, and 0.86, respectively [39].

The first part of the questionnaire was allocated to the assessment of knowledge and consisted of 10 multiple choice questions. Some of the questions in this section were as follows: "What is the right water temperature for brushing?" "What is the best way to brush?" and "When should the toothbrush be washed?"

To score this section, the correct and incorrect answers were given a score of one and zero, respectively. The range of scores was between 0 and 10, which was calculated on the basis of 100 and was divided as poor (≤49), medium (50–74), and good (≥75) knowledge.

The second part, with 6 questions, was allocated to evaluate the nurses' attitudes toward toothbrush maintenance and use. The items in this section were of two-choice type, and the answers included "agree and disagree." Two of the items in this section were "The harder the toothbrush material, the better its function" and "foreign toothbrushes are more durable." To calculate the scores, the answers "I agree" and "I disagree" were given one and zero points, respectively. The range of scores was between 0 and 6, which was calculated on the basis of 100 and was divided as negative (≤49) and positive (≥50) attitude.

The third section consisted of 10 multiple-choice questions to evaluate the nurses' practice in toothbrush maintenance and use. Some of the questions in this section were "What type of toothbrush do you use?" "Where do you keep your toothbrush" and "When do you wash your toothbrush?" To calculate the score of this section, scores 1 and 0 were assigned to the correct and incorrect answers, respectively. The range of scores was between 0 and 10, which was calculated on the basis of 100 and expressed as poor (≤49), moderate (50–74), and good (≥75) practice.

2.4. Data Collection. After receiving the approval of the university ethics committee, the researcher attended the nurses' place of work according to the work schedule. First, the objectives of the study were explained to the nurses, and if they willing to participate in the study, the questionnaires were provided to them. To ensure the validity of the data, the participants were given enough time to complete the questionnaires.

2.5. Data Analysis. Data were analyzed by SPSS-16 software using descriptive and inferential statistics. Mean, standard deviation, median, and simple and relative frequency distributions were used for the descriptive statistics section. In the inferential statistics section, Mann–Whitney *U*, Kolmogorov–Smirnov, and Kruskal–Wallis tests were used. The Kolmogorov–Smirnov test was used to evaluate the normality of the distribution of knowledge, attitude, and practice variables. The results showed that these variables had an abnormal distribution. The Mann–Whitney *U* test was used to examine the relationship between knowledge, attitude, and practice variables and gender and education level variables. The Kruskal–Wallis test was also used to examine the relationship between knowledge, attitude, and practice variables and age and work experience variables. The level of significance was set at <0.05.

2.6. Ethical Considerations. The Ethics Committee of Kermanshah University of Medical Sciences approved the study with the code IR.KUMS.REC.1397.874. Written

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informed consent was obtained from all participants. All participants were assured that their information and responses would be kept confidential. The protocol of the experiment was entirely in accordance to guidelines of national/international/institutional or Declaration of Helsinki.

3. Results

The mean age and work experience of the participants were 31.6 ± 5.6 and 5.3. ±2.7 years, respectively. Most of the participants were female ($n = 197$, 60.4%), single ($n = 179$, 55.1%), in the age range of 32–22 ($n = 215$, 66.2%) and had a bachelor's degree ($n = 299$, 92%) (Table 1).

The mean score of nurses' knowledge about toothbrush maintenance and use was 59.2 ± 16.4 out of 100. The mean scores of nurses' attitude and practice were 64.2 ± 20.6 and 51.4 ± 17.0 out of 100, respectively (Figure 1 and Table 2). There was no statistically significant relationship between the mean scores of nurses' knowledge, attitude, and practice variables and gender, education, age, and work experience variables (Tables 3–5).

Table 1: Demographic characteristics of nurses.

	Variables	*n* (%)
Gender	Male	128 (39.4)
	Female	197 (60.6)
Education	BSc.‡	299 (92.0)
	MSc.*	26 (8.0)
Age (years)	22–32	193 (59.4)
	33–42	124 (38.2)
	43–52	8 (2.5)
Work experience (years)	1–9	215 (66.2)
	10–18	102 (31.4)
	19–28	8 (2.5)

‡Bachelor of Science; *Master of Science.

4. Discussion

This study aimed to investigate the Iranian nurses' knowledge, attitude, and practice regarding toothbrush maintenance and use. In the present study, most of the participants had a moderate level of knowledge and practice and an unfavorable attitude about the maintenance and use of toothbrushes. Proper maintenance and use of toothbrushes is an important part of oral hygiene [39]. Studies have reported that nurses have different levels of knowledge and practice about oral health. In this regard, Ibrahim et al. indicated that more than 90% of Sudanese nurses had good knowledge regarding oral health [2]. Furthermore, Sreenivasan et al. reported more than 80% of Indian nurses had good knowledge in this regard [33]. However, Ahmed et al. found 70% of Indian nurses had poor knowledge about oral health [35]. In two studies conducted on the Indian and Iranian nurses, most of them had poor oral health practices [25, 35]. In terms of attitude, Indian and Australian nurses have been found to have a favorable attitude in this regard [35, 38]. It should be noted that differences in the demographic characteristics of the participants as well as the variety of data collection tools can make it difficult to compare the results of the studies. However, insufficient knowledge and practice of nurses about oral health especially toothbrush maintenance and use may be due to lack of continuous education. It seems that regular oral health training can improve nurses' awareness of their role as healthcare providers.

In the present study, no statistically significant relationship was found between age and nurses' knowledge, attitude, and practice. This finding is consistent with the findings of previous studies [10, 12, 25, 26, 29, 30, 34, 40]. However, Lin et al. reported a statistically significant relationship between nurses' age and their oral care practice [32]. The principles of oral hygiene, especially brushing and toothbrush maintenance, should be considered a health measure from childhood and be continued throughout life.

Consistent with previous studies [9–12, 25], in the present study, no statistically significant relationship was found between gender and nurses' knowledge, practice, and attitude. However, Baseer et al. reported a significant relationship between gender and nurses' practice. Having sufficient knowledge and practice about oral health including toothbrush maintenance and use should be considered by both sexes.

In keeping with previous studies [9, 10, 12, 23–25, 29], no statistically significant relationship was observed between the level of education and nurses' knowledge, practice, and attitude. However, in some studies, a statistically significant relationship has been reported [2, 11]. Nurses in every field of education are considered role models in society and should have a good attitude and sufficient knowledge and practice about oral health including toothbrush maintenance and use.

In the present study, there was no statistically significant relationship between work experience and the variables of knowledge, attitude, and practice of nurses. This finding is consistent with those of some previous studies [2, 23, 29, 33, 34, 40]. Due to the nature of the nursing profession, nurses with any work experience are expected to have sufficient knowledge and practice and a favorable attitude towards the principles of maintenance and use of toothbrushes.

4.1. Study Limitations. This study faced three limitations. First, data were collected through a self-report method, which could have affected the accuracy of the results. However, the researcher tried to increase the validity of the results by reassuring the participants of anonymity of questionnaires and visiting them at an appropriate time to complete the questionnaires. Second, due to the cross-sectional nature of the study, it was not possible to determine the causal relationships between demographic and knowledge, attitude, and practice variables. Third, due to the fact that different tools with different cutting points have been used in different studies, it can limit the accurate comparison of study results.

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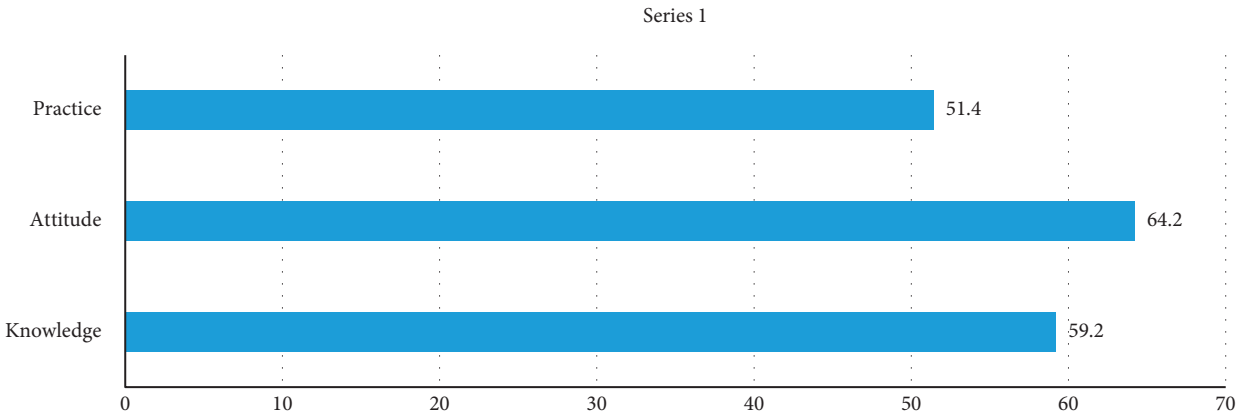

Figure 1: Comparison of nurses' knowledge, attitude and practice in toothbrush maintenance and use.

Table 2: Nurses' knowledge, attitude, and practice scores in toothbrush maintenance and use.

Variables	Median (IQR[‡])	Mean ± SD[†]
Knowledge	60.0 (20.0)	59.3 ± 16.4
Attitude	66.7 (33.3)	64.2 ± 20.7
Practice	50.0 (30.0)	51.5 ± 17.1

[‡]Interquartile range; [†]standard deviation.

Table 3: Relationship between nurses' knowledge of toothbrush maintenance and use and demographic variables.

	Variables	Median (IQR[‡])	Mean ± SD[†]	Test result
Gender	Male	60 (20.0)	58.1 (17.1)	$Z = -1.20$
	Female	60 (20.0)	60.0 (16.0)	$P = 0.228$
Education	BSc.[‡]	60 (20.0)	58.9 (16.3)	$Z = -1.24$
	MSc.[*]	60 (30.0)	63.8 (17.9)	$P = 0.213$
Age (years)	22–32	60 (20.0)	58.9 (16.3)	$X^2 = 1.47$
	33–42	60 (20.0)	60.1 (17.0)	$P = 0.477$
	43–52	50 (10.0)	55.0 (11.9)	
Work experience (years)	1–9	60 (20.0)	59.2 (15.9)	$X^2 = 0.12$
	10–18	60 (20.0)	59.4 (17.9)	$P = 0.942$
	19–28	55 (17.5)	58.7 (11.2)	

[‡]Interquartile range; [†]standard deviation; [‡]Bachelor of Science; [*]Master of Science.

Table 4: Relationship between nurses' attitude of toothbrush maintenance and use with demographic variables.

	Variables	Median (IQR[‡])	Mean ± SD[†]	Test result
Gender	Male	66.7 (33.3)	62.9 (21.7)	$Z = -1.10$
	Female	66.7 (33.3)	65.0 (19.9)	$P = 0.270$
Education	BSc.[‡]	66.7 (33.3)	64.4 (20.3)	$Z = -0.26$
	MSc.[*]	66.7 (33.3)	61.5 (24.8)	$P = 0.791$
Age (years)	22–32	66.7 (25.0)	63.5 (20.5)	$X^2 = 0.90$
	33–42	66.7 (33.3)	65.3 (20.8)	$P = 0.635$
	43–52	58.4 (41.7)	64.5 (24.3)	
Work experience age (years)	1–9	66.7 (33.3)	63.8 (20.7)	$X^2 = 0.61$
	10–18	66.7 (33.3)	65.2 (20.8)	$P = 0.737$
	19–28	66.7 (16.7)	62.5 (19.4)	

[‡]Interquartile range; [†]standard deviation; [‡]Bachelor of Science; [*]Master of Science.

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Table 5: Relationship between nurses' practice of toothbrush maintenance and use with demographic variables.

	Variables	Median (IQR[‡])	Mean ± SD[†]	Test result
Gender	Male	50 (20.0)	49.4 (17.0)	$Z = -1.94$
	Female	50 (30.0)	52.8 (17.0)	$P = 0.052$
Education	BSc.[‡]	50 (30.0)	51.9 (17.2)	$Z = -1.47$
	MSc.[*]	40 (32.5)	46.9 (15.9)	$P = 0.140$
Age (years)	22–23	50 (15.0)	51.9 (16.0)	$X^2 = 0.93$
	33–42	50 (30.0)	50.9 (18.7)	$P = 0.626$
	43–52	40 (20.0)	47.5 (18.3)	
Work experience (years)	1–9	50 (20.0)	51.5 (15.9)	$X^2 = 0.34$
	10–18	50 (32.5)	51.7 (19.6)	$P = 0.842$
	19–28	40 (20.0)	48.7 (12.5)	

[‡]Interquartile range; [†]standard deviation; [‡]Bachelor of Science; [*]Master of Science.

5. Conclusion

The results of this study indicated that nurses had moderate knowledge, attitude, and practice toward toothbrush maintenance and use, which does not seem acceptable. Since nurses are considered role models in society, they are required to have good knowledge, attitude, and practice regarding oral hygiene. Therefore, holding training courses on the principles of oral hygiene is recommended. It is also recommended to pay more attention to the issue of oral health, with emphasis on the maintenance and use of toothbrushes, in the nursing curriculum. Future studies are suggested to evaluate the factors related to nurses' knowledge, attitude, and practice regarding oral health and the effect of intervention measures on these variables.

Data Availability

The identified datasets analyzed during the current study are available from the corresponding author upon request.

Ethical Approval

The Ethics Committee of the Kermanshah University of Medical Sciences approved the study with the code IR.KUMS.REC.1397.874. The experiment protocol for involving humans was in accordance to guidelines of national/international/institutional or Declaration of Helsinki.

Consent

The written informed consent was obtained from all the participants.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

MNP, MJ, BA, and AK designed the study and wrote the manuscript. MNP and MJ collected the data. BA analyzed the data. All the authors read and approved the version for submission.

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Research Article

Nursing Students' and Preceptors' Experiences with Using an Assessment Tool for Feedback and Reflection in Supervision of Clinical Skills: A Qualitative Pilot Study

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Background. There is a need to improve students' learning in clinical practice. Undergraduate students need guidance when it comes to transferring knowledge from the classroom to clinical practice in community health services. Competence Development of Practical Procedures (COPPs), a simulation assessment tool, was used to explore students' and preceptors' experiences with feedback and reflection during the supervision of clinical skills in real practice. *Method*. This was a pilot study with a qualitative exploratory and descriptive research design. Four students in their first year of a bachelor's programme in nursing and four preceptors participated. Data were collected from eight clinical skills performance assessments, audio recordings of supervision, and open-ended questionnaires. Data were systematized, categorized, and analysed using qualitative content analysis. *Findings*. Participants' experiences were divided into five categories: "learning environment, an atmosphere of respect, acceptance, and encouragement," "students' reflections on their own personal learning," "students' reflections on various care situations," and "students' and preceptors' assessment and feedback." Participants found COPPs easy to use and providing structure for assessment, feedback, and reflection during supervision. Concepts related to learning clinical skills became visible for both students and preceptors and helped students assess their performance of clinical skills. Through verbalization and reflection in supervision, participants established a consensus around what students knew and what they needed to learn. *Conclusions*. The students and preceptors experienced the tool as a supportive structure to enhance feedback and reflection for the learning of clinical skills in municipal healthcare services. COPPs filled a gap in practice by providing a language for students and preceptors to articulate their knowledge and increasing students' awareness of what constitutes a good performance. The tool supported the coherence of concepts, enhanced clinical reasoning, and promoted deeper thinking and reflection, and the students gained insight into their own needs related to learning clinical skills.

1. Introduction

Nursing is a practice-based discipline, and clinical placement is a vital part of nursing education in bachelor's programmes. In Norway, the bachelor's degree programme in nursing runs over three years. In accordance with the EU's requirements, 50 per cent of the study time is reserved for clinical practice, either in hospitals or in the municipal health service [1].

However, newly graduated nurses demonstrate a lack of expertise in clinical skills [2]. Patients often have complex disorders and challenges, which can make it difficult for novices to learn to think like a nurse [3, 4]. Clinical skills are complex, requiring technical expertise, theoretical and practical knowledge, caring intention attuned to both the patient and environment, and ethical consideration [5, 6]. Before, during, and after clinical skill training, students and nurses must conduct a number of clinical skill assessments based on a process of clinical reasoning. One study showed that nurses engaged in up to 50 significant instances of clinical reasoning in one eight-hour shift in a medical admissions unit [7]. Clinical reasoning is defined as the

processes by which nurses and other clinicians make judgments, including the process of generating alternatives and choosing the most appropriate one(s) [4].

Novice and expert nurses often have different cognitive thinking strategies [8]. Novices require more time and training to reach a higher level of clinical reasoning and judgment. The primary reasons for adverse patient outcomes are failure to properly diagnose, failure to implement appropriate treatment, and inappropriate management of complications [8]. Learning to think like a nurse is an important component of clinical practice [4]. Students need support as well as practical training to become "fit for practice" and transfer learning from the classroom to their practice as nurses [9, 10]. Clinical supervision aims to assist students in applying the theory of nursing in real-life situations and in integrating theoretical knowledge and clinical skills, and it is essential to ensuring that nursing students can provide safe and competent care before they graduate [11].

In clinical practice in homecare and in nursing homes in Norway, students are traditionally supervised by a preceptor. The preceptors in this study were nursing staff, including both registered nurses (RNs) with a bachelor's degree and practical nurses (PNs) with a vocational degree. The concepts of preceptor, clinical supervisor, and mentor are defined differently in the literature [12, 13]. A preceptor has more experience and can help less-experienced students reach their learning potential [13] and achieve learning outcomes in clinical practice. This ability to achieve desired outcomes with assistance from more experienced individuals has been termed the "zone of proximal development" [14].

Educational practices must help students engage with patients to identify areas that need improvement, ideally in a debriefing with preceptors who can provide feedback and help students develop insight into their own clinical thinking [4]. Indeed, it has been argued that feedback is the most effective strategy for making learning visible to students [15]. Effective learning in clinical practice also requires that students have a broad experience base and an opportunity to reflect on and analyse the situations in which they are involved [11]. Reflection is often understood as looking back or looking at, as in "reflection on action" and "reflection in action" [4, 16], but it can also be looking forward (i.e., "feed forward") or "reflection beyond action" [17, 18]. As action and reflection are closely linked elements [4], reflecting on action means thinking about what one is doing while one is doing it. Systematic reflection on action will increase learning and further develop competence [19]. Without systematic reflection, learning will occur, but it will be random and may be deficient [20].

Nurses are required to supervise students as part of the nursing job. The challenge is that many nurse preceptors have a lot of tacit knowledge, which is implicit knowledge that is based on lived experience and cannot be codified [21]. To address this challenge, the authors of this article wanted to test a feedback and reflection tool designed to support supervision of students' learning of clinical skills in a simulation centre at a Norwegian university. The tool, Competence Development of Practical Procedures (COPPs), can be used to assess the performance of many clinical skills [22]. COPPs was developed from and inspired by the Model of Practical Skill Performance [5], person-centred practice in nursing [23], updated online guidelines in healthcare and clinic-based knowledge [24, 25], and nursing student syllabi and the power of feedback [26]. COPPs (Appendix 1) provides a structure for reflection and feedback and makes visible the complexity of learning clinical skills involving technical and theoretical aspects and relationships with patients. The tool is divided into three areas: (1) preparation, planning, performance, and supplementary work, (2) overall assessment, and (3) knowledge of clinical skills. It also includes the performance of clinical skills to be assessed as "excellent," "partially completed," or "missing" and a column for writing additional comments. This is a formative assessment that provides a structure for feedback and reflection on learning clinical skills in high-fidelity simulations [22]. COPPs is designed to provide structure for student learning related to clinical skills, for peer assessment, and for in-depth feedback on the learning process from teachers. However, the tool may also have the potential to support feedback and reflection in supervision of students by preceptors in real practice.

1.1. Aim. The aim of this pilot study was to explore students' and preceptors' experiences of using COPPs as a tool for supporting feedback and reflection during supervision of clinical skills in real practice.

2. Methods

This pilot study had a qualitative approach with an exploratory and descriptive design [27]. In this context, a qualitative approach enabled a focus on specific aspects of meaning and the experiences of selected participants. An exploratory design is appropriate when there is little known about the phenomenon under study, as is the case in the present study. Finally, a descriptive design was used to describe the characteristics of students' and preceptors' experiences using the COPPs assessment tool in supervision and to provide the reader with a clear, accurate picture of the situation.

2.1. Settings and Participants. This pilot study was carried out during spring 2017, at the end of the students' first year in the bachelor's programme, and during their first clinical placement. They spent eight weeks either in a nursing home or in homecare. Patients in these settings are characterized by multimorbidity, polypharmacy, and/or cognitive impairment.

Four nursing students and four preceptors volunteered to participate in spring 2017 (Table 1). All participants were women. The two homecare nurses nursing were recent RN graduates. They had completed a five-hour educational course in supervision at the university, and one of them had recently begun further training in supervision (30 ECT). The two preceptors in the nursing homes were PNs; both had extensive professional experience, but one of them had never supervised students before.

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Table 1: Students (1–4) and preceptors (a–d) together in different contexts.

Student			Preceptor				
	Age	Context		Age	Education	Nursing experience	Number of earlier student supervisions
1	21–25	Nursing home	a	>55	Practical nurse	34 years	0
2	20	Nursing home	b	>55	Practical nurse	30 years	6–10
3	21–25	Homecare nursing	c	20–25	Registered nurse Course in supervision, commenced education in supervision	4 years	6–10
4	20	Homecare nursing	d	20–25	Registered nurse Course in supervision	3 years	6–10

2.2. Procedures and Data Collection. The authors provided oral information to the department administrators before the students' clinical practice. Two randomly selected municipal health services that had supervisory responsibility for students in the bachelor's programme in nursing at the university were invited to participate in this pilot study. Out of fifteen students and their preceptors who were asked to participate, four students and their preceptors volunteered to participate. The students were familiar with COPPs from their simulated clinical skill training at the university. The preceptors received written information about the study plan, the students' learning outcomes, and COPPs before the clinical period. The academic staff from the university provided preceptors with information and presented the study at the first meeting with the students and the preceptors. The researchers were not in contact with participants during the study.

Each student performed two clinical skills in this study. The first clinical skill, selected by the researchers, involved students caring for a patient that needed "personal hygiene" assistance. The second, selected by the student, consisted of either measuring blood sugar or performing a subcutaneous injection. Figure 1 provides an overview of the data collection and supervision process related to one clinical skill.

COPPs gives a structure for performance of clinical skills and was used for reflection before action and to help the students and preceptors make a plan and discuss the concepts in the tool. As the student performed the clinical skill, the preceptor used the tool for observation and assessment and evaluated the student by ticking the appropriate box and adding comments where applicable. Shortly after performing the skill, the students assessed themselves using COPPs. Data collected for one clinical skill at this stage consisted of two completed COPPs, one from the student and one from the preceptor.

Each student and preceptor then used the completed tool in supervision to reflect together. This took place in a suitable room. The student was responsible for audio recording the dialogue to enable access to nonverbal and verbal elements along with communication cues [27]. After supervision, each student and preceptor completed a questionnaire with eight short, open-ended questions (Appendix 2). Open-ended questions allowed the participants to answer freely and spontaneously [27]. These were used to gain a deeper understanding of each student's and preceptor's experiences using COPPs. The data collected for all participants consisted of 16 completed tools (8 from the students and 8 from the preceptors), 8 audio-recorded debriefings, and 16 answered questions (8 from the students and 8 from the preceptors). The data were collected by the researchers shortly after students' clinical practice, and there was no relationship between researchers and participants during data collection.

2.3. Analysis. Data were systematized, categorized, and analysed using qualitative content analysis [28]. Qualitative content analysis emphasizes the linguistic, inductive, or text-driven search for patterns; in this study, the analysis was carried out in four steps.

Step 1: the authors listened to the audio recordings several times and transcribed them. Next, they read the transcribed text and completed COPPs systematically. Having gained a comprehensive impression of the data, the researchers then discussed the material and identified 'meaning units.' This step was inductive, with a low degree of interpretation at the textual level. Step 2: meaning units were further condensed and coded to organize the material; these units were derived through an inductive process and understood in relation to context. Codes emerged as data that seemed to cluster as a result of the condensing in the first step. Different codes were compared to the transcribed text and were interpreted in light of the study's aim. This interpretation consisted of moving between the whole and the part in what is described as a hermeneutic circle [29]. Step 3: codes were abstracted into broader categories. A category is an abstraction of condensed text that is interpreted in light of the researchers` own learning, one's own experience, and the researcher's comprehension, shaping the overall understanding and interpretation of the material. A comparison of the codes identified similarities and differences that were consolidated into categories and subcategories. Step 4**:** the data were further analysed, and categories and subcategories from all participants were compared. New dimensions emerged, and new subcategories were created. Through this extensive analytical work involving reflection on the meaning of participants' stories, new subcategories were created and four main categories were identified. Table 2 shows an example of this process. To strengthen trustworthiness and reach consensus, the authors discussed and reflected on the data at all steps of the analysis.

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Table 2: Example of the analytical process.

Meaning unit	Condensed meaning unit	Code	Subcategory	Category
I do not think I introduced myself. I Knew it was him... Oh, I forgot to introduce myself...	Oh, I forgot to introduce myself...	Student's self-assessment	Clarify goal	Students' and preceptors' assessment and feedback
I have written missing. You could have been a bit clearer to the patient about who you are and what you were going to do. I have written missing.	You could have been a bit clearer. I have written missing	Preceptor's assessment	Feed forward	
I think it was excellent that you observed so much about everything from feet to skin and how the patient felt. It was excellent to observe.	Observation was excellent from feet to skin patient's feelings	Preceptor's assessment	Feedback	

2.3.1. Open-Ended Questions. The responses from each of the students and each of the preceptors to the open-ended questions in the questionnaire were transcribed by the authors. They were then systematized for all students and all preceptors in an attempt to identify similarities and variations.

2.4. Research Ethics. The head of the Faculty of Health and Social Sciences at the University of South-Eastern Norway gave permission for the study. Participation in the study was voluntary; the participants were informed of the study design, provided written consent, and were free to withdraw at any time. The study was classified as an educational evaluation: no patients were involved and, therefore, no ethics committee approval was required. The Norwegian Social Science Data Service approved this study in February 2017 (53190). The notes and audio files were scanned immediately and stored securely, and the data were anonymized.

3. Findings

Five main categories emerged based from the qualitative data analyses: "learning environment, an atmosphere of respect, acceptance, and encouragement," "students' reflection on their own personal learning," "students' reflection on various patient-care situations," "students' and preceptors' assessment and feedback," and "students' and preceptors' experiences of using COPPs in clinical practice." The participants' own expressions are highlighted below, with reference to the numbers and letters from Table 1. A summary of the open-ended questions follows the presentation of the findings.

3.1. "Learning Environment, an Atmosphere of Respect, Acceptance, and Encouragement". Students and preceptors met for supervision and used COOP to discuss and assess discussion the students' performance. The results revealed that all the students were open to sharing their experience about practicing skills in various patient-care situations using COPPs. They were sometimes concerned about the quality of their care in personal hygiene and believed that patients may have noticed their lack of confidence. Students talked openly about what they had missed. One student recounted, "I saw the toe, but I do not know anything about nail care. So I chose not to do anything." In supervision, this student openly shared her incompetence in principles of hygiene. The preceptor accepted this openness and acknowledged the student by saying "I understand" or making small utterances like "Yes" or "Mm" to affirm statements the student made.

The overall tone in supervision was friendly, calm, and pleasant: students and preceptors showed each other respect through their honest communication using COPPs. The participants used the tool systematically as a guide to structure their conversations about clinical skills. Specific goals and learning outcomes in COPPs were consistently included in their communication. For example, regarding "overall assessment," one student said, "It was done with a mix of fluency, without hesitation and unnecessary breaks. I think it was excellent and without hesitation and with ease" (1). The preceptor (a) responded straightforwardly: "You were empathic and used nonverbal communication when the patient was unsure. I think it was excellent." Honest communication helped this student and preceptor to clearly visualize concepts using the assessment tool to find shared meaning in a safe learning environment during the supervision.

There were some complex and challenging care situations involving patients. The students expressed their experiences of lacking "Knowledge of clinical skills" related to indications, complications, observation, documentation, and ethical challenges. In supervision, the preceptors were able to deepen students' knowledge related to the patient's situation and the context. The students were honest about their weaknesses, specifically about being unsure how to behave and communicate with patients, and expressed surprise about unexpected patient-care situations. Nevertheless, two students (1 and 4) could not identify any ethical challenges. Later, in supervision with the preceptor, they decided to learn more about ethics in relation to clinical patient-care skills.

The preceptors were sometimes concerned about the patients' security during students' performance of clinical skills; in these cases, they ticked "missing" under "performing procedure according to updated guidelines" in COPPs. However, when telling students that improvement was needed, their tone of voice remained calm. The students responded to the preceptors' instruction with words and silence, sometimes followed by a shared laugh, which seemed positive for both.

One of the preceptors (d) used concepts in COPPs to ask questions that invited the student to elaborate, summarize,

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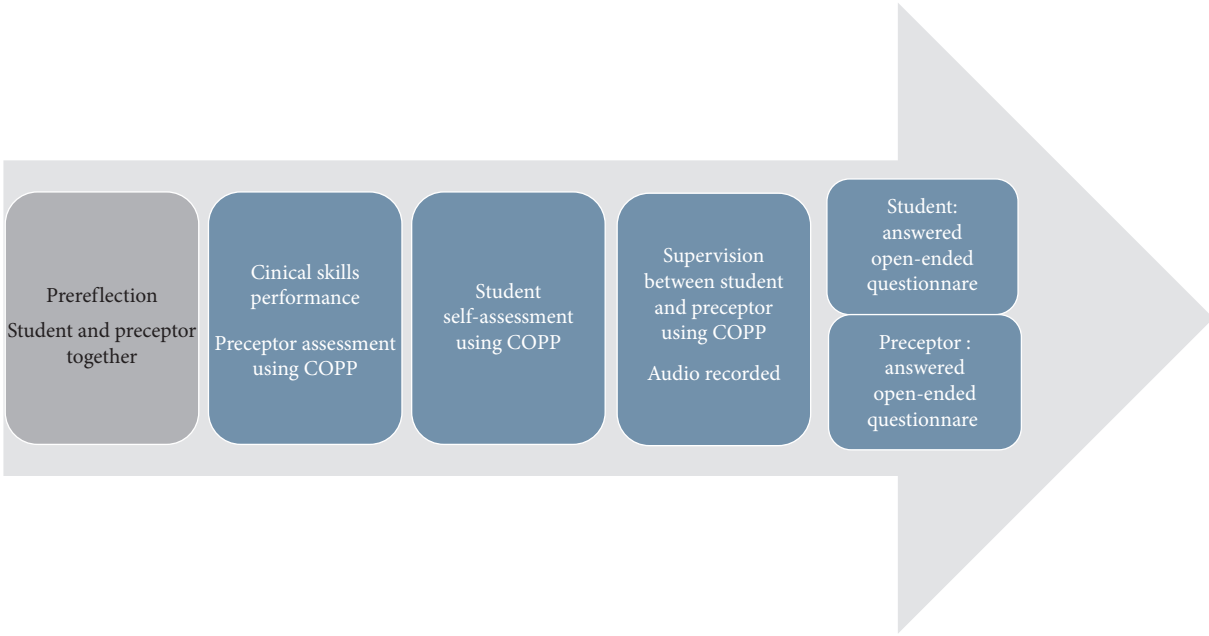

Figure 1: Data collection and supervision of one student's clinical skill.

conclude, or move on, including "What do you think you could do differently, then?" (missed hygiene); "Do you have anything else to add?" (lack of knowledge about complications, observations, and ethical challenges); "Tell me more about this" (missed introduction); or "Can you sum up?" (about the topic). It should be noted that this preceptor had the most formal pedagogical training in supervision.

COPPs as a structure for the supervision team seems to be a safe and predictable framework for the students and preceptors, which provided a good atmosphere characterized by respect, acceptance, and encouragement.

3.2. "Students' Reflection on Their Own Personal Learning". The students reflected on their own personal learning when responding to concepts in COPPs. They highlighted "Knowledge of clinical skills" in particular during supervision. One of the students stressed the importance of observations: "I feel I have become better at doing observations and not just doing the procedures" (1). This student learned about assessing observations while caring for a real patient. Another student, who helped a patient who needed a subcutaneous injection, reflected "It is not quite the same on humans as it is on dolls" (3). This student discovered a gap between learning through simulation in a lab setting using dolls and learning in clinical practice.

The students reflected on the emotions involved in learning. Many felt uncertain, somewhat anxious and hesitant, and inexperienced enough not to feel completely confident. However, this varied from student to student depending on their earlier experiences with patients, clinical skills, and healthcare contexts. One student in homecare nursing said, "I have not helped so many people with hygiene during the evening shift here. Therefore, I am a bit unsure how to do it" (2). Another student managed her situation with ease because she had experience with the patient and felt confident with this clinical skill: "I think I am safe in the situation. I know how to perform the clinical skill, and I know why. I feel I can tell the patient what I know" (4). This student's experience helped her provide safe care to the patient during the subcutaneous injection and deepened her knowledge of clinical skill in supervision.

3.3. "Students' Reflection on Various Patient-Care Situations". The students cared for patients in homecare and nursing home settings. Patients with multimorbidity had cognitive impairment and the students were not fully prepared to handle such patient situations. During clinical skills supervision, one student reflected, "It is difficult to prepare for introducing yourself and checking ID" (1). Another student noted, "Communication with this patient is difficult for me" (2). Using COPPs to reflect on 'overall assessment' situations with elderly patients, particularly those suffering from dementia, enabled novices to use appropriate communication during clinical skills. This reflection became visible for both the student and preceptor during supervision.

Personal hygiene was challenging for all students at this level of first clinical practice. One student reflected, "I've never cared for this patient before. After all, it is a challenge to get to know the patient. I asked the patient, but I think it went very well. To get to know her better, I asked her a lot about what she wanted to do herself and if she had any routines" (3). Supervision involves helping students prepare for and perform clinical skills through dialogue and reflection. This student asked the patient many questions, but in the supervision, this student realized there was a need for better preparation and planning to perform a clinical skill.

Two students chose "subcutaneous injection" for their clinical skill supervision. One student reflected, "I chose to

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put the syringe at 45° instead of 90°. She is of normal weight so I could have set it at 90°, but her skin was so thin" (4). This student had mastered the technical aspect of a clinical skill and deepened their individual knowledge, in addition to clarifying individual goals and assessing the quality of their performance in supervision using COPPs. Supervision is about clarifying each student's individual goal and the support they need to take responsibility for nursing interventions or clinical skills.

3.4. "Students' and Preceptors' Assessment and Feedback". Students used COPPs to assess themselves shortly after performing a clinical skill and before supervision. They rated themselves "excellent" or "partially completed" in "preparation and planning" and "overall assessment." The students' self-assessment with regard to "knowledge of clinical skills" ranged from "excellent" to "missing" for two students. On the other hand, two of the students did not use this part of COPPs at all, but, instead, indicated that they would wait for supervision with their preceptor. One novice student was not certain about 'knowledge of clinical skills' and wrote, "I don't know what to say. . .. This is more of something we are supposed to do together..., indications or purpose of the procedure" (2). In other words, the student's knowledge of clinical skills was limited and needed to be developed in the supervision.

The preceptors' assessments of students' performance of clinical skills ranged from "excellent" to "missing." All the preceptors actively used the additional comments column. They wrote things like "no plastic aprons," "student asks the patient too much," "somewhat uncertain due to the situation," and "helped student because she had not performed this procedure." They then used these notes to structure their input in supervision.

One of the preceptors noted shortcomings: "I have written missing. You did not introduce yourself. You did not ask if this is the right patient in front of you" (b). This student neglected to ensure patient safety before the subcutaneous injection. In the supervision, the preceptor pointed out the student's lack of knowledge and responsibility. Another preceptor also provided clear feed-forward messages during supervision: "Continue to work on this and manage more injections. It is something you need to do a bit more" (c). Effective assessment and feedback using the tool made learning potential visible.

In addition to having the opportunity to point out what was deficient and needed improvement, the preceptors were also able to use the tool to highlight what they found excellent. This constructive dialogue during supervision, therefore, bolstered a positive experience of a shared sense of direction.

3.5. "Students' and Preceptors' Experiences of Using COPPs in Clinical Practice". In the following, data from the open-ended questions (Appendix 2) answered by students are summarized first, followed by the preceptors' responses.

Students reported being familiar with the tool from simulations at the university's lab where they had used it to self-assess clinical skills and conduct peer assessment. In the present study, students experienced that the tool was appropriate to use for self-assessment in real practice as it helped them be aware of their own actions, proposed concepts to systematize their performance, and made it easier to articulate what they still needed to learn. In the students' conversations with their preceptors in supervision, all three columns ("excellent," "partially completed," and "missing") were helpful in providing both feedback and feed forward. Students reported that the preceptors allowed them to be active in assessing their own performance. Together, students and preceptors systematically compared the completed COPPs as a way of structuring conversation about the students' strengths and weaknesses in performance, reflecting on and deepening their knowledge of relevant aspects such as hygiene, overall assessment, and knowledge of clinical skills.

Preceptors reported that although COPPs was new for them, it was easy to use, and they used all of the categories and subcategories, elaborating on them if needed during the supervision. COPPs enabled them to give precise feedback and feed forward, and it highlighted many aspects of the students' performance. A nurse wrote, "The tool made me more aware of everyday procedures such as personal hygiene" (d). Preceptors, who have more experience than students, may need to articulate tacit knowledge related to basic procedures and COPPs can make concepts visible and help them articulate this.

In assessing the students, the preceptors emphasized criteria related to the students' "excellent" performance regarding care of the patient, caring comportment, and proper planning to ensure patient security. Preceptors found it useful to write comments and tick the appropriate boxes next to the concepts, and they used these notes when providing feedback during supervision. Preceptors noted that they first asked students about their self-assessments in COPPs before discussing further and deepening knowledge together. One nurse (c) noted the importance of highlighting what was missing in the student's performance with regard to taking care of the patient, thus helping the student understand how to improve.

4. Discussion

The aim of this pilot study was to explore students' and preceptors' experiences using COPPs to structure feedback and reflection in clinical skill supervision in real practice. The major findings reveal that students and preceptors found the tool useful for structuring supervision and learning of clinical skills in their first practice in community health services.

4.1. Visible Learning. A robust conceptual framework and good feedback practices are important for successful formative assessment [30]. Educational assessment that places the student at the centre of the assessment process helps make learning visible [18, 26]. Clinical skills are complex and based on both theoretical and practical knowledge; they also

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require communication skills and ethical and moral considerations, all of which must be tailored to the individual patient's needs [5, 31]. COPPs identifies and systematizes the theoretical and practical concepts that are applicable to feedback and reflection on different clinical skills [22]. There are other similar tools or frameworks used to structure reflection and supervision. The Model of Practical Skill Performance [5, 32] has been used at some nursing schools in Norway. While we think this is a good model, we found that students needed a tool that was more concrete and specifically tailored to learning practical skills and associated knowledge.

An assessment tool like COPPs can provide a shared language for articulating and even transforming knowledge and increasing competence [33]. Students in this study used COPPs to assess themselves before supervision with preceptors, which allowed them to gain insight into their own learning needs and to visualize concepts [26]. Their self-scores and comments provided information about students' strengths and weaknesses, highlighting the gap between what they were supposed to know and what they actually knew.

4.2. Tool for Enhanced Reflection and Feedback in Clinical Practice. Students often feel vulnerable when having their novice knowledge and practice assessed. COPPs can provide a safe and familiar framework for assessing learning goals. This study showed the atmosphere between the participants was characterized by respect, acceptance, and encouragement.

There is a lack of critical reflection among students [34]. Because of embodied knowledge, nurses and students find it difficult to verbalize thoughts and explain their cognitive processes [35, 36]. Results from our study show that COPPs may be helpful as a reflection and assessment tool in supervision of clinical skills. Concrete and constructive feedback from an experienced preceptor is important in formative assessment. This is in line with the idea of the "proximal zone" [14], in which students must be supervised by someone more competent. Verbalizing and reflecting cognitively on the actions they perform helps students improve clinical reasoning skills [8].

Strengthening cognitive skills, such as discussion and reflection, strategies, planning, analysis, and self-assessment, seems to be an effective and robust approach to learning clinical skills [30, 35]. An important goal of most clinical skill assessment or supervision tools is to make students aware of what constitutes a good performance [32]. However, students who focus only on the steps being performed demonstrate a lower level of competence when performing skills than those who are involved in discussion and systematic thinking in parallel with their training [37]. This may be because an advanced level of understanding is necessary to recognize the complexity of clinical skills [38].

In this study, students and preceptors used COPPs as a starting point and framework to underpin discussion and reflection that elicited deeper thinking. It has been argued that "knowing that" (theory) is essential to describing and providing reasons for "knowing how" (practice) in developing nursing skills and knowledge [39]. A novice is a newcomer who has little or no experience in handling clinical skills in real-life situations. Through reflection and assessment using the common concepts in COPPs, students engage in a process that, over time, enables them to acquire a higher level of the analytic skills needed for clinical reasoning.

Previous studies highlight a lack of pedagogical competence among preceptors [11, 40]. Students, therefore, often experience a lack of supervision and professional dialogue with preceptors who could help them link theory and practice [41]. To help students achieve a professional standard in clinical skills, it has been recommended that preceptors be nurses with pedagogical education in supervision [35]. Our study shows that preceptors' competences vary, and this seems to influence the quality of the supervision. Despite these differences, COPPs appeared to support student-preceptor interactions by establishing shared concepts and meanings and by structuring the preceptors' guidance [22, 42]. Formalized strategies or educational models such as this one have been shown to be necessary to enhance students' learning experiences [43].

4.3. Coherence of Concepts: Bridging the Gap? To bridge the gap between theory and practice, there is a need for coherence between the theoretical approaches used in the classroom and the approaches used in clinical practice so that students 'speak the same language' at university and in clinical settings [44]. The primary goal of professional education is to bridge this gap [35]. COPPs may help with this as it provides students and preceptors with concepts that are common in both university and clinical settings.

The concept of coherence is closely related to meaning [45]. COPPs helps students and preceptors create "a common meaning between minds" and provides common concepts and a framework for communication in supervision [21, 33, 39]. Knowledge might transfer more easily between university and clinical practice if students and teachers maintain close connections and working links with practitioners [46]. COPPs provides a structure for supervision, and the concepts are flexible enough that they can be adapted to different contexts in clinical practice. Knowledge translation is a process that takes time, and it is enhanced by appropriate support and formative assessment from preceptors [47]. COPPs supports this process by providing structure and shared concepts for both students and preceptors.

4.4. Methodological Considerations. To strengthen the credibility of this pilot study, participants were randomly selected from two different municipal health services. Four students and their preceptors participated, all women. A different recruiting process for students might have included more participants with varied demographic. Transferability is difficult to achieve in qualitative studies because the focus is on acquiring deeper knowledge and samples are small [48]. To compensate for this, we used different methods of

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data collection: completed COPPs, audio recordings of supervision, and questionnaires with open-ended questions to improve readability and flow. This resulted in rich, expansive, and varied data that provided insight related to the aim of the study.

Both authors conducted and transcribed the data. To enhance the quality of the analyses, all the investigators discussed the results and reached a consensus. Credibility was established by selecting the most appropriate meaning units, categories, and themes to cover the data. Dependability was strengthened by using a coding list to prevent changes in meaning between the coding and decoding process. Validity was strengthened by the researchers' self-reflection on their role as teachers with a professional nursing background and expertise in the field.

A weakness of this study is that only the students were familiar with COPPs as a tool for feedback and reflection. If the preceptors had been accustomed to using COPPs, they would likely have more actively used it for preparation and planning during the students' clinical practice. A second limitation is that the findings of this pilot study are limited to one university in Norway and are, therefore, specific to both location and context.

5. Conclusions

The results indicate that the participants found that COPPs provided support and structure for feedback and reflection in clinical reasoning and clinical skills development in municipal healthcare services.

An important goal of COPPs as a tool for assessing clinical skills is to make students aware of what constitutes a good performance. In a practice that is characterized by clinical skills and tacit knowledge, COPPs seems to provide a language for students and preceptors to articulate their knowledge and competence. Through structured reflection and assessments, the students revealed their own strengths or weakness and got insight into their own learning needs. COPPs seemed to support the transfer of knowledge and helped bridge the gap between university and clinical practice. The tool supported the coherence of concepts, enhanced clinical reasoning, and promoted deeper thinking and reflection when learning clinical skills. This was a pilot study, and further studies are needed to evaluate this tool with a broader sample and/or in other contexts of clinical practice in nursing education.

Data Availability

The data from notes, audio-recorded interviews, and questionnaires used to support the findings of this study are available from the corresponding author upon request.

Disclosure

This research was performed as part of the authors' employment at the University of South-Eastern Norway.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

All authors made substantial contributions to conception and design or acquisition of data or analysis and interpretation of data. All authors were involved in drafting the manuscript or revising it critically for important intellectual content. All authors gave final approval of the version to be published. Each author participated sufficiently in the work to take public responsibility for appropriate portions of the content. All authors agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All the authors meet the following criteria, as per ICMJ recommendations (http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html) and have agreed on the final version.

Supplementary Materials

Appendix 1: the assessment tool Competence Development of Practical Procedures (COPPs). Appendix 2: questionnaire to preceptors and students. (*Supplementary Materials*)

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Research Article

Depression and Anxiety among Patients with Type II Diabetes Mellitus in Chitwan Medical College Teaching Hospital, Nepal

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The prevalence of depression and anxiety disorders is common among people with diabetes mellitus. Coexistence of diabetes and depression/anxiety increases the risk of diabetes complications and reduces the overall quality of life. Hence, this study aimed to assess the depression and anxiety among patients with type 2 diabetes mellitus in Chitwan. Descriptive survey was carried out among 296 purposively selected clinically diagnosed type 2 diabetes patients admitted in the Chitwan Medical College Teaching Hospital from 15th June 2018 to 17th September 2019. Patients were interviewed using the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorders-7 (GAD-7). Data were analyzed using descriptive and inferential statistics. Of 296 diabetic patients, 48.6% were 60 years and above, 59.5% female and 61.5% literate; their common occupation was agriculture (38.2%) followed by household work (26.4%). Nearly two-thirds (62.8%) of diabetes patients had other chronic comorbid conditions. Depression and anxiety were observed among 57.8% and 49.7% of diabetes patients, respectively. While observing the severity, 27.4%, 19.6%, 8.4%, and 2.4% of patients had mild, moderate, moderately severe, and severe depression, respectively. Likewise, 24.7%, 20.3%, and 4.7% of patients had mild, moderate, and severe anxiety, respectively. Current living status, educational status, medicine adherence, satisfaction toward current treatment, and history of mental illness in the family were found to be significant factors associated with the anxiety of patients with diabetes. Further, educational status, smoking habit, satisfaction towards current treatment, and history of diabetes in family were the factors associated with depression. Prevalence of depression and anxiety is high among admitted patients with diabetes mellitus, and many factors are associated with it. Hence, regular screening services are essential along with diabetes management plan for timely identification and treatment of the vulnerable groups in the healthcare centers.

1. Introduction

Diabetes mellitus (DM) is a frequently encountered chronic metabolic disease which is characterized by elevated plasma glucose level resulting from inadequate insulin secretion and/or increased insulin resistance. According to the International Diabetes Federation (IDF), there were estimated 463 million adults, 20–79 years, living with diabetes mellitus in 2019 which accounted for 9.3% of the global population and was expected to increase to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. Although the proportion of people with type 2 diabetes is increasing in most countries, 79% of adults with diabetes are living in low- and middle-income countries [1] and the expected rise in prevalence will be more aggressive in low-income countries [2]. People with DM have a higher risk of morbidity and mortality as well as increased healthcare cost than the general population. Diabetes caused 4.2 million deaths and at least 10% of global health expenditure in 2019 (USD 760 billion dollars) (IDF, 2019) [1]. In Nepal, DM is emerging as a major health

problem and its prevalence accounts for 8.4% among adults. The prevalence of diabetes is reported to be higher in urban than in rural areas [3].

Diabetes is typically a manageable disease through lifestyle modifications and treatment. However, it can create added stress to the diabetes patients due to the never-ending demands of diabetes care, such as eating and maintaining physical health, exercising, monitoring blood glucose, regular follow-up, and management of symptoms and fears about or the reality of complications. As a result, they experience feelings of depression, anxiety, and stress, which affect their health and overall quality of life [4].

During psychological stress, counter-regulatory hormones such as catecholamine, a neurotransmitter, glucocorticoids, growth hormones, and glucagon are activated [5]. The activation of the counter regulatory hormones interferes in the action of insulin which is not able to lower glucose but instead elevates blood glucose. The increase in glucose level creates a greater challenge in maintaining metabolic control. Poor glycemic control and functional impairment due to increasing diabetes complications may cause or worsen depression [6] and anxiety in patients [7, 8].

Anxiety and depression are common among patients suffering from type II diabetes, and their prevalence has been summarized in a number of studies [7, 9–11]. Patients with diabetes had significantly higher anxiety and depression than general population [12, 13]. The coexistence of diabetes and depression results in poor glycemic control and self-management, increases the risk of diabetes complications, and reduces overall quality of life and life expectancy [10, 14–16]. So, prevention, early recognition, and treatment of these conditions are essential for achieving optimal goals in the management and in patients' overall quality of life.

In Nepal, depression and anxiety are usually underdiagnosed and undertreated due to social stigma and discrimination as well as there is a dearth in the literatures related to topic. Few previous studies [9, 17–19] reported depression among patients with type II diabetes mellitus attending outpatients' settings. Hence, this study was undertaken to find out depression and anxiety among admitted patients with type II diabetes mellitus which will be helpful for the healthcare providers to plan collaborative care in healthcare settings.

2. Materials and Methods

Descriptive cross-sectional survey design was used, and the study was conducted in the Chitwan Medical College Teaching Hospital (CMC-TH), Bharatpur-10, Chitwan, from 15th June 2018 to 17th September 2019. Population of the study was those clinically diagnosed type II diabetes patients either alone or in combination with other diseases admitted in medicine inpatient departments of CMC-TH. Those patients who were clinically diagnosed with type II diabetes according to International Diabetes Federation (IDF) criteria for at least one year irrespective of their sex were included in the study, whereas patients who were unable to complete the interview due to communication or cognitive difficulties were excluded. Sample size was determined using 40.3% overall prevalence of depression among type 2 diabetes at tertiary care centers of Kathmandu [9] with an allowable error of 6% at 95% confidence interval. The estimated sample size was 296 after adding 15% nonresponse rate. A purposive sampling technique was used to select the desired sample for the study.

Pretested Nepali version structured interview schedule was used to collect the sociodemographic and disease-related information of the patients. The Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorders-7 (GAD-7) were used for the screening of depression and anxiety. These two instruments assessed the symptoms experienced by participants during the 2-week period before they take the survey. Each item of GAD-7 and PHQ-9 was rated 0 to 3 scores, where 0-not at all, 1-several days, 2-more than half of the days, and 3-nearly every day, with higher scores indicating patients' increased self-report of anxiety and depression severity. The PHQ-9 questionnaire is a validated questionnaire, found to be useful in screening of patients for psychiatric illness worldwide [20–25]. Content and face validity was established through extensive literature review and consultation with experts. Pretesting of the Nepali version instrument was done among 50 diabetes patients admitted in the CMC-TH, and they were excluded from the final study. Reliability of the instrument was tested by calculating Cronbach's alpha values of PHQ-9 and GAD-7 which were 0.78 and 0.75, respectively.

Data were collected through the face-to-face interview method on the 2nd day of admission in a separate room. Scores obtained in GAD-7 were classified into mild (5–9), moderate (10–14), and severe anxiety (≥15). Likewise, scores of PHQ-9 were divided into mild (5 to <10), moderate (10 to <15), moderately severe (15 to <20), and severe (≥20) depression. Those patients who had moderate-to-severe anxiety and depression were referred to the psychiatry department for further management.

To maintain the rights of patients, further evaluation was performed by psychiatrists to those patients who were found to be positive on PHQ-9 and GAD-7 for confirmation and further treatment. Ethical approval was obtained from the Chitwan Medical College Institutional Review Committee (CMC-IRC). Written informed consent was obtained from the patients ensuring their confidentiality of the information.

Collected data were entered into IBM SPSS (Statistical Package for Social Sciences) version 20. Then, data were analyzed in terms of descriptive statistics as well as bivariate analysis. Statistical significance was determined at $p < 0.05$. Then, a multivariate logistic regression model was designed for those variables significant at the bivariate level.

3. Results

Of 296 patients, nearly half (48.6%) were 60 years and above and more than half (59.5%) were female. Majority (84.8%) of the patients followed Hinduism, 68.6% were urban residents, 62.5% belonged to joint family, and nearly two-thirds (61.5%) were literate. Common occupation was agriculture

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(38.2%) and household work (26.4%). More than two-thirds (68.2%) of the patients reported that they quit their job due to their illness. Approximately half (49.7%) of the patients reported that their monthly family income was just sufficient for their daily expenses and 25.3% reported surplus expenses (Table 1).

Regarding clinical variables, more than one-third (37.2%) of the patients had diabetes only, whereas 62.8% had diabetes with other comorbidities. More than three-fourths (76.4%) of the patients' duration of diagnosis was ≥3 years, 53.7% had no history of hospital admission in the last one year, 86.8% had adherence with their medicine, 87.2% were satisfied with their treatment, and only 9.5% had a family history of mental illness (Table 2).

In diabetes patients, overall depression was seen among 57.8% of patients. Among them, 27.4% had mild depression, 19.6% had moderate depression, 8.4% had moderately severe depression, and 2.4% had severe depression. Likewise, overall, 49.7% of patients had anxiety disorder where 24.7%, 20.3%, and 4.7% of patients had mild, moderate, and severe anxiety, respectively (Table 3).

Table 4 shows that the level of anxiety disorder was significantly associated with the sociodemographic variables such as current living status ($p = 0.001$) and educational status ($p = 0.001$) of the diabetic patients. Likewise, level of depression was significantly associated with the age group in years ($p = 0.045$), current living status ($p = 0.003$), educational status ($p = < 0.001$), smoking habit ($p = 0.005$), and perceived impact of illness on work ($p = 0.014$).

In Table 5, significant association was found between level of anxiety and selected disease-related variables such as medication adherence ($p = 0.003$), satisfaction towards current treatment ($p < 0.001$), and history of mental problem in family ($p = 0.001$). Likewise, level of depression was significantly associated with satisfaction towards current treatment ($p = 0.013$), other comorbidities ($p = 0.037$), history of diabetes in family ($p = < 0.001$), and history of mental problem in the family ($p = 0.019$) (Table 5).

Logistic regression analysis showed that patients who were currently living with the family, were illiterate, had nonadherence to medication, had a family history of mental diseases, and were not satisfied with current treatment were more likely to be affected by anxiety compared to patients who lived alone, were literate, had adherence to medication, had no history of mental diseases in family, and were satisfied towards current treatment (Table 6).

Regarding depression, patients who were not satisfied towards current treatment, were illiterate, were smokers, and had a family history of diabetes were more likely to have depression than patients who were satisfied with treatment, were illiterate, were never smokers, and had no history of diabetes in the family (Table 7).

Table 1: Sociodemographic characteristics of patients.

Sociodemographic characteristics	$n = 296$ Number (%)
Age groups in years	
<40	12 (4.1)
40–60	140 (47.3)
≥60	144 (48.6)
Mean±SD = 59.50 ± 11.72; min. age: 25 years; max. age: 90	
Sex	
Female	178 (59.5)
Male	120 (40.5)
Religion	
Hindu	251 (84.8)
Other than Hindu©	45 (15.2)
Caste	
Bramin	99 (33.4)
Chhetri	47 (15.9)
Janajati	117 (39.5)
Dalit and Madhesi	33 (11.1)
Residence	
Rural	93 (31.4)
Urban	203(68.6)
Family type	
Nuclear	111 (37.5)
Joint	185 (62.5)
Marital status	
Unmarried	5 (1.7)
Married (husband/wife together)	243 (82.3)
Widow/widower	46 (15.5)
Divorce and others	2 (0.7)
Current living status	
Alone	37 (12.5)
With family	259 (87.5)
Educational level	
Illiterate	114 (38.5)
Literate	118 (39.9)
Primary	33 (11.1)
Secondary and above	31 (10.5)
Occupation	
Agriculture	113 (38.2)
Household work	78 (26.4)
Service	48 (16.2)
Business	32 (10.8)
Others (daily wages)	25 (8.5)
Family income	
Insufficient	74 (25.0)
Just sufficient	147 (49.7)
Surplus	75 (25.3)
Impact of illness to quit the job	
Yes	94 (31.8)
No	202 (68.2)

©Including Buddhists, Christians, Muslims, Kirats, and others.

4. Discussion

This study assessed the depression and anxiety among patients with type 2 diabetes mellitus admitted in a tertiary care center of Chitwan. Of 296 patients with type 2 diabetes mellitus, more than half (57.8%) of the patients exhibited depression and nearly half (49.7%) showed generalized anxiety disorders. Many variables are associated with the level of depression and anxiety of the patients.

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Table 2: Disease-related characteristics of patients.

	$n = 296$
Variables	Number
Presence of comorbidity	
No	110 (37.2)
Yes	186 (62.8)
Number of comorbidities	
None	110 (37.2)
One	105 (35.4)
Two or more	81 (27.4)
Duration of disease diagnosis in years	
<3 years	70 (23.6)
≥3 years	226 (76.4)
Number of hospital admissions in the last 1 year ($n = 926$)	
None	159 (53.7)
<3	91 (30.7)
3-4	46 (15.5)
Medicine adherence	
Yes	257 (86.8)
No	39 (13.2)
Satisfaction toward current treatment	
Yes	258 (87.2)
No	38 (12.8)
H/o diabetes in family	
Yes	125 (42.2)
No	171 (57.8)
H/o mental problem in family	
Yes	28 (9.5)
No	268 (90.5)

Table 3: Level of depression and anxiety among patients with diabetes mellitus.

Variables	$n = 296$ Number (%)
Level of depression	
Mild	81 (27.4)
Moderate	58 (19.6)
Moderately severe	25 (8.4)
Severe	7 (2.4)
Overall depression	171 (57.8)
Level of anxiety	
Mild	73 (24.7)
Moderate	60 (20.3)
Severe	14 (4.7)
Overall anxiety	147 (49.7)

The prevalence of depression in our sample is almost similar to the studies conducted among T2DM patients in Kathmandu, Nepal, i.e., 40.3% [9] and 44.1% [19] but higher than the prevalence reported among the patients in Sunsari district (22.7%) [17]. Regarding severity of depression, 27.4%, 14.6%, 8.4%, and 2.4% of patients had mild, moderate, moderately severe, and severe depression, respectively. Although data related to severity from Nepal are limited, a study in Saudi Arabia showed mild, moderate, severe, and extremely severe depression among 9.3%, 14.0%, 7.1%, and 3.3% of patients with type 2 DM, respectively [10].

Compared to other published studies, our finding is almost similar to the study in Pakistan which revealed 49.2% depression in patients with DM [8]. However, prevalence of depression is higher in our sample than that in the studies conducted in Jordan [25], South London King's College hospital [26], Palestine [27], Saudi Arabia [28], and North-Eastcoast Malaysia [29]. Similarly, a meta-analysis of 42 published studies held in the United States reported the prevalence of major depression among 11% of diabetic patients and the prevalence of clinically serious depression in 31% of patients [30]. Likewise, a study carried out in Jordan revealed that the prevalence rate of undiagnosed depression among Jordanian diabetic patients was 19.7% [31]. The possible reasons for the varied prevalence rate of depression in studies might be the use of different scales to screen the depressive symptoms in patients and settings used in these studies.

Along with depression, anxiety is also common among diabetes patients and many studies have reported about it. In our study, half (49.7%) of the patients had anxiety disorders where mild, moderate, and severe anxiety was found in 24.7%, 20.3%, and 4.7% of patients, respectively. Similar results were also reported by studies conducted in Pakistan [8], Saudi Arabia [10, 28], South London King's College hospital [26], and Jordan [25], which found 50.7%, 43.4%, 42.0%, 38.3%, and 37.7% anxiety, respectively, in patients with DM. Our finding is slightly higher than the finding reported by the study in India which showed overall prevalence of anxiety among 34% of patients where mild, moderate, and severe anxiety was found in 22%, 8%, and 4%, of patients, respectively, by GAD-7 scale [24]. In the same line, a study in Saudi Arabia showed mild, moderate, severe and extremely severe anxiety among 13.4, 13.0%, 6.0%, and 5.8% of patients with type 2 DM, respectively [10]. However, very low prevalence of anxiety was observed in other studies conducted in 15 nations [32] and in United States, Baltimore [33] which showed 18.0% and 21.8% overall prevalence of anxiety respectively among type 2 diabetes patients. The variation in the results might be due to nature of the patients included in these studies and different measurement tools.

Bivariate analysis of this study found the significant association of depression with other selected variables such as age in year, current living status, educational status, impact of illness on work, smoking habit, satisfaction towards current treatment, presence of comorbidities, history of diabetes in family, and history of mental problem in family. Regression analysis also found educational status, smoking status, satisfaction toward current treatment, and history of diabetes in family as significant factors associated with depression in the model. These findings are in line with other studies that highlighted the association of depression with patients' educational status, smoking status, family history of diabetes, and compliance with diabetes management [9, 17, 19, 25]. In our study, age and presence of other chronic comorbidities were not significant to the regression model, whereas Ahmad and colleagues reported the significant association of age and presence of ≥ three comorbid diseases than their counterparts in Jordan [25].

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Table 4: Association between anxiety and depression with selected sociodemographic and behavioral pattern of patients.

Variables	Anxiety		χ^2	p value	Depression		χ^2	$n = 296$ p value
	No	Yes			No	Yes		
Age group in year								
<40	10 (58.8)	7(41.2)			12 (70.6)	5 (29.4)	6.221	0.045
40–60	72 (47.7)	79 (52.3)	1.122	0.571	59 (39.1)	92 (60.9)		
≥60	67 (52.3)	61 (47.7)			54 (42.2)	74 (57.8)		
Sex								
Female	93 (52.8)	83 (47.2)	1.088	0.297	71 (40.3)	105 (59.7)	0.635	0.426
Male	56 (46.7)	64 (53.3)			54 (45.0)	66 (55.0)		
Residence								
Rural	53 (57.0)	40 (43.0)			45 (48.4)	48 (51.6)	2.107	0.147
Urban	96 (47.3)	107 (52.7)	2.400	0.121	80 (39.4)	123 (60.6)		
Family type								
Nuclear	58 (52.3)	53 (47.7)	0.260	0.610	48 (43.2)	63 (56.8)	0.075	0.785
Joint	91 (49.2)	94 (50.8)			77 (41.6)	108 (58.4)		
Current living status								
Single	28 (75.7)	9 (24.3)	10.860	0.001	24 (64.9)	13 (35.1)	8.880	0.003
With family	121 (46.7)	138 (53.3)			101 (39.0)	158 (61.0)		
Educational status								
Illiterate	44 (38.6)	70 (61.4)	10.224	0.001	33 (28.9)	81 (71.1)	13.408	<0.001
Literate	105 (57.7)	77 (42.3)			92 (50.5)	90 (49.5)		
Occupation								
Agriculture	54 (47.8)	59 (52.2)			43 (38.1)	70 (61.9)		
Homemade work	43 (55.1)	35 (44.9)	1.800	0.615	34 (43.6)	44 (56.4)	1.984	0.576
Service	26 (54.2)	22 (45.8)			20 (41.7)	28 (58.3)		
Business and others	26 (45.6)	31 (54.4)			28 (49.1)	29 (50.9)		
Family income								
Insufficient	35 (47.3)	39 (52.7)	2.006	0.367	30 (40.5)	44 (59.5)	1.499	0.473
Just sufficient	80 (54.4)	67 (45.6)			67 (45.6)	80 (54.4)		
Surplus	34 (45.3)	41 (54.7)			28 (37.3)	47 (62.7)		
Impact of illness on work								
Yes	46 (48.9)	48 (51.1)	0.108	0.742	30 (31.9)	64 (68.1)	6.007	0.014
No	103 (51.0)	99 (49.0)			95 (47.0)	107 (53.0)		
Smoking habit								
Smoking	14 (58.3)	10 (41.7)	0.949	0.622	8 (33.3)	16 (66.7)	10.546	0.005
Past smoker	49 (47.6)	54 (52.4)			32 (31.1)	71 (68.9)		
Never	86 (50.9)	83 (49.1)			85 (50.3)	84 (49.7)		

Regarding anxiety, our study found the significant association between anxiety and other variables such as current living status, educational status, satisfaction towards current treatment, medicine adherence, and history of mental problem in family. Furthermore, these variables were identified as significant factors associated with anxiety in the regression analysis model. Similarly, another study also showed the consistent results where anxiety was associated with family history of chronic diseases and compliance with diabetes management [10]. However, Ahmad et al. revealed contrasting results where educational level was not significantly associated with the anxiety of patients [25]. In our study, comorbidity was not significant in bivariate analysis as well as regression model, whereas other studies reported the positive association between anxiety and presence of comorbid diseases [10, 26]. This difference in results might be due to varied nature of healthcare systems of the countries and nature of patients included in the study.

This study adds to the dearth of information available regarding anxiety and depression among hospitalized patients with type 2 diabetes mellitus in Nepal. Despite this, it has certain limitations: (i) it is a cross-sectional study which could not explore the causal relationship between anxiety and depression with other associated factors; (ii) this study was conducted among diabetes patients who were admitted in tertiary care hospital setting which may itself mean higher anxiety and depression; (iii) it did not exclude the patients with chronic complications which might have influenced the study findings. Considering these limitations, this study suggested that the coexisting anxiety and depression in diabetes patients needs to be screened regularly in the healthcare settings to enhance the efficacy of treatment regimens and reduce an additional burden on diabetes patients.

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Table 5: Association between anxiety and depression with selected disease-related variables of patients.

Variables	Level of anxiety		χ^2	p value	Level of depression		χ^2	$n = 296$ p value
	No	Yes			No	Yes		
Duration of disease								
<3 years	34 (48.6)	36 (51.4)	0.114	0.735	36 (51.4)	34 (48.6)	3.180	0.075
≥3 years	115 (50.9)	111 (49.1)			89 (39.4)	137 (60.6)		
Number of hospital admissions								
None	80 (50.3)	79 (49.7)	2.274	0.321	62 (39.0)	97 (61.0)	2.732	0.255
<3	53 (47.3)	59 (52.7)			49 (43.8)	63 (56.2)		
34	16 (64.0)	9 (36.0)			14 (56.0)	11 (44.0)		
Medicine adherence								
Yes	138 (53.7)	119 (46.3)	8.802	0.003	111 (43.2)	146 (56.8)	0.738	0.390
No	11 (28.2)	28 (71.8)			14 (35.9)	25 (64.1)		
Satisfaction toward current treatment								
Yes	140 (54.3)	118 (45.7)	12.389	<0.001	116 (45.0)	142 (55.0)	6.146	0.013
No	9 (23.7)	29 (76.3)			9 (23.7)	29 (76.3)		
Presence of comorbidity								
No	61 (55.5)	49 (44.5)	1.833	0.176	55 (50.0)	55 (50.0)	4.332	0.037
Yes	88 (47.3)	98 (52.7)			70 (37.6)	116 (62.4)		
Number of comorbidities								
None	61(55.5)	49 (44.5)	2.460	0.292	55 (50.0)	55 (50.0)	4.538	0.103
One	47 (44.8)	58 (55.2)			38 (36.2)	67 (63.8)		
Two or more	41 (50.6)	40 (49.4)			32 (39.5)	49 (60.5)		
H/o diabetes in family								
Yes	65 (52.0)	60 (48.0)	0.239	0.625	37 (29.6)	88 (70.4)	14.147	<0.001
No	84 (49.1)	87 (50.9)			88 (51.5)	83 (48.5)		
H/o mental problem in family								
Yes	6 (21.4)	22 (78.6)	10.339	0.001	6 (21.4)	22 (78.6)	5.485	0.019
No	143 (53.4)	125 (46.6)			119 (44.4)	149 (55.6)		

Table 6: Factors associated with the anxiety of patients.

Variables	Unadjusted OR	p	Adjusted OR	p	$n = 296$ 95% CI
Educational status (1-illiterate, 0-literate)	2.169	0.002	2.192	0.003	1.318–3.646
Current living status (1-with family, 0-single)	3.548	0.002	3.098	0.008	1.340–7.164
Medication adherence (1-non-adherence, 0-Adherence)	2.952	0.004	2.791	0.010	1.273–6.122
Satisfaction towards current treatment (1-no, 0-yes)	3.823	0.001	3.744	0.002	1.619–8.662
Mental problem in family (1-yes, 0-no)	4.195	0.003	2.895	0.034	1.081–7.755

Dependent variable: anxiety; Nagelkerke $R^2 = 0.196$. OR: odds ratio.

Table 7: Factors associated with the depression of patients.

Variables	Unadjusted OR	p	Adjusted OR	p	$n = 296$ 95% CI
Educational status (1-illiterate, 0-literate)	2.509	0.001	2.581	0.001	1.487–4.481
Current living status (1-with family, 0-single)	2.888	0.004	1.335	0.502	0.574–3.104
Smoking status (1-smoker, 0-never smoker)	2.201	0.001	2.072	0.007	1.221–3.516
Impact of illness on work (1-yes, 0-no)	1.894	0.015	1.392	0.261	0.782–2.479
Presence of comorbidity (1-yes, 0-no)	1.657	0.038	1.520	0.132	0.881–2.621
Satisfaction towards current treatment (1-no, 0-yes)	2.632	0.016	3.293	0.009	1.352–8.018
History of DM in family (1-yes, 0-no)	2.522	0.006	2.181	0.006	1.253–3.797
H/o mental problem in family (1-yes, 0-no)	2.928	0.024	1.633	0.340	0.593–4.542

Dependent variable: depression; Nagelkerke $R^2 = 0.217$. OR: odds ratio.

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5. Conclusions

Depression and anxiety are high among the admitted patients suffering from type 2 diabetes mellitus. Many factors such as educational status, current living status, smoking status, medication adherence, satisfaction toward current treatment, and history of mental problem in the family are associated with anxiety and depression. Hence, there is a need to develop an integrated care model to manage these morbidities associated with diabetes mellitus.

6. Recommendations

Routine screening and counselling by nurses working in medical departments and regular visits by psychiatrists are recommended for the early detection and treatment of anxiety and depression among diabetes patients admitted in healthcare settings. Many factors are associated with anxiety and depression so these factors are needed to be considered while planning and implementing the program for the risk groups.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon request.

Ethical Approval

Ethical approval was obtained from the Chitwan Medical College Institutional Review Committee (CMC-IRC).

Consent

Participants were enrolled after obtaining written informed consent.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

KS provided the concept, designed and executed the study, interpreted the data, and prepared the report of the study. SA provided an input on concept design and collection of data for the study. GD contributed to data management and analysis. APB and MS contributed to report preparation. All authors read and approved the final paper.

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