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29 September 2023 03:53

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## TABLE OF CONTENTS

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Search Strategy.....	iv
1. Assessment of Knowledge, Attitude, and Practice of Iranian Nurses towards Toothbrush Maintenance and Use.....	1
2. Knowledge on Newborn Life Support among the Healthcare Providers in a Tertiary Care Maternity Hospital in the Southern Province, Sri Lanka.....	11
3. Spatial Distribution and Determinants of Nonautonomy on Decision Regarding Contraceptive Utilization among Married Reproductive-Age Women in Ethiopia: Spatial and Bayesian Multilevel Analysis.....	19
4. 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.....	21
5. Nursing Students' and Preceptors' Experiences with Using an Assessment Tool for Feedback and Reflection in Supervision of Clinical Skills: A Qualitative Pilot Study.....	39
6. Medication Administration Error Reporting and Associated Factors among Nurses Working in Public Hospitals, Ethiopia: A Cross-Sectional Study.....	52
7. Nursing and Midwifery Students' Satisfaction with Their Clinical Rotation Experience: The Role of the Clinical Learning Environment.....	65
8. Students' Perspectives on Learning Practical Nursing Skills: A Focus Group Study in Norway.....	80
9. The Influence of Person-Environment Fit on the Turnover Intention of Nurses in Jordan: The Moderating Effect of Psychological Empowerment.....	93
10. A Multisite Study on Knowledge, Perceived Motivators, and Perceived Inhibitors to Precepting Nursing Students within the Clinical Environment in Ghana.....	107
11. Depression and Anxiety among Patients with Type II Diabetes Mellitus in Chitwan Medical College Teaching Hospital, Nepal.....	126
12. Preceptorship of Student Nurses in Ghana: A Descriptive Phenomenology Study.....	128
13. Effect of an Educational Program on Healthcare Professionals' Readiness to Support Patients with Asthma, Allergies, and Chronic Obstructive Lung Disease for Improved Medication Adherence.....	140
14. The Effect of Hand Reflexology Massage on Pain and Fatigue in Patients after Coronary Angiography: A Randomized Controlled Clinical Trial.....	155
15. Families' Experiences Living with Acquired Brain Injury: "Thinking Family"—A Nursing Pathway for Family-Centered Care.....	167
16. Implementation of Nursing Process and Its Association with Working Environment and Knowledge in Ethiopia: A Systematic Review and Meta-Analysis.....	182
17. First-Time Mothers' Enjoyment of Breastfeeding Correlates with Duration of Breastfeeding, Sense of Coherence, and Parental Couple and Child Relation: A Longitudinal Swedish Cohort Study.....	192
18. Collaboration among Registered Nurses and Licensed Practical Nurses: A Scoping Review of Practice Guidelines.....	220
19. The Face of Workplace Violence: Experiences of Healthcare Professionals in Surgical Hospital Wards.....	231
20. Psychometric Properties of the Moore Index of Nutrition Self-Care in Arabic: A Study among Saudi Adolescents at King Saud University, Riyadh, Saudi Arabia.....	245
21. Expectation and Satisfaction with Nursing Care among Hypertensives Receiving Care at a Resource-Constrained Hospital in Ghana.....	263

## TABLE OF CONTENTS

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22. Comparing Nursing Student Competence in CPR before and after a Pedagogical Intervention.....	277
23. Improving Clinical Nurses' Development of Supervision Skills through an Action Learning Approach.....	286
Bibliography.....	300

## SEARCH STRATEGY

Set No.	Searched for	Databases	Results
S1	Nursing Research and Practice	Ebook Central, Public Health Database, Publicly Available Content Database	257225*

\* Duplicates are removed from your search, but included in your result count.

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

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## ABSTRACT (ENGLISH)

*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  $59.2 \pm 16.4$ ,  $64.2 \pm 20.6$ , and  $51.4 \pm 17.0$  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.

## FULL TEXT

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### 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 ( $\leq 49$ ), medium (50–74), and good ( $\geq 75$ ) 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 ( $\leq 49$ ) and positive ( $\geq 50$ ) 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 ( $\leq 49$ ), moderate (50–74), and good ( $\geq 75$ ) 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 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  $31.6 \pm 5.6$  and  $5.3 \pm 2.7$  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).

Table 1

Demographic characteristics of nurses.

	Variables	<i>n</i> (%)
Gender	Male	128 (39.4)
	Female	197 (60.6)
	BSc. <sup>†</sup>	299 (92.0)
	26 (8.0)	Education
	193 (59.4)	MSc.*
	43–52	Age (years)
		22–32
		33–42
		124 (38.2)
		Work experience (years)
		8 (2.5)

1–9	215 (66.2)	10–18
102 (31.4)	19–28	8 (2.5)

†Bachelor of Science; \*Master of Science.

The mean score of nurses' knowledge about toothbrush maintenance and use was  $59.2 \pm 16.4$  out of 100. The mean scores of nurses' attitude and practice were  $64.2 \pm 20.6$  and  $51.4 \pm 17.0$  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).

[figure omitted; refer to PDF]

Table 2

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

Variables	Median (IQR <sup>‡</sup> )	Mean $\pm$ SD <sup>†</sup>
Knowledge	60.0 (20.0)	59.3 $\pm$ 16.4
Attitude	66.7 (33.3)	64.2 $\pm$ 20.7
Practice	50.0 (30.0)	51.5 $\pm$ 17.1

‡Interquartile range; †standard deviation.

Table 3

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

	Variables	Median (IQR <sup>‡</sup> )	Mean $\pm$ SD <sup>†</sup>	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
	BSc. <sup>‡</sup>	60 (20.0)	58.9 (16.3)	Z = -1.24
	60 (30.0)	63.8 (17.9)	58.9 (16.3)	P = 0.213
	60 (20.0)	58.9 (16.3)	63.8 (17.9)	$\chi^2 = 1.47$
	60.1 (17.0)	P = 0.477	43–52	50 (10.0)
	Work experience (years)	1–9	60 (20.0)	55.0 (11.9)
	10–18	60 (20.0)	59.4 (17.9)	P = 0.942



‡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 <sup>‡</sup> )	Mean ± SD <sup>†</sup>	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
	BSc. <sup>‡</sup>	66.7 (33.3)	64.4 (20.3)	Z = -0.26
		66.7 (33.3)	61.5 (24.8)	P = 0.791
			63.5 (20.5)	Age (years)
			43–52	22–32
			58.4 (41.7)	66.7 (33.3)
			64.5 (24.3)	64.5 (24.3)
	Work experience age (years)	1–9	66.7 (33.3)	63.8 (20.7)
		10–18	66.7 (33.3)	65.2 (20.8)
				P = 0.737

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

Table 5

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

	Variables	Median (IQR <sup>‡</sup> )	Mean ± SD <sup>†</sup>	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
	BSc. <sup>‡</sup>	50 (30.0)	51.9 (17.2)	Z = -1.47
		40 (32.5)	46.9 (15.9)	P = 0.140
			51.9 (16.0)	Age (years)
			33–42	22–23
			40 (20.0)	50 (30.0)
			47.5 (18.3)	47.5 (18.3)
	Work experience (years)	1–9	50 (20.0)	51.5 (15.9)

$\chi^2=0.34$	10–18	50 (32.5)	51.7 (19.6)	P=0.842
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<sup>‡</sup>Interquartile range; <sup>†</sup>standard deviation; <sup>‡</sup>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.

#### 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.

### **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.

### **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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## DETAILS

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# 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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## ABSTRACT (ENGLISH)

*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.

## FULL TEXT

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### 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 (SPSS) 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.

Table 1

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

Characteristics	Frequency	Percentage
<i>Position</i>		
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
-		
<i>Gender</i>		
Female	172	90.1
Male	19	9.9
-		
<i>Age</i>		
34 years or less	68	35.6
35–50 years	90	47.1
51–65 years	14	7.3
Missing	19	9.9

### 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.

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

### 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 ( $p<0.001$ ).

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
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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)	6-8 (good)	4-5 (average)	0-3 (poor)	No (%)	No (%)	No (%)
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)

$p^*$ value is significant at 0.05.

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

Table 5

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

Designation	Knowledge on adherence to NLS guidelines			Total	Significance
5-6 (good)	3-4 (average)	0-2 (poor)	No (%)	No (%)	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.

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 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 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.

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Document 3 of 23

# 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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## ABSTRACT (ENGLISH)

**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.

## FULL TEXT

## DETAILS

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# 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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## ABSTRACT (ENGLISH)

**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.

## FULL TEXT

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### 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].

[figure omitted; refer to PDF]

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).

[figure omitted; refer to PDF]

#### **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 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 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).

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
Marital status	45–49	2	0.3
	Single	15	2.3
	Married	583	89.1
	Divorced	37	5.7
Educational status of the mother	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

### 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).

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
	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
	12	1.8	Relatives
Know postnatal care is important?	Yes	477	72.9

### 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).

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)	—

### 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 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).

[figure omitted; refer to PDF]

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
	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	Relative s
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?	YesNo	383271	58.641.4
-			
Experienced obstetric problem the last pregnancy?	Yes	376	57.5

### 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).

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)*	0.0 01
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)*	0.0 03
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)*	0.0 1
No	17	9	—	—	—	—	—
Attitude about skilled maternity care	Good	408	34	0.38 (0.23–0.63)	0.000	1	—

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

### 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).

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	—	—	Col leg e
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)*	0.04
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)*	0.01
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	—

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

### 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).

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

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

#### 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. 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 emphasizing 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 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 nonutilization 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.

#### **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.

#### **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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## DETAILS

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Document 5 of 23

# 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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## ABSTRACT (ENGLISH)

*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.

## FULL TEXT

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### 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.

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.

[figure omitted; refer to PDF]

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.

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.
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### 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, 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 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 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 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.

### **Disclosure**

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

### **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.

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

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## ABSTRACT (ENGLISH)

**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.

## FULL TEXT

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### 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.

## 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).

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	25.5	11.4
		-	
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

### 3.2. Work-Related Characteristics of the Respondents

From the participants, 106 (47.3%) had a work experience of  $\leq 4$  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).

Table 2

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

Variables	Response	Frequency	Percentage
Working experience	$\leq 4$ years	106	47.3
5–10 years	71	31.7	11–14 years
27	12.1	$\geq 15$ 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	$\leq 3$ months	15	6.7
3–6 months	119	53.1	$\geq 6$ 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

Others=NICU, OR, TB.

### 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).

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

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.

### 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).

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	3	1.3
	>50		
–			
Wrong time	1–20	126	56.3
	21–30	55	24.6
	31–40	21	9.4
	41–50	5	2.2
	>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

### 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 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 15years 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).

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)	
		Cor	AOR	Sex	Male
Yes	No				
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	≤4yrs	38 (35.8%)	68 (64.2%)	1.00	1.00
5–10yrs	28 (39.4%)	43 (60.6%)	1.35 (0.64–2.81)	1.17 (0.51–2.70)	11–15yrs
11 (40.7%)	16 (59.3%)	5.17 (2.40–11.13)	2.11 (0.84–5.30)	>15yrs	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	Agree	58 (44.6%)	72 (55.4%)	1.00	1.00
Consequence from MAE reporting	Disagree	27 (28.7%)	67 (71.3%)	0.50 (0.28–.88)	0.97 (0.47–1.99)

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

#### 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].

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.

## **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.

### **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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### **Glossary**

#### **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

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.

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## DETAILS

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# Nursing and Midwifery Students’ Satisfaction with Their Clinical Rotation Experience: The Role of the

# Clinical Learning Environment

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## ABSTRACT (ENGLISH)

*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 ( $\chi^2 (9, N=224)=80.665, p < 0.001$ ), 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.

## FULL TEXT

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### 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 Studies, 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 Bhattacharjee [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  $n = \frac{N}{1 + Ne^2}$ , 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, while 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 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%).

Table 1

Demographic characteristics of participants.

Demographic characteristics	Frequency ( <i>n</i> =224)	Percentage (%)
<i>Ages</i>		
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
-		
<i>Gender</i>		
Male	93	41.5
Female	131	58.5
-		
<i>Marital Status</i>		
Single	176	78.6
Married	45	20.1
Devoice	3	1.3
-		
<i>Religion</i>		
Christian	168	75
Moslem	50	22.3
Traditional	6	2.7
-		
<i>Ethnicity</i>		
Mole Dagbani	88	39.3
Eve	17	7.6
Ga	21	9.4
Akan	62	27.7
Others	36	16.1
-		
<i>Nursing Category</i>		

General nursing	160	71.4
Midwifery	64	28.6
-		
<i>Financial Support</i>		
Self	67	29.9
Sponsorship	15	6.7
Parents	125	55.8
Guardian	17	7.6
-		
<i>Level of Entry</i>		
Postdiploma	47	21
Generic	177	79

Source: Field Survey (2018).

### 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.

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).

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.

Table 3

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

Independent variables	$\chi^2$	Df	p-value
<i>Demographic Characteristics</i>			
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
<i>Clinical Learning Environment</i>			
Clinical learning environment	80.665	9	0.001*

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

### 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.

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).

### 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 ( $\chi^2$  (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 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 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.

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.	
		Lower	Upper				
B				Clinical learning environment	0.422	0.511	0.055
1.0	0.001*	0.404	0.619	Constant	1.374	0.169	

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

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.

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  $p \leq 0.05$ .

#### 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 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 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 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.

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## DETAILS

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

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## ABSTRACT (ENGLISH)

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.

## FULL TEXT

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### 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 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.

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...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...No. 3: You need to repeat it several times...	Communicate and collaborate Be aware of different patients Be sensitive to different situations Allowed to do it in practice Do not learn procedures by doing it only four times Need repetition and further training	Human-to-human relations Need for supervision

### 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.

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.

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)

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 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 palsy 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 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 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.

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

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## ABSTRACT (ENGLISH)

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.

## FULL TEXT

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### 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 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. [figure omitted; refer to PDF]

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.

#### 4.2. Structural Model

The results of the hypothesis are shown in Table 5.

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\*\*\*p

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

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\*\*\*p

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.

[figure omitted; refer to PDF]

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.

[figure omitted; refer to PDF]

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 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 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 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 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 Jordan 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 Jordan.

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

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## ABSTRACT (ENGLISH)

**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.

## FULL TEXT

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### 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 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 nonparticipation 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 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.

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)

### 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 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.

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)
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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.

Table 3

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

Scale items	Loadings	Perceived motivator factors
<i>Component 1</i>		
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
-		
<i>Component 2</i>		
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	-
<i>Component 3</i>		
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	

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.

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)

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.

Table 5

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

Scale items	Loadings	Perceived barriers
<i>Component 1</i>		
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
-		
<i>Component 2</i>		
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	-	
<i>Component 3</i>		
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

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.

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)

### 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 ( $r=-0.059$ ,  $p=0.216$ ), 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 diversifiers, 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 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].

#### **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 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.

#### **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 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.

### **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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## DETAILS

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Document 11 of 23

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

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## ABSTRACT (ENGLISH)

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 15<sup>th</sup> June 2018 to 17<sup>th</sup> 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.

## FULL TEXT

## DETAILS

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# Preceptorship of Student Nurses in Ghana: A Descriptive Phenomenology Study

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## ABSTRACT (ENGLISH)

*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.

## FULL TEXT

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### 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. 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 22<sup>nd</sup> 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.

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

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.

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

### 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 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 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 remunerate 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 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.

### **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.

### **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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# Effect of an Educational Program on Healthcare Professionals' Readiness to Support Patients with Asthma, Allergies, and Chronic Obstructive Lung Disease for Improved Medication Adherence

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## ABSTRACT (ENGLISH)

*Purpose.* The aim of this study was to strengthen the healthcare professionals' readiness to support patients who have asthma, an allergy, and COPD for better medication adherence. *Methods.* The design was an educational intervention in a study population ( $n=70$ ) consisting of 66 nurses and four other allied healthcare professionals working in primary care with patients diagnosed with asthma, allergy, or COPD in a county in southern Sweden. As part of two training days, an educational intervention—consisting of lectures and workshops—was conducted. Both qualitative and quantitative data were collected. The qualitative data were collected during the workshops when the participants worked with fictitious patient cases. They documented in writing how they, based on the theoretical content in the educational intervention in combination with their clinical experiences, reasoned that the fictitious patients could be supported for better adherence. This documentation constituted qualitative data. The quantitative data were collected through questionnaires, which the participants completed before and after the intervention. Data from the questionnaires were statistically analyzed using descriptive statistics and paired *t*-tests. The qualitative data collected from the workshops were analyzed with content analysis. *Results.* The intervention increased the participants' knowledge of adherence (pre mean 3.95 versus post mean 4.18,  $p=0.001$ ) and how to better support patients' adherence to medication (pre mean 3.71 versus post mean 3.98,  $p=0.001$ ). Moreover, their knowledge of how to measure patients' adherence behavior (pre mean 3.02 versus post mean 3.54,  $p=0.001$ ) and how to communicate with patients effectively about adherence was heightened (pre mean 3.92 versus post mean 4.13,  $p=$



0.011). Furthermore, participants felt that their readiness to support patients for better adherence had strengthened (pre mean 3.78 versus post mean 4.13,  $p=0.001$ ). Individual adherence support for three fictitious patients with different adherence issues was developed. *Conclusion.* An educational intervention focusing on adherence and communication equipped healthcare professionals with tools to support patients with asthma, an allergy, or COPD for better medication adherence.

## FULL TEXT

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### 1. Introduction

A plethora of studies shows that medication adherence among individuals with asthma or chronic obstructive pulmonary disease (COPD) needs to be improved [1–7]. Low adherence to medication can compromise the chances of achieving good disease control and good health-related quality of life [8, 9]. Consequently, low medication adherence for asthma and COPD is associated with increased healthcare utilization and increased healthcare costs [10, 11]. Thanks to the extensive research on adherence in recent decades, several factors that affect patients' adherence behavior to medication treatment for asthma and COPD have been identified. Some factors can be attributed to the individual, such as personality traits [12–17]. Persons with low levels of the personality traits of conscientiousness or agreeableness [13, 15, 16] or high levels of neuroticism are more likely to report lower adherence to asthma medication treatment [12–17]. Illness perceptions in terms of being more concerned about the COPD [18] have been associated with lower adherence while perceptions that asthma can be controlled by treatment or understanding asthma have been associated with better medication adherence [19]. Beliefs about medication have also been associated with adherence among persons with asthma [13, 17, 19] and COPD [18, 20]. For instance, beliefs that the medication is a necessity for the health have been associated with better adherence among patients with asthma and COPD [13, 17, 19, 20] while concerns, i.e., worries about side effects or becoming addicted have been associated with lower adherence [13]. Indeed, both side effects and complex treatment regimens are of significance for adherence among patients with asthma and COPD [21]. Yet, another influencing factor of adherence can be health literacy [22, 23], which refers to a person's ability "to gain access to, understand, and use information" to promote and maintain health [24].

Another aspect of adherence is that healthcare professionals' adherence to treatment guidelines for asthma and COPD is low [25–28] which may jeopardize patients' adherence and disease management. Nonetheless, healthcare professionals who are treating patients with asthma and COPD have a responsibility to identify patients' potential poor adherence and to promote good patient adherence to medication treatment for these diseases [8, 9, 29]. This implies that patients' adherence to prescribed medication treatment for asthma and COPD should be checked at each follow-up visit at asthma/COPD clinics [8, 9]. Further, healthcare professionals should be well aware of factors influencing adherence [29, 30] and be knowledgeable about how to address adherence issues [29]. Nurses are a valuable resource for promoting patients' adherence [31] because they work closely with patients and possess the necessary competence to support improved medication adherence, for instance, by monitoring inhaler technique and communicating with patients about their adherence behavior [32]. In Sweden, as in many countries [29], most patients with asthma and COPD are treated at asthma/COPD clinics in primary healthcare centers; these clinics are usually led by nurses highly educated in the care and treatment of asthma, allergies, and COPD and by physicians with competence in the field. In addition, nurses with competence in asthma, allergy, and COPD care independently follow up prescribed medication treatment [33]; this may also include medication adherence. However, a recent study conducted in Sweden showed that poor asthma control and emergency visits are common and that these outcomes were attributed to irregular use of maintenance medication treatment, which was used as a proxy for poor adherence. It was concluded that there is a need for interventions to improve the management of asthma in primary care [34]. It has been argued that healthcare professionals working in primary care, where most asthma and COPD patients are treated, play an important role in improving adherence. Moreover, interventions aimed at improving

adherence that healthcare professionals in primary care can implement in their daily clinical practice reach many patients with asthma and COPD. [29] Importantly, previous research shows that that asthma/COPD nurses sometimes feel uncertain when educating patients [35] and that an educational intervention among physicians increased their readiness to communicate about aspects of asthma with the patients [36]. It is, therefore, of importance to develop tools to follow if educational interventions increase health professionals' readiness to communicate about adherence with patients with both COPD and asthma. Consequently, an educational intervention with a focus on adherence and professional communication was carried out for nurses and other healthcare professionals working at asthma/COPD clinics in primary healthcare centers. The aim was to strengthen their readiness to support patients who have asthma, an allergy, and COPD for better medication adherence.

## **2. Materials and Methods**

The study design was an educational intervention, during which both quantitative and qualitative data were gathered and subjected to analyses. This was a collaborative project between Malmö University in Sweden and The Knowledge Centre for Allergy, Asthma, and COPD, Region Skåne, Sweden.

### **2.1. Study Population**

The study population consisted of asthma, allergy, and COPD nurses and other allied healthcare professionals working in primary care in a county in southern Sweden. The following inclusion criteria were used: being a registered nurse or an allied healthcare professional working at asthma/COPD clinic and participating during two annual training days. These annual training days are directed toward all registered nurses and allied healthcare professionals working at asthma/COPD clinics in primary care in one county in Sweden. The sample in the current study comprised those that participated during the training days.

### **2.2. Intervention**

An educational intervention, lasting 3½ hours, was carried out on two training days. The content in the intervention was based on the research team's overall and extensive competencies within this specific area. This means that the educational intervention was based on evidence, scientific literature on adherence, and proven experience within the research group altogether, which have been gained through adherence research, clinical practice within the field of asthma, allergy, and COPD, experience from education, planning of education, and content of lectures both at universities and in clinical practice. All of them were relevant for planning an educational intervention focusing on adherence. The intervention, which is depicted in detail in Figure 1, consisted of an educational package focusing on medication adherence and professional communication focusing on adherence. A lecture focusing on adherence to medication treatment was given, followed by a lecture focusing on professional communication. After these lectures, the research group performed three different fictitious patient cases with different adherence issues developed from clinical experiences within the Knowledge Centre. The patient cases are described in brief in Table 1. Thereafter, the healthcare professionals participated in one workshop each where they discussed different ways to support the three patients for better adherence according to patient-centered care. In a follow-up, each group orally shared their experiences of how to support better adherence and then engaged in a group discussion.

[figure omitted; refer to PDF]

Table 1

Description of the three fictitious patient cases.

*Patient number 1:* a 52-year-old woman diagnosed with asthma in childhood and prescribed regular corticosteroids for inhalation twice a day. She is very skeptical of both the asthma medication and the asthma diagnosis. She stops taking her asthma medication when she feels well. Presently, she has not taken it for the last four months. The medication was only used for two weeks after the last appointment at the asthma/COPD clinic. Thereafter, she felt well and stopped using the inhaler. In preparation for today's appointment with the nurse at the asthma/COPD clinic at the primary healthcare center, she has taken the medication. The appointment is a follow-up, as the last spirometry showed an obstructive curve. The asthma control test, 18, which is a symptom scoring assessment, shows 15. This is to be interpreted as poor disease control, though she says she feels very well. She does not believe in asthma medication or the asthma diagnosis. Rather, she believes that there is a problem with her back, which a chiropractor, in fact, told her was the case

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*Patient number 2:* a 52-year-old woman with a medical history of asthma and an allergy. Patient number 2 works as a hairdresser and loves jewelry and clothing. She is a worrier and very skeptical about and hesitant to use inhaled corticosteroids. As she believes that the body is self-healing, she prefers acupuncture to medication to get her body in balance. She is now visiting the nurse at the primary health care center because she has suffered from troublesome chest tightness and respiratory symptoms for the last six months; this has forced her to seek emergency care several times. She believes that there is something wrong with her heart, not with her respiratory airways. However, medical examinations show that her symptoms were not related to her heart but more likely to her airways. The patient is very worried and anxious. She does not believe she has asthma any longer because acupuncture healed her. For that reason, she has not used any asthma medication for years, and she has not shown up at the follow-up consultations at the asthma/COPD clinic at the primary healthcare center. Instead, she has sought health care for her heart problems

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*Patient number 3:* a 63-year-old man, and a former smoker, diagnosed with COPD three years ago. He has worked as a welder for most of his working life. He has tried to use the available protective equipment as his workplace. He says he is fine. Patient number 3 was present at his father's death, which was a traumatic experience for him because his father had a very hard time breathing. Patient number 3 cannot cope as before, but he reasons that he is no longer young—63 years old. He cannot exercise but thinks it is enough with his work and some gardening. He has been prescribed short-acting-beta2-agonist and long-acting-antimuscarinic-antagonists (LAMAs) for inhalation use. When he refilled the prescription of the LAMAs, he received another inhalator. He was annoyed that he was prescribed a cheaper medication without training about the correct inhalation technique, explaining that it was typical for the healthcare system to prescribe the cheapest one. Thereafter, his respiratory symptoms, mucus secretion, breathlessness, and fatigue increased. Eventually, he was hospitalized for COPD exacerbation. Now, he is visiting the primary healthcare center for a follow-up. He is provoked by the fact that he was prescribed a cheaper and low-quality medication stating, "They do not care about the patient; it's just about making money". He is also questioning the value of visiting the primary healthcare center

\*Regarding the prescription of medication in Sweden, it is to be noted that there is a high-cost threshold as part of the Pharmaceutical Benefits Scheme. The threshold serves to protect persons from high costs for prescribed medication, and medications are subsidized via tax funds. Moreover, pharmacies are obliged to offer cheaper medication if available as the more expensive medication is not included in the high-cost threshold. However, inhaled drugs are one of the few medications that the pharmacy must not change without contacting the prescriber [37].

### 2.3. Data Collection

The data were collected in April 2018. Both quantitative and qualitative data were gathered to answer the aim. The quantitative data consisted of self-reported background data and self-reported readiness to support adherence. First,

the participants completed questionnaires on background data. Then, they estimated their readiness to support adherence, which was done both before and after the educational intervention. The questionnaire included thirteen statements that were answered on a five-graded Likert scale, ranging from disagree=1, do not agree=2, neither or=3, agree=4, to agree completely=5. To the best of our knowledge, there were no published questionnaires measuring healthcare professionals' readiness to support adherence; therefore, the questionnaire used in the current study was developed for that purpose, and this study is the first step to test the reliability of this questionnaire. The statements in the questionnaire were developed to correspond with the content in the educational intervention, which in turn was developed based on the competencies within the research team, i.e., adherence research, clinical expertise, teaching experiences, and relevant literature. First, two of the researchers developed a set of statements for the questionnaire. Thereafter, the other two researchers checked the relevance of the statements. This was done to test the face validity of the questionnaire [38]. The qualitative data were collected during the workshops through the participants documenting in writing how they, based on the theoretical content in the lectures and their clinical experiences, reasoned that the fictitious patients could be supported for better adherence; this documentation constituted the qualitative data.

#### **2.4. Analysis**

Background data and data collected through the questionnaires were analyzed with descriptive statistics (frequencies, percentages, means, and standard deviations). Paired *t*-tests were used to evaluate the intervention regarding readiness to support patients for better adherence. The qualitative data collected from the workshops were analyzed with content analysis. The data were compiled into three data sets, one for each case representing results from all the groups ( $n=11$ ) participating in the workshops. The three data sets contained ideas of how the three different cases were to be managed to improve adherence. In the analyses, the ideas for each case were merged as a narrative [39].

#### **2.5. Ethical Considerations**

The study adhered to the Helsinki Declaration [40] and to the directives of Malmö University, both of which are in line with Swedish legislation on research ethics [41]. No personal or sensitive data were gathered from the participating healthcare professionals. The participants received information in writing about the study when registering for the training days, and the information was followed up orally during the training days. They were informed that participation was voluntary and that they could withdraw at any time without explanation. The participants consented to participate in the study by choosing to fill in the questionnaires and by submitting written ideas and suggestions during the workshops. Furthermore, they were informed that participation in the study was completely independent of participation in the intervention (educational package focusing on adherence), that the collected data from the questionnaires and workshops would be handled confidentially, and that the results would be presented at the group level, so no individual could be identified. The questionnaires were completed anonymously without any codes that could be linked to any participant.

### **3. Results**

The results are based on 70 participants of which a majority were nurses (94.3%). A total of 84.3% of the participants had undergone education in the field of asthma, allergy, and COPD, and a half (55.1%) had worked at a certified asthma/COPD clinic in primary healthcare (Table 2). Certification of asthma/COPD clinic means that the primary healthcare center can guarantee that the care of patients with asthma/allergy/COPD is quality-assured and provided by qualified healthcare professionals in accordance with the recommendations of The National Board of Health and Welfare [42]. The average work experience within the field of primary healthcare was 7.0 years. As illustrated in Figure 2, 48.6% completely agreed and 45.7% agreed with the statement "I follow up patients' adherence to the medication at each reception visit." The majority disagreed with the following three statements: "It is not part of my duties to follow up how the patients take their medication (91.4%)", "Patients' adherence to medication need not be followed up at each reception visit" (77.1%), and "The patient's inhalation technique need not be checked at each reception visit" (82.6%).

Table 2

Background characteristics of the study population (*n*=70).

Occupation: registered nurses	<i>N</i> (%)
Asthma-COPD-allergy nurse	55 (78.6)
District nurse	4 (5.7)
Nurse	4 (5.7)
Nurse specialist	1 (1.4)
Research nurse	2 (2.9)
-	
Other healthcare professionals	
Physiotherapist	3 (4.3)
Nurse assistant	1 (1.4)
-	
Education	
Bachelor degree in nursing	
Yes	36 (53.7)
No	31 (46.3)
Bachelor degree in physiotherapy	
Yes	1
No	2
Master degree in nursing	
Yes	6 (8.7)
No	63 (91.3)
Education in asthma, allergy, COPD 15 ECTS	

Yes	59 (84.3)
No	11 (15.7)
-	
Work experience	
Working at certified asthma-COPD reception	
Yes	38 (55.1)
No	31 (44.9)
Work experience in years	Mean (SD)
As a health care professional	19.5 (12.2)
At asthma, allergy, COPD reception	7.0 (5.8)

COPD=chronic obstructive pulmonary disease; ECTS=European Credit Transfer and Accumulation System; SD= standard deviation.

[figure omitted; refer to PDF]

### 3.1. Preintervention and Postintervention

As presented in Table 3, the intervention increased readiness to support patients to better adherence to some extent. After the intervention, participants scored significantly higher regarding their knowledge of adherence to medication and how to support patients for better adherence. Moreover, they reported higher readiness regarding how to ask patients about their adherence behavior, how to measure patients' adherence behavior, and how to create an effective conversation with the patients. Further, they also disclosed increased readiness to support patients for better adherence to medication. However, there were no differences between pre- and postintervention regarding what extent they found it easy to talk about adherence, knowledge of what factors influence medication adherence, and the risks of poor adherence.

Table 3

Comparisons between preintervention and postintervention regarding readiness for adherence support.

Variable	Mean (SD)Preintervention	Mean (SD)Postintervention	p value <sup>##</sup>
I believe I have good knowledge of adherence to medications	3.95 (0.65)	4.18 (0.53)	0.001
It's easy to talk about adherence	3.82 (0.81)	3.88 (0.78)	0.484
I have good knowledge of how I can support patients for better adherence	3.71 (0.76)	3.98 (0.62)	0.001

It is important to know which factors influence medication adherence	4.46 (0.79)	4.54 (0.69)	0.496
I know how to ask patients about their adherence behavior	3.68 (0.79)	3.95 (0.60)	0.007
I know the risks of poor adherence	4.29 (0.76)	4.38 (0.55)	0.292
I know how to measure patients' adherence behavior	3.02 (1.05)	3.54 (0.96)	0.001
I know how to create an effective conversation with the patients	3.92 (0.63)	4.13 (0.58)	0.011
I feel that I have the readiness to support patients for better adherence to medication	3.78 (0.72)	4.13 (0.65)	0.001

SD=standard deviation. ##Paired samples *t*-test.

Figures 3(a)–3(c) show that the majority of participants stated that they had increased their readiness by having learned about adherence, having learned how to talk about adherence, and having learned how to support patients with asthma, allergy, or COPD for better adherence.

[figures omitted; refer to PDF]

## 3.2. Results from the Workshops

### 3.2.1. Patient Number 1

During the workshops, the participants discussed how to best support patient number 1, who displayed both skepticism and reluctance, for better adherence (Table 1). They suggested that initial communication should concern ascertaining what she knows about asthma and the medications and what she wants to know. Should she seek information about asthma, it was suggested that the verbal information be combined with pictures to facilitate her understanding of the anatomy and pathophysiology of the airways of an asthmatic. One could, for example, draw a picture or use teaching material denoting both healthy and obstructive airways. In addition, it was recommended that the score of the asthma control test [43] be used when talking about asthma symptoms and everyday consequences for this patient. To facilitate her understanding, examples were given on how the medication worked and what happens if the medication was not used. Because this patient had concerns about using the corticosteroid inhalation and because she did not adhere to the prescribed medication, the participants related the importance of explaining to her why medications are crucial and why inhaling corticosteroids are less dangerous than having swollen/inflamed airways. Here, they suggested that pictures of both healthy and obstructive airways be used to explain the effect of the corticosteroids. Another suggestion to address this patient's concerns with the medication was to draw parallels with other medications, for instance, the use of paracetamol when needed in the same way as one uses short-acting-beta-2-agonist as a reliever when having asthma symptoms.

The participants suggested that the self-care should focus on the patient's own goals: they suggested to include follow-ups, both at the asthma/COPD clinic in the primary healthcare center and through telephone calls. Further, they recommended a written self-care plan and a peak-expiratory flow meter to enable the patient to document and follow improvements and deteriorations with and without asthma medication.

### 3.2.2. Patient Number 2

During the workshops, the participants discussed how to best support patient number 2 (Table 1) for improved adherence to asthma medication. They conveyed the importance of respecting the patient's own opinions while trying to initiate traditional treatment. They wanted to determine the reasons behind her skepticism and, perhaps, fear of inhaled corticosteroids. The participants suggested earning her trust through being patient and having a conscientious initiation and long-term planning. Furthermore, they suggested that this patient be informed about

anatomy and pathophysiology with the help of pictures or drawings. An example was the use of Internet information videos as a means to explain her symptoms as coming from her lungs, not her heart.

Participants advised drawing spirometry curves to show the differences between taking medications and not. Moreover, it was proposed that patient number 2 needed repeated information and education concerning how asthma medications work preventively: short-acting with a long-term effect. This could be realized through, for instance, emphasizing that regular use of cortisone inhalations helps to maintain normal lung function and prevent chest tightness. Participants communicated that they would try to get this patient to give the medication a chance. Thus, they suggested that she started with short-acting-beta2-agonists, thereby enabling her to feel the immediate effect of the medication. In addition, they proposed she be given a written treatment plan. They underlined the importance of letting patient number 2 choose the inhaler and of then informing her how it worked. To facilitate this, both additional and repeated information about how the inhaler worked would be given.

Regarding self-care for patient number 2, it was suggested that she might benefit from a patient-training group, i.e., an asthma school for peer-support. Participants also discussed whether she might need some kind of psychological counseling, due to her anxiety, and future support in the form of exercise or yoga/mindfulness. Moreover, there was concern that her asthma might be exacerbated through her occupational use of hairdressing products. However, the priority was to motivate her to return to the asthma/COPD clinic in the primary healthcare center.

### **3.2.3. Patient Number 3**

To improve patient number 3s (Table 1) adherence, the participants recommended support with the practical inhalation technique, including loading of the medication. Moreover, he should have a written treatment plan. It was advised that the asthma/COPD nurse be contacted when new inhalers were prescribed so instructions on use should be given. If problems with the correct inhaler technique, spray+spacer, were discussed, he could, as an alternative, during follow-ups receive information about the new medication, which could be evaluated, for instance, by using the COPD Assessment Test (CAT™) [44]. However, participants also recommended a timely consultation with an asthma/COPD nurse, preferably in the presence of a next-of-kin, as patient information and education were considered important for this patient. He was deemed to need more information regarding COPD, learning early signs of exacerbation, and knowing how to avoid ending up in emergency care. For COPD, they recommended displaying uncomplicated anatomy with posters of healthy airways. Though patient number 3 should be praised for smoking cessation, it was considered important that he received information about oxygen uptake. Because he worked as a welder, the participants considered it important to remind patient number 3 of his work environment and the importance of using respiratory protection. Future planning for patient number 3 was to encourage him to initiate contact with a patient association for peer-support, to initiate training for regular exercise, and to invite him to participate in COPD school, i.e., patient-adapted education. In the future, participants needed to plan for interprofessional care and treatment.

## **4. Discussion**

The aim of the current study was to strengthen the healthcare professionals' readiness to support patients who have asthma, an allergy, and COPD for better medication adherence. The results showed that the majority of the participating healthcare professionals checked patients' adherence at each visit. Furthermore, they saw it as their duty to check for adherence when patients visited the asthma/COPD clinic. However, it would have been preferable that all had measured adherence at each visit in order to comply with international guidelines [8, 9]. Comparisons between preintervention and postintervention revealed that the educational package seemed to have strengthened the healthcare professionals' readiness to support patients with asthma, an allergy, and COPD for better medication adherence. The workshops resulted in individual adherence planning for the three fictitious patients that was in line with both international [8, 9] and national guidelines [42].

As nurses have a unique combination of competence as caregivers and as patient educators, they play a significant role in supporting patients with asthma [45], allergies [46], and COPD [47] with the management of their health conditions. A systematic review shows that educational interventions conducted by nurses supported patients with asthma in acquiring more knowledge of the condition. This helped them to better manage their asthma, which in turn



can contribute to a reduction of asthma morbidity and symptoms [48]. However, it has been reported that asthma/COPD nurses sometimes feel uncertain when educating patients [35]. Therefore, an intervention in the form of an educational package consisting of lectures and workshops aimed at heightening the readiness of healthcare professionals, the majority of them being nurses, to support patients for better medication adherence for asthma, allergies, and COPD was considered prudent. Raising their readiness may contribute to them supporting their patients' improved medication adherence. The intervention not only increased the participants' knowledge of adherence but also their knowledge about how to support patients for better adherence and how to create an effective conversation about adherence. Additionally, their readiness to support patients for better medication improved. Our findings are in line with a former study based on physicians that showed that intervention increased readiness to communicate about aspects of asthma, such as symptoms and treatment goals, after the participants had an educational intervention [36]. From an educational viewpoint, the current study shows that an adherence intervention increases nurses' and other healthcare professionals' awareness of adherence issues among patients with asthma and COPD and their readiness to address these issues. From a clinical viewpoint, this implies that educational interventions focusing on adherence similar to the one presented in this study targeting nurses and other healthcare professionals can be offered regularly. Thereby, nurses and other healthcare professionals become empowered enough to empower the patients to better adherence. As adherence to medications for asthma and COPD continues to be low [1–7] and leads to increasing healthcare costs [8, 9] and poor health outcomes [10, 11], addressing adherence is a continuous work and empowering patients to better adherence requires know-how. Thus, in order to be able to tailor the educational readiness of health care professionals, it is of importance to monitor which interventions increase the interest of talking about adherence with their patients. Medication adherence is a complex phenomenon, which is influenced by a number of different factors. Those are related to the patient, the disease and associated treatment, the healthcare system, and healthcare professionals [49]. Together, this argues that improving adherence requires joint efforts in cooperation between different factors such as patients, healthcare professionals, healthcare providers, and policymakers and is not an exclusive responsibility for patients, nurses, and other healthcare professionals.

Although a former study showed that patients with asthma who regularly attended asthma follow-up consultations in primary health care had better adherence [2], there remains considerable room for improvement concerning medication adherence for both asthma and COPD [1–7]. Most likely, tailored interventions are needed if adherence is to be improved, as one method does not fit all. This places demands on healthcare professionals who need knowledge about how adherence support can be tailored to each patient [21]. To practice developing individual adherence support, the participants in the current study were presented for three fictitious patients who all three had different reasons for nonadherence to the prescribed treatment. During the workshops, the participants practiced developing tailored interventions to act on the patients' poor adherence. One of the fictitious patients, patient number 1, was reluctant to accept her asthma diagnosis; consequently, she was hesitant to use the prescribed asthma medication. Poor adherence to asthma medication treatment can be seen as a rational response from a patient perspective. Questioning one's diagnosis or believing that asthma is not an acute condition is perceptions of illness, which have been associated with adherence to asthma medication treatment [19, 50]. During the workshops, the healthcare professionals, for instance, suggested addressing patient number 1's illness perceptions by focusing on what she knows about asthma and the medications and on what she wants to know. Both patient number 1 and number 2 held concerns about their asthma medication and corticosteroids, in particular. Assumptions about medications are recognized as influencing factors of adherence. Patients with asthma who have concerns about the medication are less likely to be adherent in comparison to those who regard the medication as necessary for their health [13]. Moreover, because patients with asthma who are followed up regularly at asthma/COPD clinics in primary health centers are more inclined to see their medication as necessary, this may indicate that healthcare professionals can influence patients' assumptions [2]. During the workshops, the participants suggested that the concerns about the medication that both patient number 1 and number 2 had needed to be addressed. Importantly, they proposed different approaches. For patient number 1, a more educational approach was planned, while for

patient number 2, the importance of them being conscientious and having a long-term plan to win her trust was underlined. Personality characteristics are associated with adherence behavior. For instance, worriers like patient number 2 are more likely to be less adherent to asthma medication treatment [13–16]. Thus, healthcare should be aware of patients' different personality characteristics when planning for adherence support as individual differences influence adherence behavior. Previous research has shown that the personality traits of agreeableness, conscientiousness, and neuroticism are associated with adherence to asthma medication [12–17]. Persons with lower levels of agreeableness tend to be skeptical and less into cooperation, persons with lower levels of conscientiousness are less goal-directed, and persons with higher levels of neuroticism are more worried and anxious [51]. These personality characteristics are by nature associated with lower adherence [13]. Increased awareness of how personality characteristics influence adherence is important in efforts to promote adherence and, therefore, was a necessary ingredient in the current educational interventions aimed at heightening healthcare professionals' readiness to support patients to better adherence. During the current workshops, the participants practiced planning tailored adherence support for patient number 1, who was reluctant and skeptical about her asthma diagnosis, and for patient number 2 who was worried and anxious.

Nurses play a central role in educating patients about practical inhaler techniques [32]. Indeed, nurse-led education has been successful in improving the inhaler technique for patients with asthma [52] and with COPD [53]. In the current study, the fictitious patient number 3 who had COPD was unintentionally nonadherent—meaning that he expressed a willingness to adhere to the prescribed medication for COPD; however, adherence failed due to incorrect inhaler technique [21]. During the workshops, the planned adherence support for this patient included a written treatment plan stating, for instance, that the asthma/COPD nurse should be contacted when new inhalers were prescribed. The nurse could then instruct patient number 3 on how to use the new ones; this would serve to minimize the risk for unintentional nonadherence. Because poor inhaler technique is common among patients with COPD [54] and asthma [55], a suggestion for a clinical implication is that educational interventions to teach patients with COPD and asthma correct inhaler technique are routinely introduced as a health policy for asthma/COPD clinics. Additionally, timely consultation with an asthma/COPD nurse, preferably in the presence of a next-of-kin, was planned for patient number 3 because he seemed to be in need of more information and education about COPD and the treatment. This may indicate that this patient had lower health literacy, which is an essential influencing factor of adherence among patients with COPD [23]. Therefore, it is of vital importance to check that the patient understands the health information provided.

#### **4.1. Methodological Considerations**

A strength of the current study was the sample and their competence within the field. The participants had several years of clinical work experience at asthma/COPD clinics in primary healthcare centers. Additionally, the majority had undergone theoretical education within the field of asthma, allergy, and COPD care. In Sweden, it is mandatory to have theoretical education in this field to work at asthma/COPD clinics, which may not be the same in other countries. This potential difference in education between countries could, thus, interfere with the representativeness of the sample. Despite their competence, the intervention increased their readiness to support patient adherence. This increase may be ascribed to the possibility of discussing and sharing clinical experiences with colleagues from other clinics. Further, the discussion and sharing of clinical experience took part in the content in the educational intervention. This may indicate that education about adherence is to be included in syllabi in both theoretical and practical education for healthcare professionals and be continued thereafter. Regarding the generalizability of the results, the clinical work experience and theoretical education among the participants need to be taken into consideration. If the participants had had less experience, maybe, the effect of the intervention and the content in the adherence support generated from the workshops had been different. Most of the sample consisted of nurses, which could be considered a strength as both nurses and physicians lead the asthma/COPD clinics in primary health care. At the same time, not having other healthcare professionals attend the training days can be seen as a limitation, as a treatment for asthma and COPD involves interprofessional competence. When designing the study, there was no questionnaire available for measuring healthcare professionals' readiness to support patients to better

adherence. Therefore, a questionnaire was developed for that purpose, and it may serve as an implication for future research focusing on further development and testing for the questionnaire measuring healthcare professionals' readiness to support patient adherence. Importantly, the statements in the questionnaire were based on the competencies within the research team, which included experience from individual adherence research, clinical expertise within the field, and teaching skills with a special focus on communication. To test face validity [38], the statements in the questionnaire were developed by two of the researchers and the other two checked the relevance of the statements for measuring readiness for adherence. This overall competence argues that the content in both the educational intervention and the questionnaire is valid for its purpose: to raise healthcare professionals' readiness to support patients to better adherence and to measure readiness. As to reliability, the questionnaire was used in two different educational sessions, and the results from both groups were comparable, indicating that the next step could be to do a test-retest reliability check of the questionnaire. Moreover, the study design did not enable an evaluation of the intervention with consideration to patients' adherence. However, improving communication behavior among physicians has resulted in better asthma outcomes [36]. Hopefully, the outcome of our study will inspire nurses and other healthcare professionals at asthma/COPD clinics to include adherence planning for patients, which in turn will improve adherence to medication treatment. Performing an educational intervention as in the current study but with one intervention group and one control group and evaluating the effect on patients' adherence is indeed an implication for future research.

## 5. Conclusion

An educational intervention consisting of an educational package of lectures and workshops increased healthcare professionals' readiness to support patients with asthma, an allergy, or COPD for better medication adherence. Workshops can be useful for practicing the planning of individual adherence support for patients with different adherence issues. This may indicate that educational interventions consisting of a combination of theoretical and practical content focusing on adherence equip healthcare professionals with tools to support patients with asthma, an allergy, or COPD for better medication adherence.

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## DETAILS

<b>Subject:</b>	Emergency medical care; Acupuncture; Personality traits; Asthma; Inhalers; Clinical medicine; Clinics; Communication; Intervention; Patient compliance; Primary care; Allergies; Chronic obstructive pulmonary disease; Nurses; Disease control; Content analysis
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# The Effect of Hand Reflexology Massage on Pain and Fatigue in Patients after Coronary Angiography: A Randomized Controlled Clinical Trial

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## ABSTRACT (ENGLISH)

*Introduction.* Coronary angiography can cause pain and fatigue in patients. Hand reflexology as complementary and integrative care approach has been suggested to help with the reduction of patient's pain and fatigue. *Aim.* This study aimed to investigate the effect of hand reflexology on pain and fatigue in patients after coronary angiography. *Design.* A randomized controlled clinical trial. *Methods.* This study was conducted on 90 patients in an angiography department of a referral hospital in an urban area of Iran. The patients were randomly divided into two interventions ( $n=45$ ) and control ( $n=45$ ) groups. Hand reflexology was performed for 20 minutes in the intervention group. Pain and fatigue in the groups were measured immediately, 4 and 6 hours after the intervention. *Results.* Statistically significant differences were observed in pain and fatigue scores between the groups after the intervention ( $P=0.001$ ). The intervention had medium to large effects on the patients' pain and fatigue. Hand reflexology as a nonpharmacological and safe technique can be used by nurses along with other pharmacologic interventions in order to reduce patients' suffering related to invasive procedures. The trial is registered with IRCT20110912007529N17.

## FULL TEXT

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### 1. Introduction

Cardiovascular disease (CVD) is the major cause of morbidity and mortality across the world [1]. It has become one of the major health concerns in developing countries [2, 3].

Coronary angiography has been recognized as the best method for the diagnosis of CVD [4]. Since the 1940s, this procedure has been used for understanding anatomy, blood circulation, physiology, and pathology of coronary arteries. Coronary angiography plays an important role in the diagnostic of patients with CVD and is accompanied by a minimum risk [5]. Annually, more than 1 million coronary angiographies are performed in the USA, and more than 70% of hospitals perform this procedure on asymptomatic patients [6, 7]. The most common side effects of coronary angiography are bleeding, hematoma, artery thrombosis, pain, and fatigue [8].

Pain is considered the most important complaint experienced by patients after coronary angiography. While analgesic medicines are prescribed to patients after this invasive procedure, they often report mild to moderate pain [9]. After coronary angiography, patients are asked to stay in bed for 6–24 hours to prevent bleeding, hematoma, and embolism. Staying in bed for 6 hours is intolerable and leads to discomfort, backache, and fatigue in patients [10]. Also, the pain increases the number of breaths and reduces the lung volume, because of initiating stress responses, and finally increases the risk of myocardial ischemia [11, 12]. Enough attention should be paid to older patients' complaints regarding pain and fatigue, because they negatively influence their mental health and wellbeing [13]. Therefore, relieving pain and fatigue after coronary angiography needs appropriate interventions by nurses to prevent their negative effects on patients' recovery and the length of hospital stays [9, 14].

### 2. Background



A great challenge of nursing care is to ensure the patient's comfort and relaxation after invasive and painful procedures [15]. Pharmacologic pain management confers both benefit and harm. Nurses often are concerned with adverse drug reactions and side effects of medications that may compromise the patient's health and wellbeing [16]. Analgesic medicines are accompanied by adverse effects including sedation, emesis, anxiety, agitation, and delirium. They may also lead to the prolongation of the length of hospital stays and an increase of healthcare costs [16–18]. On the other hand, nonpharmacologic methods in the form of complementary and alternative medicines are safer [18]. They are nonexpensive interventions, have a few side effects, and can be used in nursing practice [20, 21].

Reflexology is one of the most common complementary methods, but the mechanism underlying its effect has not been clearly understood. It has been suggested that during reflexology energy circulates in the body through vertical zones from the leg toward the head. Therefore, the application of pressure on a reflective point of an organ can impact all organs, glands, bones, and muscles [22]. Reflexology is a comprehensive health method consisting of the application of pressure on the foot and palm. In terms of lexicon, the reflex is nonvoluntary contraction caused by an external stimulant. However, reflex in reflexology means reflection or mirror picture, which reflects small points as a mirror [22]. Since each body organ has reflections in the foot, palm, and ear, reflexology experts believe that hands and feet are the body's mirror and map of the body embodies in hands and feet. Therefore, certain reflective stimulant influences related organs and systems [23, 24]. All organs and glands in the body are associated with reflective points in feet, hands, and ears. Reflexology creates a feeling of security and safety through the reduction of tension and stress [25]. In fact, the application of deep pressure in certain parts of the body can be used for relieving pain [26].

Various theories have been presented to describe the effect of reflexology and one of them is the stimulation of neural receptors through emphasizing the relationship between the central and peripheral nervous systems [23, 24, 27]. Reflexology has been shown to reduce pain and fatigue in chronic diseases such as in patients with lymphoma [28]. Applying pressure on a certain point on the hand and foot can increase blood circulation, neural impulses, and secretion of endorphin and improve the body function [29, 30]. Researchers have raised theories for explaining biological, physiological, and metaphysical mechanisms of reflexology including the energy channel theory, meridian theory, nerve impulse theory, electromagnetic theory, pain gate control theory, and zone theory [24, 31]. According to the gate control theory by Wall and Melzack in 1965, painlessness is caused by the electrical stimulation of the nerve. Reflexology acts as the transcutaneous nerve stimulation (TENS), which transfers the pain message to the brain and blocks the pain perception path. Also, it is believed that reflexology acts by releasing endorphin and enkephalin as natural seducers to resist pain [18, 24]. According to Fitzgerald's reflexology zone theory in 1971, the human body is divided into 10 vertical zones as 5 equal zones in each side of the body from the head to thumb. Therefore, the application of pressure by fingers on each side reduces pain at that side. According to the Chi theory, energy circulates in the body in certain pathways [32]. The attentional models of pain perception describe pain reduction in response to reflexology and due to distraction [22, 33]. Therefore, the positive effects of reflexology are the result of the relationship between patients and the therapist, rather than the characteristics of the intervention [34]. This method is often used for symptomatic treatments along with pharmaceutical treatments [35]. Current studies have shown that reflexology is a noninvasive and safe nursing intervention [18, 36, 37]. Hand reflexology can be used to improve physical and psychological symptoms in patients with various types of health conditions [38–41], but its effect on patients after coronary angiography has not been studied yet. Therefore, this study was conducted to investigate the effect of hand reflexology on pain and fatigue in patients after coronary angiography.

### **3. Materials and Methods**

#### **3.1. Design**

This was a randomized controlled clinical trial with a pre-post intervention design. The outcome measure was the impact of hand reflexology on patients' reported pain and fatigue after coronary angiography. Figure 1 displays the recruitment, allocation, and follow-up of participants according to the CONSORT flow diagram.

[figure omitted; refer to PDF]

### 3.2. Setting and Sample

This study was conducted on patients scheduled for an elective coronary angiography in a high turnover coronary angiography department of a hospital affiliated with a University of Medical Sciences in an urban area of Iran, from 2 March 2018 to 31 July 2018. This coronary angiography department treats over 280 patients every month.

### 3.3. Eligibility Criteria

The following inclusion criteria were used to select participants: age >18 years, scheduled to undergo coronary angiography for the first time, no invasive procedures such as transesophageal echocardiography prior to coronary angiography, non-emergency coronary angiography, no previous history of coronary angiography, no vascular injuries in the upper limbs and sensory-motor disorders in hands, absence of abnormalities such as corns, burns, amputations, and skin lesions in hands, lack of intervertebral disc herniation, no previous history of mental disorder, and no disturbance in the consciousness level.

Exclusion criteria were hemodynamic instability including dysrhythmia, respiratory disorders, and severe changes in blood pressure that require emergency interventions, bleeding after coronary angiography, and unwillingness to participate in this study.

### 3.4. Sample Size and Recruitment

Given the sample size of a previous study [42], alpha 0.05, 95% confidence interval, power 80%, and 20% possibility of samples' dropout, the sample size was estimated 45 patients in each group using the following sampling formula:

$$(1)n=za/2+z\beta^2\sigma^2+\sigma^2d^2=1.96+0.852*3.052+2.9722.68-4.632=37.41\approx 38.$$

Lost=20%=7 per group.  $\alpha=5\%$ ,  $\beta=20\%$ ,  $d=3.80$ ,  $s_1=3.05$ ,  $s_2=2.97$ , group=2. Total sample=2\*45=90.

The head nurse of the coronary angiography unit was informed of the study's purpose and inclusion criteria to help with the identification of eligible patients. The patients were selected using a convenient sampling method and were assigned to intervention and control groups using a random sampling method. The group assignments were performed using the block basis sequence by the second author who was unaware of the patients' assignments using a table of random numbers. The random allocation sequence with 23 quadruple blocks with letters A or B indicating the sequence was generated by the statistical adviser. Sealed opaque envelopes containing cards were used, and the size of blocks was not announced to prevent selection bias. The sampling process continued until the required number of the participants was recruited to intervention (hand reflexology) and control (routine nursing care) groups.

### 3.5. Measures

Data was collected using a questionnaire consisting of three parts as follows.

#### 3.5.1. The Demographic Data Form

It was filled out using the patient's medical file or through interviewing the patients. It included items about the patients' age, gender, education level, marital status, employment status, history of smoking or drug use, and medical diagnosis.

#### 3.5.2. Numeric Rating Scale (NRS)

The effect of hand reflexology on self-reported pain was measured using the NSR as a valid instrument for pain assessment in critically ill patients. It is an 11-point scale with equal divisions for self-reporting of pain by adults and children aged 10 years old or older. The range of scores was between 0 and 10 with the following ratings: 0 (lack of pain), 1–3 (mild pain), 4–6 (moderate pain), and 7–10 (severe pain) [43].

#### 3.5.3. The Rhoten Fatigue Scale (RFS)

It consists of a 10cm line with extremely positive statements on one end and extremely negative statements on the other end. The most positive and negative fatigue statements were scored between 0 and 10, respectively. The ratings of this line were from 0 (lack of fatigue), 1–3 (mild fatigue), 4–6 (moderate fatigue), 7–9 (severe fatigue) to 10 (very severe fatigue). The test-retest method has shown the reliability of this instrument to be 0.93 [44].

### 3.6. Procedure

After obtaining permission to conduct the study, one male nurse and one female nurse received education and

training on reflexology for 3 months under the supervision of a reflexology expert. After 2 hours of coronary angiography, baseline data was collected. The nurses greased the patients' hands using sweet odorless almond oil and performed hand reflexology according to the Ingham's method for 20 minutes as 10-minute pressure on the right hand and then the left hand. First, the whole palm was given the pressure for 2 minutes. Three areas reflecting the solar plexus, heart, and pituitary were pressured. The downward pressure was applied with the thumb in the heart, pituitary, and solar plexus [27, 45]. Next, circular pressure was applied on the same points. The hand reflexology was performed by the male nurse on male patients and by the female nurse on female patients. In the control group, only routine care was provided without hand reflexology consisting of being placed in the supine position in the complete bed rest condition and without receiving any medication. Pain and fatigue levels in the groups were measured immediately after the intervention and 4 and 6 hours after it.

It was impossible to blind the patients with regard to the groups' assignment due to the nature of the intervention. Also, the blindness of the theatre nurses due to the presence of the reflexologist in the unit was impossible. Nevertheless, the statistical analyzer was unaware of the patients' allocation to the groups. In addition, the randomization code was available only to a research fellow who was not connected to this study and was disclosed to the researchers after completing the statistical data analysis.

### 3.7. Statistical Procedures

Descriptive and inferential statistics were used for data analysis via the SPSS software version 20 (SPSS Inc., Chicago, IL, USA). The Kolmogorov-Smirnov test was used to assess data in terms of normal distribution. Data was coded and tabulated to present them in terms of frequency, percentage, mean, and standard deviation. Inferential statistics consisted of the Chi-square test, *t*-tests, and Cramer's V to investigate the intervention's effectiveness and its effect size.

### 3.8. Ethical Considerations

The permission to enter the research zone was granted by the ethics committees affiliated with Shahed University (decree code: IR.Shahed.REC. 1396.52). All participants gave their informed consent prior to entering the study. For illiterate patients, the informed consent documentation was read aloud by their companions or relatives and they were asked to add their fingerprints if they were willing to take part in the study. Verbal informed consent was also obtained. Numbers rather than names were used to deidentify the participants and ensure confidentiality and anonymity. The purpose and method of the study were described to the patients. Also, their confidentiality throughout the study was ensured. A cardiologist was available during the procedure to intervene if any adverse effect occurred, but no adverse events or complications related to angiography or hand reflexology were reported by the patients indicating the safety of reflexology. The study research protocol was registered on the Iranian Registry of Clinical Trial under the code of IRCT20110912007529N17.

## 4. Results

Of 123 patients assessed for eligibility, 90 patients met the inclusion criteria and were recruited. All approached agreed to participate and were assigned to either the intervention or the control group (*n*=45 in each group).

### 4.1. Demographic Characteristics of the Participants

The patients in the intervention and control groups had a mean age of  $60.60 \pm 12.77$  years and  $57.75 \pm 10.34$  years, respectively. No statistically significant differences were reported between the groups in terms of sociodemographic and clinical characteristics at the baseline ( $P > 0.05$ ) Table 1.

Table 1

The baseline characteristics of the patients in the groups.

Variable	Control ( <i>n</i> =45)	Intervention ( <i>n</i> =45)	test, P value
Age mean (SD)	57.75 (10.34)	60.60 (12.77)	<i>t</i> (88) = -1.16, <i>P</i> = 0.24

Kolmogorov–Smirnov test		D (45)=0.12, P=0.06	D (45)=0.06, P=0.20	
Variable	n (%)	Control (n=45)	Intervention (n=45)	test, P value
Gender	Male	33 (36.7%)	24 (26.7%)	Chi-square $\chi^2$ (1)=3.87, P=0.07
	Female	12 (13.3%)	21 (23.3%)	Married
	40 (44.4%)	32 (35.6%)	Chi-square $\chi^2$ (1)=4.44, P=0.06	Married
	13 (14.4%)		Single	5 (5.6%)
			-	
Education level	Illiterate	16 (17.7%)	13 (14.4%)	Chi-square $\chi^2$ (4)=4.36, P=0.35
	Elementary	8 (8.9%)	12 (13.3%)	Middle school
	9 (10%)	Diploma	4 (4.4%)	6 (6.7%)
	11 (12.2%)	8 (8.9%)		Academic
			-	
Occupation	Housekeeper	11 (12.2%)	12 (13.3%)	Chi-square $\chi^2$ (3)=0.18, P=0.98
	Self-employed	14 (15.6%)	13 (14.4%)	Employee
	9 (10%)	Retired or disabled	10 (11.1%)	11 (12.2%)
Smoking and drug use	Tobacco	8 (8.9%)	7 (7.8%)	Chi-square, $\chi^2$ (3)=0.70, P=0.87
	Opium	7 (7.8%)	5 (5.6%)	Both
	8 (8.9%)	None	24 (26.7%)	25 (27.8%)
Primary diagnosis	Coronary disease	15 (16.7%)	13 (14.4%)	Chi-square, $\chi^2$ (3)=1.38, P=0.71
	Myocardial infarction	12 (13.3%)	14 (15.6%)	Unstable angina
	10 (11.1%)	Ventricular disease	5 (5.6%)	8 (8.9%)

Nitro drip	No	13 (14.4%)	12 (13.3%)	Chi-square, $\chi^2 (1)=0.05$ . P=0.99
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#### 4.2. Pain after the Intervention

At the baseline, the pain level in the control and intervention groups had no statistically significant difference ( $P>0.05$ ). However, it showed statistically significant differences between the groups during the measurement times ( $P=0.001$ ), and the severity of the effect of reflexology was reported to be large (Table 2).

Table 2

Comparison of pain between the groups before the intervention and at follow-up.

Time	Group (n=45)	No (0) n (%)	Mild (1-3) n (%)	Moderate (4-6) n (%)	Severe (7-10) n (%)	test, P-value
Baseline	Control	—	4 (4.4%)	30 (33.3%)	11 (12.2%)	Chi-square $\chi^2 (2)=4.86$ . P=0.08
Intervention	—	12 (13.3)	24 (26.7%)	9 (10%)		-
Immediately after the intervention	Control	—	5 (5.6%)	13 (14.4%)	27 (30%)	Chi-square $\chi^2 (2)=32.45$ . P=0.001 Cramer's V=0.60 Large effect
Intervention	—	24 (26.7 %)	18 (20%)	3 (3.3%)		-
4 hours after the intervention	Control	0 (0%)	10 (11.1%)	18 (20%)	17 (18.9%)	Chi-square $\chi^2 (3)=35.95$ . P=0.001 Cramer's V=0.63 Large effect
Intervention	11 (12.2%)	26 (28.9 %)	6 (6.7%)	2 (2.2%)		-
6 hours after the intervention	Control	—	3 (3.3%)	15 (16.7%)	27 (30%)	Chi-square $\chi^2 (2)=42.87$ . P=0.001 Cramer's V=0.69 Large effect

#### 4.3. Fatigue after the Intervention

At the baseline, the fatigue level had no statistically significant difference in the control and intervention ( $P>0.05$ ). After the intervention, statistically significant differences between the groups during the measurement times were reported ( $P<0.05$ ). The severity of the effect of reflexology was reported to be moderate immediately after the intervention and was reported large 4 and 6 hours after it (Table 3).

Table 3

Comparison of fatigue between the groups before the intervention and at follow-up.

Time	Group (n=45)	No (0) n (%)	Mild (1-3) n (%)	Moderate (4-6) n (%)	Severe (7-9) n (%)	Very severe (10) n (%)	test, P value
Baseline	Control	5 (5.6)	-	16 (17.8)	-	24 (26.7)	Chi-square $\chi^2$ (2)=4.58. P=0.10
Intervention	8 (8.9)	-	23 (25.6)	-	14 (15.6)	-	-
Immediately after the intervention	Control	3 (3.3)	5 (5.6)	11 (12.2)	9 (10)	17 (18.9)	Chi-square $\chi^2$ (4)=12.48. P=0.01 Cramer's V=0.37 Medium effect
Intervention	6 (6.7)	10 (11.1 %)	19 (21.1)	5 (5.6)	5 (5.6)	-	-
4 hours after the intervention	Control	0 (0)	7 (7.8)	10 (11.1)	24 (26.7)	4 (4.4)	Chi-square $\chi^2$ (4)=43.36. P=0.001 Cramer's V=0.69 Large effect
Intervention	6 (6.7)	28 (31.1 )	2 (2.2)	2 (2.2)	7 (7.8)	-	-
6 hours after the intervention	Control	0 (0)	8 (8.9)	13 (14.4)	19 (21.1)	5 (5.6)	Chi-square $\chi^2$ (4)=42.70. P=0.001 Cramer's V=0.68 Large effect

## 5. Discussion

This study aimed to investigate the effect of hand reflexology on the patients' reported pain and fatigue after coronary angiography. After the intervention, it was found that hand reflexology reduced the patients' pain and fatigue. The hand reflexology group reported lower pain and fatigue levels than the control group. While the effect of hand reflexology after coronary angiography has not been studied in the past, our findings concur with those of previous studies indicating the effectiveness of hand reflexology for managing pain or fatigue in patients with various health conditions. Aliasgharpoor et al. and Shaer Moghadam et al. [38, 41] found that hand reflexology reduced fatigue in patients undergoing hemodialysis. Irani et al. [39] showed the effect of hand reflexology on the reduction of postcesarean pain and anxiety. The study by Wang and Keck [46] supported its effect on postoperative pain. Cassileth and Vickers [47] reported substantive improvements in the symptoms of patients with cancer after hand reflexology. Hodgson and Lafferty [48] studied the effects of reflexology and Swedish massage on stress and pain in older cancer survivors in nursing homes. Accordingly, both types of massage improved patients' outcomes. Rambod et al. [28] showed that reflexology was helpful for the reduction of fatigue and pain in patients with lymphoma. The application of hand reflexology only for one session can be considered a limitation of this study. Therefore, to remove the effect of the "healing crisis" or "cleansing process," [49] the reflexology intervention should be applied in more sessions. Impossibility to blind the researchers and the participants to the group allocations and the assessment of pain and fatigue using the self-report method are the other limitations of this study.

## 6. Conclusions

Hand reflexology reduced fatigue and pain in patients after coronary angiography. It is a nonexpensive and safe intervention that does not need any special equipment unless specific instructions that are given to nurses on how to implement it and how to incorporate it into routine nursing practice. The use of complementary and integrative medicines as safe and nonpharmacologic interventions for the reduction of pain and fatigue in patients undergoing invasive procedures can improve nurses' independence in decision-making and increase their self-confidence during patient care. Therefore, its education is suggested to be incorporated into academic nursing education and on-the-job training in critical and intensive care units. Further studies are required to investigate the impact of hand reflexology in comparison with other complementary medicines approaches on pain, fatigue, and wellbeing in patients undergoing painful and invasive procedures. Also, the use of a placebo group can enable making firmer conclusions regarding the impact of reflexology on patients' reported pain and fatigue in relation to the attentive presence of the reflexologist. Replicating this research in other healthcare settings and on patients with chronic diseases is suggested.

### Ethical Approval

This study was approved by the ethics committee of Shahed University.

### Disclosure

All authors met the authorship criteria in terms of substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; involvement in drafting the manuscript or revising it critically for important intellectual content; and final approval of the version to be published. The authors agreed on the order in which their names will be listed in this manuscript.

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# Families’ Experiences Living with Acquired Brain Injury: “Thinking Family”—A Nursing Pathway for Family-Centered Care

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## ABSTRACT (ENGLISH)

The objective of this study was to examine families’ experiences living with acquired brain injury (ABI) using a research approach that included *both* the affected individual family member and the family together as a family group. A narrative inquiry study, informed by the life-stage approach of Lieblich, Tuval-Mashiach, and Zilber, was used to obtain family stories. Families experiencing an ABI event were purposefully selected from different regions in a western Canadian province. Centered on the life stages of before the ABI event, now living with the ABI, and the future, thematic findings included: Families, a grounding force; Losses, individual and family; Family adaptive capacities; Experiences with the healthcare system-hospital to home; and A patchwork future-entering the unknown. Themes affirmed the significant impacts of ABI on individual and family members and acknowledged ABI as an ambiguous loss event. The findings also illuminated families’ strengths and resiliencies in coping with living with ABI. The study results suggest by “*thinking family*” nurses can contribute towards a healthcare model that focuses on “family” as the central unit of care.

## FULL TEXT

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### 1. Introduction

“*Thinking family*” is a pivotal perspective for nurses’ understanding and supporting individuals and families living with acquired brain injury (ABI). While the impact of ABI on individuals and families, and their corresponding sense of losses, has been well documented, generating knowledge and understanding of families’ experiences of living with ABI has largely derived from examination of the subsystems within families—to either present their views of the family or provide their own perceptions of being in the family. Subsystems studied have included the individual with the ABI [1–8]; the caregiver or primary family carer [9–18], children [19–23], siblings [24–28], and the marital relationship [29–36]. Whilst the subsystem research has provided further understanding of individuals’ experiences living with ABI, a family systems approach that studies the family in interaction with each other is limited. This approach purports that individuals cannot be understood in isolation; rather they need to be understood within the context of the “whole” family unit [37, 38]. Family members interact reciprocally; therefore, family members’ perspectives are a result of the interplay between each other.

While there is growing interest in the experiences of the family as a whole; to date, only a limited number of qualitative studies have explored this area. Landau and Hissett [39] employed the family group as a unit of analysis to explore the relationship between loss of identity issues faced by the family member with a mild brain injury and the family’s sense of loss of the member who is now different. Kean [40] collected data from family group interviews (12 adults, 12 children of various ages), to investigate families’ experiences with critical illness in an intensive care setting. To obtain family perspectives of psychosocial transitions during the first 18 months post moderate to severe ABI, Whiffin et al. [41] interviewed nine non-injured family members from three families at three separate intervals post ABI and the data were analyzed on three levels: the individual, the family, and between family units. To determine the dynamics of relationships in families of patients with brain injury, Segev et al. [42], studied 10 family cases and completed separate individual interviews with the spouse and a family of origin member (i.e., father, mother, sibling or child). These studies have demonstrated, when research with families is informed by congruence with a systems perspective, new knowledge is acquired about the whole of families’ experiences living with ABI. Furthermore, understanding families’ perspectives of the impact of ABI is important as family members continue to report they require enhanced understanding of their needs and want the family to be considered the primary unit of attention and care [43, 44]. The family-centered care paradigm, informed by principles of partnership and collaboration, has been garnering attention and evolving within health care over the past 10 to 15 years [45]. Yet, struggles to fully implement a family-centered practice model remain, as nurses and other healthcare practitioners, while considering families to be valuable contributors to treatment, continue to limit family involvement [46]. Informed by ambiguous loss theory, and employing a family research model that included *both* the individual family member and family members together as a group, the purpose of this study was to understand families’ experiences with ABI; to explore the impact of ABI on families’ attitudes, beliefs and identities; and to gain greater understanding of families’ relational experiences to each other, their community, and healthcare practitioners for the purpose of supporting a family-centered model of care. The study results suggest by “*thinking family*” nurses can contribute to a healthcare model that focuses on “family” as the central unit of care.

### 2. Theoretical Background

This study was informed by ambiguous loss theory. This theory proposes a more systematic view of individuals and their families [47]. The concept of ambiguous loss is defined as a unique stressor situation in which there is an unclear loss resulting from not knowing whether a loved one is dead, alive, absent, or present [48]. There are two types of ambiguous loss: (1) a loved one is physically absent yet kept psychologically present, and (2) a loved one is physically present but psychologically absent [48]. A loved one who has disappeared in body (physically missing) is often kept psychologically present by family and community members, because the loss is not verified by evidence of death [47, 49]. This physical absence could be a result of war, terrorism, ethnic cleansing, genocide, kidnapping,

and natural disasters. Conversely, an individual may be missing in mind (physically present yet be psychologically absent)—that is, emotionally or cognitively different [47, 49]. Examples of this type of ambiguous loss include people living with Alzheimer’s disease, dementia, brain injury, AIDS, autism, depression, addiction, or other chronic mental or physical illnesses [47].

Ambiguous situations often are not tolerated well by people. Ambiguous loss is a stressor event and becomes more difficult and stressful the longer the ambiguous loss situation continues without resolution [47]. In either the physically absent or psychologically absent ambiguous state, the result may be unresolved grief as well as an uncertainty about who is in ‘the family’. This uncertainty about who is ‘in the family’ is called boundary ambiguity. It is manifested when families experience role upheavals and disturbances in regular routines and family ritual practices. This study on families’ experiences living with ABI incorporated the second type of ambiguous loss.

### **2.1. The Researcher**

The researcher is an experienced mental health clinician with many years of professional clinical practice work with individuals and families affected by ABI. The researcher also experienced living with a family member diagnosed with an ABI. To mitigate bias and support trustworthiness, the following strategies were utilized: (1) triangulation of data; (2) rich thick description; (3) member checking; (4) audit trail documenting methods decisions; (5) reflexive journaling; and (6) discussing emerging themes with colleagues.

### **3. Methods**

A narrative inquiry qualitative approach was utilized in this research project to capture family group stories about their experiences living with ABI. Narrative inquiry is a useful methodology for examining families affected by an ABI because of its ability to encapsulate how families make sense of their experiences living with ABI through the characteristics of meaning, relatedness, identity, and time. This is the first known study to incorporate narrative inquiry with family research and utilize the life-stage approach of Lieblich et al. [50].

#### **3.1. Recruitment and Participants**

Families were recruited from different regions of a province in Canada. Multiplex criteria for both the individual and family members were considered. Criteria for the individual with the brain injury included medical stability; recovery from any acute medical conditions; no mechanical ventilation; living in the community; having English language communication skill capabilities; and ability to provide informed consent. A two-year postinjury criterion was established for the family members to secure family member participants who had passed the traumatic and episodic impact of the acute stage of the brain injury.

Consistent with the definition the family is who they believe themselves to be “a self-defined group of individuals” ([51], p.284), ‘family’ consisted of at least the individual member with the ABI and up to a maximum of four other perceived family members. For the purpose of maintaining feasibility, a boundary was placed on the maximum number of family member participants. In accordance with beliefs of a family’s right to self-refer, family members determined which family members participated. To help family members in their selection process, guidelines for selection were employed. These included persons who support, share a history and a future, and are committed and caring towards each other. Neither the individual member with the ABI nor the other family members needed to be residing within the same household. These guidelines were written permitting families to include friends as well as biological and legal family member participants. All individual and family participants were required to be a minimum of 18 years of age at the time this study was conducted.

Six families participated in this study (Table 1 insert near here). Narrative inquiry with families is unsuitable for a large number of participants as it involves a time commitment and close collaboration between participants and the researcher [52]. Recruitment was challenging, taking over one year to complete. Participants were recruited through ABI community support agencies.

Table 1

Family unit participant demographics.

<i>The Carter family:</i>
Allen—father, traumatic brain injury 17 years ago
David—oldest son
Jeff—younger son
<i>The Wilson family:</i>
May—mother
Mitchell—father
Ann—older daughter
Marie—younger daughter, traumatic brain injury eight years ago
Tradder (pseudonym)—family pet dog
<i>The Stetler family</i>
Debbie—wife and mother, nontraumatic brain injury two years ago
Mike—husband
Rob—younger son
Collen—step daughter
Trudy—sister to Debbie
<i>The Mercer family</i>
Frank—father
Margaret—mother
Melanie—daughter, traumatic brain injury 12 years ago
<i>The Holder family</i>
Terri—wife and mother, traumatic brain injury 10.5 years ago

Brent—husband
Matt—son
Mona—close family friend
Macey—close family friend
<i>The Cross family</i>
Evelyn—wife and mother; nontraumatic brain injury one and half years ago
Greg—husband and stepfather
Shelley—daughter
Curtis—son

All six participating families were unique, varying in structure, culture, and ages. Family structures included; (1) intact biological members (father and or mother and children); (2) blended families; and (3) friends as family members. One family self-identified as Aboriginal. Participant ages ranged from 23–67. Regarding the individual family members with the ABI, their brain injuries resulted from either nontraumatic or traumatic and were diagnosed within a range of moderate to severe. Of the six family member participants that had the brain injury, only one was male. Potential bias may have been introduced in the recruitment process as family members may have chosen their members for participation based on family members' willingness to participate and level of connection.

### 3.2. Setting

The face to face interviews were held at a convenient location that protected the families' confidentiality. All family units chose to hold the interview in a family member's home. Within the setting environment, family members had full visibility of each through circular seating around a dining table or in the living room area.

### 3.3. Data Collection Procedure

Data collection was completed using several strategies. Transactional level data (data generated through discernable interactions amongst multiple family members) were collected through in-depth face to face interviews with individual family units; which included the individual with the ABI and other family members. Data were also collected by ethnographic methods including: family genogram; family group observation sociogram; family ecomaps; and field notes. Also, data were collected on how family members chose who would participate. The interviews were framed in the context of no right or wrong responses as viewpoints by all participants were considered valid. During the interviews, questions were asked requiring family members to think how a missing family member would have responded. During the interviews, to initiate the process of narrative opportunities, the premise of Lieblich et al.'s [49] life story stages was used to help families structure their narratives around their experiences living with ABI. Families were asked to think about their life experiences with ABI as three life-stage chapters in a book about their family. The first chapter was about their family life before the ABI event, the second chapter is now—living with ABI, and chapter three concerns their future family life. Initial narrative conversational opening prompt such as "Tell me about a time in your family before the ABI event that reflects who you are," "Tell me about a time after the brain injury that reflects who you are as a family now," and "tell me about how you envision your family's future" were used. Conscious efforts were made to elicit responses from all family participants. Family members were provided with individual summaries of their intact statements pulled from the original transcripts for them to review.

The study was approved by the research ethics committees of the relevant Universities {Approval numbers: E2016: 126 (HS20242); 22276}. Each family member participant provided informed consent. Privacy and confidentiality considerations were adhered to, including the deidentification of all transcripts and the use of pseudonyms in reporting results.

### 3.4. Data Analysis

Narrative analysis, while having aspects common with other case-centered approaches, relies on accounts that are analytically treated as whole units rather than fragmented into coded categories as evidenced in other qualitative approaches [53]. Methods of family level data analysis are not readily identified in the literature as most models have been designed with the individual in mind. For the study on families' experiences of living with ABI, analysis models developed by Boss and Carnes[49] and Riessman [53] were adapted for transactional level data analysis and processed through two layers.

First, each family unit transcript was analyzed separately by within case analysis, followed by an across-case analysis. Interpretive within case analysis was accomplished using a combination of cell classifications outlined by Boss and Carnes [49] for the purpose of analyzing different components of the narratives such as holistic content; repeated words or phrases; the plot; discrete stylistic or linguistic characteristics of defined units of the narrative; and emotions. Subsequent to the within-case analysis, the across-case analysis was accomplished using the thematic analysis approach delineated by Riessman [53].

Individual interpretive family synopses were generated from the within-case analysis reflecting global impressions of how each family made sense of their experiences living with ABI. Subsequent to the within case analysis, the across case analysis was accomplished using the thematic analysis approach delineated by Riessman [53] resulting in the development of overarching master themes or narratives. Only the thematic findings of the across case analysis are presented.

## 4. Findings

The master narrative themes were structured to replicate the chronological boundaries of the three life-stage chapters of the narrative interview process: (1) Before the ABI Event—*Families: a grounding force*, (2) Now Living with the ABI Event—a. *losses individual and family*, b. *family adaptive capacities and*, c. *experiences with the healthcare system: hospital and home*, and, (3) The Future—*A patchwork future, entering the unknown*.

### 4.1. Before the ABI Event—Families: A Grounding Force

This theme was set in the chronology of before the ABI event centered on the belief of connectedness and closeness and was associated with the bonding of its members, leading to a sense of belonging. These families' value of belonging underpinned their actions emotions and patterns of relating and was the grounding force that maintained their commitment to the "family unit."

"We've always said to ourselves that we were a close family—so we make more effort to do things regularly, so the closeness is there" (Stetler family).

"You would have seen a family of two working parents with children quite involved in the community and their sports and so on coming and going. And weekends always brought us together. Work took us away from our family the odd day, but the weekends would *always bring us back together as a family. We were a close family—closeness would be presence—coming around and physically being with you.*" (Mercer Family)

Connected...interested and involved in one another's lives." (Holder family)

### 4.2. Now Living with the ABI—A. Losses: Individual and Family

There are three major themes within the chronological segment of Now Living with the ABI. The theme of losses: individual and family addressed the range of complications experienced by the individual family member with the brain injury and the impact of these impediments on family members. Whether the original brain injury diagnosis was considered mild, moderate, or severe each, of the individual family members who were diagnosed with an acquired brain injury talked about experiences of being different after the ABI. Their individual experiences of difference were mirrored by their families' perceptions that their loved one was also not the same as before.

Individual family members with the ABI expressed the following:



It took many months before I could handle more than a conversation with one person at a time. I think it was probably months, I couldn't talk to you and look at you at the same time. I had to keep my eyes closed or looked down because my brain was overwhelmed with information. I couldn't have a radio on. I couldn't watch television. It was years before I could watch and I enjoy sports, say watch a football game, because there was just way too much going on. So I couldn't be part of social things. (Terri Holder)

I mean not working anymore, and not driving for the last many months. Anything that I was taking on personally was now taken on by somebody else. Not only that, taking care of me. I guess over the year, I've been dealing with anger, frustration, and lack of independence. You want to just be back to your old self. And I know it's never going to be the same. (Evelyn Cross)

Family members of the individuals with the ABI were also aware of the changes to their loved ones and talked about how they were or are continuing to be affected by these changes. The participating families acknowledged changes and differences to identity, relationships, social activities, and societal supports which had created an overarching sense of loss. For the Carter, Stetler, Holder, and Cross families, the suggested experiences of loss were about degrees of loss as the initial acute impairments experienced by their loved ones were now residual or were continuing to improve at the time of the family interviews. However, for the Wilson and Mercer families, their sense of loss was significant and permanent. May Wilson described "*When Marie had that accident, it was like we lost a family member. After the accident she was a different person. We have never really known what she would have been like before her accident...*" Frank and Margaret Mercer expressed "*The children...our grandchildren, they lost their mother.*" Families recognized other losses, experiencing social isolation as family friends disengaged and disappeared from their lives. Shelley Cross also understood a loss of societal support.

If it was just paralysis on one side, then people give the extra time or accommodate or hold open doors or whatever the case would be that way. And if they need physical support people support them. But it's the same thing as with a mental illness, when you don't see the situation, it's hard to empathize or understand what's difficult and different.

#### **4.3. Now Living with the ABI—B. Family Adaptive Capacities**

This second major theme revealed a powerful thread of strength and resiliency as families coped with the ABI event. The coping these families exhibited moved beyond a coping of subsisting or survival, rather their strength and resiliency were evidenced in these families' abilities to build capacity to effectively adapt to change. These families demonstrated the capacity to reorganize roles; self educate; and incorporate beliefs that further engendered acceptance and solidified their sense of belonging and identity as a family unit. These abilities showed the families to be responsive and consider the needs of all family members while retaining the similar mechanisms for family function and structure.

The participating families' capacity to reorganize roles was displayed in their ability to shift roles, specifically from child to parent, husband to caregiver, grandparent to parent, and friends as caregivers. Several of the participating adult child family members to varying degrees undertook aspects of the parental role by providing substantial support and encouragement to their parent and assisting with daily activities that would have previously been in the domain of their parent. Shelley Cross expressed the following:

I would say that my brother and I have more communication and contact. Like "have you talked to mom?" "Have you checked in?... I don't mind going grocery shopping. I did the Christmas shopping this year because the thought of (my mom) going to stores, waiting in lines, it's too much, too many tasks all at once...

For Mike Stetler, Brent Holder and Greg Cross their role as marital partner veered in the direction of more responsibility in taking care of their spouses; responding to and managing their illness needs. Greg Cross clearly acknowledged the transition to caregiver and its impact on him.

I am the caregiver at this point. And I'm okay with it. There was a time, when I literally had to be around all of the time. I basically, in a sense, you take your own life and you just sit it on a shelf somewhere and forget everything that you do. And now you're a caregiver for somebody. And you do it because you care. That's why it's a caregiver. But that wears on you after a while. And the little things that you want to do, that you always did, and you can't do anymore because they may be external pressures that she can't handle.

The role shift from grandparent back again to parent was encountered by Frank and Margaret Mercer. When Melanie had her ABI event, they needed to reclaim parental duties and functioning as Melanie's ability to parent was severely impaired. They expressed the following:

We were getting ready to retire. We were living in a condo and when we finally decided that we needed to become more fully involved with our grandchildren and our daughter, we walked away from our jobs basically. That's how we tried to assist Melanie by moving in with the family...we became the strong support for them. We didn't just become the grandparents; we also became the caregivers.

As well, family friends became caregivers. Mona and Macey, friends to the Holder family stated "As friends, we would give them whatever support they needed at any time. It was pretty much every day or twice a day."

The onset of the ABI event was for all the participating families their first and only exposure to this diagnosis. Self education as a coping strategy was utilized by the participating families to build capacity to effectively adapt to change and manage living with the ABI. Several families educated themselves about brain injury; acquiring knowledge of what happened and developing understanding and awareness of what to expect and or anticipate. Shelley Cross articulated: *"I think as a family, when mom was in the hospital, we did things like send scholarly articles and research and we were trying to educate ourselves as fast as possible in that situation."*

Beliefs are personal attitudes that allow for meanings to be considered as a basis of human emotions and actions. These families revealed mutually shared interpretations or beliefs about the brain injury event that aided them in effectively coping with living with ABI. Participating families expressed beliefs were prominently positive in nature. Whether characterized by faith-based language, ideas of living in the moment, or the commencement of another life path, these belief systems enabled effective adaptation to living with the ABI by reinforcing the families' bonds to each other; the grounding force behind their demonstrations of strength and resiliency.

From the perspective of the Carter family, the ABI event was a near death experience that provided Allen with a second chance to reevaluate his life and reconnect with his sons. Jeff named this belief a "Blessing." The Wilson's family mantra of *"one day at a time"* and *"just do it"* attitude became more pronounced following the ABI event of their daughter Marie. *"One day at a time that's all you get. It's all you need. That's all we got...we just did it."* Frank Mercer expressed the belief that the ABI event was a "gift"; *"But we get a gift. We get to spend a lot of time with our grandchildren. So, there are some fringe benefits from that too. We get to see them grow and not everybody gets to do that so."* Frank also believed the ABI event was the start of a new family beginning because it *"changed everything"*.

#### **4.4. Now Living with the ABI—C. Experiences with the Healthcare System: Hospital and Home**

This third major theme explored the experiences families had or continue to have with the healthcare system from initial hospitalization to community treatment and supports. While families' experiences were described in this theme, this theme also revealed missing elements in their experiences and these omissions were interpreted. Overall, families' experiences of the healthcare system varied depending on the cause of the ABI, the severity of the ABI, the recovery process, and the degrees and kinds of service involvement (i.e., mental health services, community rehabilitation services, community support groups, and or insurance agencies {worker's compensation or vehicle insurance}). However, the similarity in families' experiences was the distinction between acute care and rehabilitation and community-based care. Family members spoke about the decrease in resource availability following acute care.

Frank Mercer stated the following:

When you get into recovery, that's when the healthcare system starts to deteriorate... where they haven't got time to spend time with the patient. Melanie with her injury, would maybe wander away. So, they had her tied to a wheelchair. And then because if she started to yell for things or whatever, they started to sedate her to slow her down. And that's when we became more involved as parents. So, Margaret would go 8 o'clock in the morning when she woke up and spend all day with her so they didn't have to sedate her. And I would go at 4:30 and stay till midnight until she went to sleep. And we did that for 4½ months as parents. That was just so that the healthcare system would not sedate her and drug her up. So, we were more involved as a family being there.

Families involved with insurance service providers considered themselves lucky because resource availability included financial support for additional rehabilitation and caregiving costs. However, these resources were also limited. The Mercer family had to advocate for additional funding and resources when insurance support was denied or ended. Margaret recounted:

You phone people. You gotta write. You go there, you go here. You get moved around and stuff like that. The difficulty with the doctors. Counselling for my grandchildren. 'What about them?' Insurance simply said, well no, we don't cover the children, this is just for the client. So, then I made an effort, how many different places I called to try and get help for them. Couldn't do it.

Families also noted a reduction in resource availability in rural centers. May Wilson contended; "*But you get out to these smaller towns, and there's not as many supports or, or no supports out there.*" As they shared their experiences within the healthcare system, families touched on how healthcare professionals engaged with families. Mike Stetler communicated: "*the hospital is run really good. The surgeon actually showed us exactly what he did.*" May Wilson spoke about all of the appointments; "*Marie had a lot of appointments. I had to write every little thing down because she had so many appointments.*" And Mitchell Wilson followed up by saying; "*The insurance company would book appointments. They wouldn't relay that on to us and they would phone to confirm an appointment and May never had any knowledge of the appointment.*" Shelley Cross recounted a time when her mom was still in the hospital; the family requested that Evelyn be allowed to audio-record (using her phone) the doctors' conversations with her because she could not remember what they were telling her and therefore could not relate the information to her family. While some of the doctors allowed the recording, others did not. These descriptions give the impression healthcare professionals are primarily engaging with the individual in care.

On one level, the findings for this theme indicated these families experienced resource inadequacies within healthcare systems and healthcare professionals focused on the person in care. Missing from families' perspectives was the element of how families as a unit were cared for by the healthcare system. For families, their involvement with the healthcare system was in relation to the individual. Their focus was singularly centered on their loved one with the ABI or a family subunit; and their cognitive, physical, and emotional energies were directed towards trying to ensure that resources were made available to those individuals. Their experiences did not include family members talking about being part of the treatment process in which healthcare professionals collaborated with them and engaged with them as being experts on their own family members or asked about family needs.

#### **4.5. The Future—A Patchwork Future: Entering the Unknown**

This final master theme illustrated how living with the ABI continues to influence families' thoughts and feelings about their future. Families expressed a patchwork of thoughts: hope and optimism for continued recovery and successful progression through ongoing life stages as life carries on, while also conveying undercurrents of fear and worry about legalities of arranging for future care and supports and potential for occurrence of another ABI event. These findings suggest living with ABI is an undertaking that extends into the future, continuing to impact these families as they try to anticipate the unknown. However, no matter what their thoughts and feelings about the future these families continued to emanate their future together as a collective force.

"I think it's a progression of what it is right now. We're just moving with my dad to see what's happening. So, I guess we'll take it as we see it. But we'll always be there." (Carter family)

"I don't know where Marie's going to end up. So, I guess we'll be here if Marie's here and you know we'll be helping her out as much as we can." (Wilson family)

"We do have a document through the lawyer...Melanie will always need some assistance with living. The children are already getting a sense that they will hold the unit together and be with their parents and things like that. So, the future, it'll still go on. Family look after family and this is family." (Mercer family)

### **5. Discussion**

Predominantly, the literature has consistently reported ramifications of ABI on families as negative; with prolonged exposure to stress and strain and harmful effects on families' social, emotional, structural, and financial functioning; role changes; and challenges to core values and resources in families [14, 54–62]. Rather, the findings of this study

offer a counterbalance to these bleak reports.

This study illuminated families' strengths and resiliency by demonstrating families have inherent competencies and adaptive capacities that help them to establish effective psychosocial coping and functioning while living with ABI. Instead of families experiencing increasing loss of identity issues [39], in this study, families' beliefs about their identity as a family unit were maintained and became more solidified while living with the ABI. These families described an increased sense of belonging and used their relationships as resources for each other, thereby having less functional difficulties [42]. While families in this study described stressful and challenging experiences, the role changes they recounted were not viewed as a loss that was negative and burdensome [41]; rather families demonstrated flexibility as they accepted the forced role changes and adapted. Establishing collective beliefs and meanings of the ABI situation helped these families tolerate the losses and adjust to the different circumstances. Participant families' demonstrations of strength and resiliency attest to their capabilities as carers and supporters of their loved ones with ABI.

In taking over the caregiving responsibilities for the members with the ABI, participating families in this study encountered issues with the healthcare system. Family members spoke about the decrease in resource availability following acute care. Their experiences with the healthcare system are affiliated with the literature reporting on unmet service and support needs throughout the continuum of care from hospital to home [62–67]. In addition, findings highlighted that families do not consider themselves to be in collaborative relationships with healthcare professionals. Compounding lack of collaborative relationships with the fact that families do not always know what they should ask for or expect [68] suggests the healthcare system is continuing to restrict involvement of the families in the planning, delivery, and evaluation of care [45, 46]. At the same time, research has identified families want to be involved in all aspects of care [43, 44]. Research has also shown healthcare providers are often hesitant to include family members, as families are seen as barriers in the patient-health clinician relationship [69]. These findings elucidated families' strengths, resiliencies, and expertise in living with ABI and also exposed relationship challenges between families and healthcare professionals. Findings suggest minimal supports exist for families impacted by ABI and nurses, and other healthcare professionals need to acknowledge and attend to the entire family system and not just the individual and primary care giver. In particular, the findings highlight the need for healthcare practitioners to continue to adopt practices informed by frameworks espousing strengths-based care and family-centered care. The prominence of the medical model has created a healthcare system focused on a systematic approach to diagnosis and treatment, reducing people's identities to a disease process, thereby distancing the relationships between individuals, families, and healthcare professionals [70]. The foundation of strengths-based care is the focus on persons' and families' strengths in order to promote care that empowers persons and families to take control of their own health and healing [70]. Based on the factors of respect, information sharing, participation, and collaboration [45], the essential ingredients of the family-centered care model are collaboration and partnership with the entire family for the purpose of planning, delivery, and evaluation of health care [69].

For nurses working with ABI individuals and families, the first practice step is to purposefully "*think family*" and then adopt intentional actions of knowing families' strengths and capabilities to collaborate with them throughout the stages of recovery and living with ABI [68]. Nurses are more effective collaborators when they generate greater understandings of family needs. Gaining knowledge about the person in the family who has the greatest influence on member health, family expectations, family decision making dynamics, and individual and family perspectives helps build effective partnerships and communication [68]. As with client-centered practice, the linkage between family-centered care and improved individual and family health outcomes is supported by the evidence [71, 72].

The study findings highlight the need for ongoing family research as these findings have only touched the surface of what can be learned from families who are coping in living with ABI. This study has exposed the need to continue researching the development of family centered care frameworks which recent articles within the ABI and loss literature have started [69, 73]. These findings when viewed through the paradigm of strengths-based care offer an alternative from preoccupation with what is going wrong and needs fixing to focusing on positives and what is going

well [70]. A systematic review on strengths-based approaches working with families affected by progressive neurological illness revealed there is little evidence of the use of strengths-based approaches with this population [74]. To date, there is also minimal evidence of the strengths-based paradigm, theoretical or otherwise, being considered in conjunction with ABI and families.

## 6. Strengths and Limitations

The choice of narrative inquiry methodology and the a priori determined life chapters were significant as they explicated the characteristics of temporality, relatedness, meaning, and identity and helped in making narrative development less awkward. Temporality was affixed to the families' narratives in their lives before the ABI, now living with the ABI, and the potential future of living with the ABI. Relatedness was manifested by the families' acute sense of belonging to each other, which further adhered them to their identity as a 'family'. These families' beliefs revealed the ways in which they interpreted their world in living with ABI and how they built shared meaning which strengthened their value of family.

Families' experiences of loss adhered to the definition of ambiguous loss as a unique stressor event in which a loved one is physically present but psychologically missing. Families' descriptions of their loved ones being 'not the same', 'different,' or 'lost' substantiated the ambiguous loss definition. To varying degrees, these families continue to experience ambiguous loss because there is no resolution, as there is in a clear-cut death.

Research with families can be a rewarding yet intricate and complex process. Awareness of barriers to data collection arose as individuals may have been interested in participating, yet they did not want family members involved, or family did not want to be involved, or there were impediments in gathering family together for an interview. Recommendations for researchers interested in doing family research is to recruit widely and include longer recruitment time frames.

## 7. Conclusions

The exploration of families' experiences living with acquired brain injury affirmed that impacts of ABI are relational and revealed that while families contend with ambiguous loss, they have the capacities and competencies to affect their own healing processes. Through this study, it became apparent that living with ABI is a life process underscored by the need for nurses to incorporate relational thinking and practices that focus on getting to know families and collaborating with them on any potential needs and or supports. This study, by illuminating *the individual and family together*, can facilitate further development and implementation of family research across multiple health issues.

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# Implementation of Nursing Process and Its Association with Working Environment and Knowledge in Ethiopia: A Systematic Review and Meta-Analysis

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## ABSTRACT (ENGLISH)

**Background.** The nursing process is a scientific problem-solving approach, which directs nursing care and potentially improves quality of health care service. The national pooled implementation of the nursing process in Ethiopia remains unknown. Hence, this review and meta-analysis aimed to estimate the overall implementation of the nursing process and its association with the working environment and knowledge in Ethiopia. **Methods.** PubMed, Scopus, Cochrane Library, Google Scholar, PsycINFO, and CINAHL were searched and complemented by manual searches. The DerSimonian and Laird random effects model was applied to estimate the pooled effect size, odds ratios, and 95% confidence interval across studies. The  $I^2$  statistic was used to check heterogeneity between the studies. Sensitivity analysis was deployed to see the effect of a single study on the overall estimation. Publication bias was examined using funnel plot and Egger's regression test statistic. Analysis was performed using STATA™ Version 14 software. **Results.** Seven studies comprised of 1,268 study participants were included in this meta-analysis. The estimated pooled implementation of the nursing process in Ethiopia was 42.44% (95% CI: 36.91, 47.97%). Based on subgroup analysis, methods of outcome measurement showed that the highest overall implementation of the nursing process was observed from studies conducted using self-report technique 42.95% (95% CI: 35.76, 50.15). Nurses

working in stressful environment were 81% less likely to implement the nursing process (OR 0.19, 95% CI: 0.04, 0.76), and nurses having good knowledge were 8 times more likely to implement nursing process (OR 8.38, 95% CI: 2.82, 24.86). *Conclusion.* The overall implementation of the nursing process in Ethiopia was relatively low. Good knowledge of nurse had paramount benefits to improve implementation of the nursing process. Therefore, nurse can be educated on the imperative of knowledge in order to enhance the nursing process implementation and to improve the overall quality of healthcare services. Furthermore, policymakers and other concerned bodies should give special attention to improving the implementation of the nursing process.

## FULL TEXT

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### 1. Background

Nursing is a dynamic profession with a unique perspective on people, environment, and health [1]. The nursing process is a systematic problem-solving approach used to identify, prevent, and treat actual or potential health problems and promote wellness. It consists of five steps: assessment, diagnosis, planning, implementation, and evaluation [2]. The use of the nursing process helps in making and planning a clear and effective nursing care that potentiates improvement of the quality of patient care [3]. Implementation of the nursing process in clinical settings facilitates high quality nursing care, improves client health outcomes, and promotes nursing as a professional scientific discipline [4]. In addition, studies claim that, by implementing the nursing process, the nursing profession will be strengthened, internationalized, and dignified as efforts to achieve patient care criteria [5]. The approach of client care has moved from the medical to a holistic care model [1]. The nursing process, in its emphasis on patient-centred and goal-oriented care, has the potential to improve the quality of nursing care and to meet individualized health care needs [6–10].

Emphasis on holistic patient care within the nursing process is key to delivering quality nursing practice and central to nursing education [11]. Standard implementation of the nursing process could improve quality of care and encourages the utilization of evidence-based nursing practice [12, 13]. Appropriately implemented, the nursing process may provide meaning and relevance to professional knowledge [5]. Globally, the nursing process is recognized as an integral part of nursing education, practice, dynamic client care, and critical thinking in attempting to address the needs of clients [14]. The nursing process is the corner stone of the nursing profession [15, 16]. Using the nursing process as a tool to guide nursing care allows nurses to make independent and evidence-informed decisions that can encourage healing [17].

Utilization of the nursing process could assure nurses that they are meeting their responsibility for the patient care and enable evaluation of nursing care quality [18]. The essence of the nursing process lies in benefits to the client and nursing profession [19]. The nursing process guides nursing activities, promotes quality of care, and provides professional autonomy [20]. Substantial variations on the implementation of the nursing process across the globe have been reported. For instance, it has been reported 33.1% in Kenya [10], 57.1% in Nigeria [1], and 81.77% in Brazil [21]. On the other hand, a study conducted in the Democratic Republic of Congo showed that there was no implementation of the nursing process [22].

Factors that affect the implementation of the nursing process are complex and rooted in multiple factors. A review of several studies suggests that factors responsible to reduce the implementation of the nursing process include sociodemographic of nurses [10, 20, 22–29], patient-related factors [26, 28], knowledge and attitude of nurses [22, 26, 30, 31], and organizational factors [14, 23, 25, 29, 30]. On the other hand, a study conducted in Nigeria showed that institutional factors do not pose a barrier to the utilization of the nursing process [4, 32]. Identification of associated factors can be used as benchmarks to design appropriate measures, to improve client safety, and enhance utilization of resources.

Ethiopian Federal Ministry of Health has been engaged in improving quality of nursing care across the country in the last five years. Among these, national nursing process guideline was developed, national nursing mobilization

activities were conducted, national dressing code guideline was launched, and national nursing service quality improvement audit tools were developed [33]. Nursing process is incorporated as the part of the curriculum to both in private and government education sector in Ethiopia. Though the government of Ethiopia gives emphasis on quality of healthcare service and nursing care. Nurses are paid 1500–2400 USD per year, and there is no retention strategies in most Ethiopian health institutions with high nurse turn over being a common challenge in the country. The nurse to patient ratio ranges from 1:6 to 1:12 based on the individual institution patient load and nurse availability.

Despite the effort of Ethiopian Federal Ministry of Health since 2011 to prepare and distribute protocol to the implementation of nursing process for all health care settings [34], the implementation of the nursing process in different health care setting is not well developed and organized [4, 26, 35]. In Ethiopia, nurses constitute the backbone of healthcare delivery system to improve the quality of health care service, and implementation of the nursing process may contribute a significant role. Different primary studies in Ethiopia [24–27] show the implementation of the nursing process as significant and a major issue in nursing care. However, variation was observed among these studies. Therefore, this study aimed to estimate the overall implementation of the nursing process and its association with the working environment and nursing knowledge in Ethiopia. Findings from the current study could serve as benchmark for institutional health care policymakers to implement appropriate measures to improve the implementation of the nursing process.

### **1.1. Research Questions**

Three research questions were posited for this study:

(1)

What is the prevalence of implementation of the nursing process in Ethiopia?

(2)

What is the association between implementation of the nursing process and knowledge on nursing process?

(3)

What is the association between implementation of the nursing process and nurses' working environments?

## **2. Methods**

### **2.1. Design and Search Strategy**

To extract all relevant literature, electronic databases such as PubMed, Cochrane Library, Google Scholar, CINAHL, Cochrane Library, and Scopus were searched. In addition, a manual search of grey literature available on local university shelves, institutional repositories, and reference lists of all retrieved articles was conducted to identify additional relevant research to augment our meta-analysis. This search involved articles published from inception to April 1, 2019. The searches were restricted to full texts, free articles, human studies, and English language publications. Endnote X 8.1 reference manager software was used to collect and organize search outcomes and for removal of duplicate articles. The search strategy was developed using the Population Exposure Controls Outcome and Study design (PECOS) searching guide. The search was conducted using the following MeSH and free-text terms: "nursing process", "implementation", "nursing process implementation", and "Ethiopia". Boolean operators such as "AND" and "OR" were used to combine search terms.

### **2.2. PECOS Guide**

#### **2.2.1. Population**

All nurses working within health care settings for at least six months.

#### **2.2.2. Exposure**

Nurses who have good knowledge on the nursing process and working within well-organized environments.

#### **2.2.3. Controls**

Nurses who have poor knowledge on the nursing process and working in stressful environments.

#### **2.2.4. Outcome**

Implementation of the nursing process.

#### **2.2.5. Study Design**

All observational studies.

### **2.3. Eligibility Criteria**

Studies were included if they met the following criteria: (1) articles conducted in Ethiopia; (2) articles published in peer reviewed journals and grey literature; (3) published in English language from inception to 2019; and (4) observational studies, reporting their outcome variable as implementation of the nursing process. Studies were excluded on any one of the following conditions: (1) not fully accessible (i.e., full text) at the time of our search process; (2) poor quality score as per the stated criteria; (3) duplicated citation; and (4) failure to measure the desired outcome (implementation of the nursing process).

### **2.4. Outcome of Interest**

The main outcome of interest was the overall implementation of the nursing process. In the present review, implementation of the nursing process was evaluated either through nurse documentation of all its components from patient files or from the self-report of nurses working in a hospital or outpatient unit, in all of the following phases: data collection, nursing diagnosis, prescription of nursing, and evaluation of nursing [24, 27, 35]. The associated variables included in this review were working environment (i.e., well-organized versus stressful) and knowledge on the nursing process (i.e., good knowledge versus poor knowledge).

### **2.5. Data Extraction and Quality Assessment**

Data were extracted by two authors using a Microsoft™ Excel spread sheet. For each included article, we extracted data regarding the name(s) of the author(s), year of publication, study area/region, health institution, study design, sample size, sampling technique, tool to measure the outcome, reported prevalence with its 95% confidence interval (CI), and information regarding the associated factors. The quality of each included study was assessed using the Newcastle–Ottawa Scale (NOS) [36]. Studies were included in the analysis if they scored  $\geq 5$  out of 10 points in three domains of modified NOS components for cross-sectional studies [36, 37]. The point allocation of each domain included selection (5 points), comparability (2 points), and outcome assessment (3 points). Furthermore, quality assurance checks were independently performed by three authors. Any disagreements at the time of data abstraction were resolved by discussion and consensus (Supplementary File 1).

### **2.6. Assessment of Risk of Bias in Included Studies**

The risk of bias tool for prevalence studies developed by Hoy and colleagues [38] was used to assess the risk of bias among included studies. The risk of bias within the selected articles was classified as either low, moderate, or high. On the other hand, the Quality in Prognosis Studies tool was used to assess the risk of bias for studies, which reported the factors associated with the implementation of nursing process [39]. Both authors carried out the risk of bias assessment of the included studies independently (Supplementary File 2).

### **2.7. Heterogeneity and Publication Bias**

Cochran's Q chi-square statistics and the  $I^2$  statistical test were conducted to assess the random variations between primary studies [40]. In this study, heterogeneity was interpreted as an  $I^2$  value of 0% = no heterogeneity, 25% = low, 50% = moderate, and 75% = high [41]. In case of high heterogeneity, subgroup analysis, meta regression, and sensitivity analyses were run to identify possible moderators of this heterogeneity. Potential publication bias was assessed by visually inspecting funnel plots and objectively using the Egger bias test ( $p < 0.05$  was considered as statistical significant publication bias) [42].

### **2.8. Statistical Analysis**

To obtain the overall implementation of the nursing process, a meta-analysis using the random effects DerSimonian and Laird model was performed due to significant heterogeneity among studies ( $I^2 = 74.1\%$ ,  $p < 0.001$ ) [43]. The pooled effect size (i.e., proportion and odds ratio (OR)) with a 95% confidence interval (CI) was generated and presented using a forest plot. The meta-analysis was performed using the STATA™ Version 14 software [44]. Finally, for all analyses,  $p < 0.05$  was considered statistically significant.

### **2.9. Presentation and Reporting of Results**

To estimate the overall implementation of the nursing process, the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guideline was used [45]. The PRISMA checklist was used alongside the final review.

The entire process of study screening, selection, and inclusion were depicted with the aid of a flow diagram. Quantitative data were presented through forest plots and summary tables.

### 3. Results

#### 3.1. Search Results

The search strategy identified a total of 648 articles. About 643 studies were found from six international databases and the remaining 5 were through a manual search. The databases included PubMed (4), Scopus (83), PsycINFO (46), Cochrane Library (68), Google scholar (327), and CINAHL (115). Out of them, 239 duplicate records were identified and removed. Second, from the rest 409 impending article, 371 articles were excluded after reading of titles and abstracts based on the predefined eligibility criteria. Finally, 25 full text articles were read and assessed. Based on the predefined criteria and quality assessment, seven articles met eligibility for the review and were included in the final analysis (Figure 1).

[figure omitted; refer to PDF]

#### 3.2. Baseline Characteristic of the Included Studies

A total of seven studies with 1,268 study participants were included in this meta-analysis. The implementation of the nursing process was obtained from various regions across the country with two studies from Amharic region [26, 35], one each from Afar [24], Addis Ababa [25], Harare [28], Tigray [30], and Southern Nations, Nationalities, and People's Region (SNNPR) [27]. With respect to sample size, half the studies had fewer than 200 participants [24, 26, 27]. The highest implementation of the nursing process (52.1%) was reported in a study conducted in Addis Ababa [25], whereas the lowest (32.7%) was reported in a study conducted in SNNPR [27]. Regarding tools used to measure implementation of the nursing process, five studies [24–28] used self-report, and two studies [30, 35] employed a document review method. All the included studies were cross-sectional by design and were conducted among nurses working in different clinical setting of Ethiopia. The quality score of each primary study, based on the Newcastle–Ottawa quality score assessment, was moderate to high for all seven articles assessed (Table 1).

Table 1

Baseline characteristics of studies included in the meta-analysis.

Primary author	Pub. year	Study area, Region	Health facility name	Sampling	Sample size	Prevalence % (95% CI)	Tool to measure outcome variable	Quality score
Abebe et al. [26]	2014	Amhara	Finoteselam and Debre Markos Hospital	Census	139	37.1 (28.6–45.6)	Self-reported	6
Miskir and Emishaw et al. [24]	2018	Afar	Afar region hospitals	Simple random	107	42.1 (32.5–51.6)	Self-reported	7
Aseratie et al. [25]	2014	Addis baba	Public hospitals	Simple random	202	52.1(45.0–59.2)	Self-reported	8
Shewangizaw and Mersha et al. [27]	2015	Arba Minch, SNNPR	Arba Minch General Hospital	Simple random	105	32.7 (23.4–41.9)	Self-reported	8

Baraki et al. [30]	2017	Tigray	Hospitals of Central and Northwest zones	Simple random	200	35.0 (28.4–41.6)	Document review	7
Semachew [35]	2018	Amhara	Felege Hiwot Referral Hospital Debretabor and Finoteselam general hospitals	Systematic random	338	47.0 (41.7–52.3)	Document review	7
Atnafe et al. [28]	2017	Harare	Public Hospitals of Harari People National Regional State	Systematic random	177	48.9 (41.5–56.3)	Self-reported	6

### 3.3. Implementation of Nursing Process in Ethiopia

The result of this meta-analysis using the random effects model showed that the overall implementation of the nursing process in Ethiopia was 42.44% (95% CI: 36.90, 47.97), with high significance of heterogeneity being observed ( $I^2=74.1\%$ ;  $p<0.001$ ) (Figure 2).

[figure omitted; refer to PDF]

### 3.4. Subgroup Analysis

The presence of high significance heterogeneity among the primary studies requires the need to conduct subgroup analysis. As a result, to ascertain the sources of heterogeneity, we undertook a subgroup analysis using a type of outcome measure as the variable of interest. The finding of subgroup analysis using a type of outcome measure showed that the highest implementation of the nursing process was observed in studies conducted using self-reported methods 42.95% (95% CI: 35.76, 50.15) (Figure 3).

[figure omitted; refer to PDF]

### 3.5. Meta-Regression Analysis

To investigate the possible source of variation across the included studies, we performed meta-regression by using publication year, outcome measurement, and sample size as covariate of interest. However, the result of the meta-regression analysis showed that both covariates were not statistically significant for the presence of heterogeneity (Table 2).

Table 2

Meta regression analysis for the included studies to identify source of heterogeneity.

Covariate (source)	Coefficients	Standard error	p value	95% CI
Publication year	-0.010	1.011	0.992	-6.062, 5.131
Sample size	0.047	0.043	0.338	-0.073, 0.168
Type of outcome measure Self-report Document review (ref.)	0.029	1.002	0.978	-2.546, 2.605

### 3.6. Sensitivity Analysis

To evaluate the effect of an individual study on the pooled effect size, sensitivity analysis was conducted. Sensitivity analyses using the random effects model revealed that no single study influenced the overall implementation of nursing process (Figure 4).

[figure omitted; refer to PDF]

### 3.7. Publication Bias

To identify the presence of publication bias, Egger's test was performed. The evidence from Egger's regression test showed no significant proof of publication bias ( $p=0.349$ ).

### 3.8. Association between Working Environment and Implementation of the Nursing Process

According to the current meta-analysis, those nurses working in a stressful environment were 81% less likely to implement the nursing process compared with nurses working in a well-organized environment (AOR=0.19; 95% CI: 0.04, 0.76,  $I^2=84.2\%$ ) (Figure 5). The evidence from Egger's regression test showed significant evidence of publication bias ( $p=0.032$ ).

[figure omitted; refer to PDF]

### 3.9. Association between Knowledge and Implementation of the Nursing Process

Nurses with good knowledge were 8.38 times more likely to implement the nursing process compared with nurses having poor knowledge (AOR=8.38; 95% CI: 2.82, 24.86) (Figure 6). The evidence from Egger's regression test showed that there was no publication bias ( $p=0.182$ ).

[figure omitted; refer to PDF]

## 4. Discussion

The main objective of this systematic review and meta-analysis was to estimate the overall implementation of the nursing process and its association with working environment and knowledge in Ethiopia. In this meta-analysis, the national pooled implementation of the nursing process in Ethiopia was estimated to be 42.44% (95% CI: 36.9, 47.9%). This finding was higher than that in a study conducted in Kenya with 33.1% [10]. However, this result was substantially lower than studies conducted in Nigeria with 57.1% [1] and Brazil with 81.77% [21]. This variation could be justified by difference in awareness, knowledge, educational background among nurses, policy, and health system strategies. For instance, in Brazil, there is an initiative, which emphasizes awareness-raising and training of nursing professionals in hospitals and outpatient clinics related to the nursing process implementation [31].

The result of the subgroup analysis based on methods of outcome measurement showed that the highest overall implementation of the nursing process was observed in studies using self-report technique 42.95% (95% CI: 35.76, 50.15). The present study revealed that nurses who had good knowledge of the nursing process were positively associated with implementation of the nursing process. This finding was supported by other studies conducted in developing and developed countries [46–49]. The possible explanation might be nurses who have theoretical knowledge on the nursing process could successfully promote quality of care to clients [20, 50].

According to the present review, nurses working in stressful environments were nearly 81% less likely to implement the nursing process as compared with those who are working in a well-organized environment. This finding is in agreement with a study conducted in Egypt [29]. This may reflect that a conducive environment is a necessary condition for effective and efficient nursing practice.

The meta-analysis conducted in this study has limitations that should be considered in future research. First, it is difficult to determine if the results from various regions are representative of the entire country, as no data were found for all regions of Ethiopia; second, most of the studies included had small sample size. Third, it was challenging to synthesise some of the factors as they were not defined or measured in the same way across the different studies; fourth, included studies only reported on hospital level data. Last, it was challenging to compare and contrast our findings with others because of lack of other published systematic review and meta-analysis on the implementation of the nursing process.

### 4.1. Implications for Nursing Practice

This meta-analysis has implications for clinical practice. Estimating the overall implementation of the nursing process would serve as a baseline for health care providers on the utilization of the nursing process, as standard of care, and to address client demand. The finding emphasizes the need for nursing educators to facilitate and encourage knowledge of the nursing process amongst their students in order to embed this practice. Furthermore, there is an imperative to design and implement different strategies on nursing knowledge and working environment to enhance



the potential implementation of the nursing process across the health care system.

## 5. Conclusion and Recommendations

The overall implementation of the nursing process in Ethiopia was relatively low. Good knowledge of the nurse had paramount benefits to improve implementation of the nursing process. Therefore, nurses can be educated on the imperative of knowledge in order to enhance the nursing process implementation and to improve the overall quality of healthcare services. Furthermore, policymakers (FMOH) and other concerned bodies should give special attention to improve implementation of the nursing process.

### Disclosure

This research was performed as part of the employment in Debre Berhan University.

### Authors' Contributions

WSS and TYA developed the protocol; were involved in the design, selection of study, data extraction, and statistical analysis; and developed the initial drafts of the manuscript. YAA, ADW, and TYA involved in data extraction, quality assessment, statistical analysis, and revising subsequent drafts. WSS and YAA prepared the final draft of the manuscript. All authors read and approved the final draft of the manuscript.

### Glossary

#### Abbreviations

CI:Confidence interval

FMOH:Federal ministry of health

OR:Odds ratio

PRISMA:Preferred reporting items for systematic reviews and meta-analyses

SNNP:Southern nations, nationalities, and peoples

WHO:World Health Organization.

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# First-Time Mothers' Enjoyment of Breastfeeding Correlates with Duration of Breastfeeding, Sense of Coherence, and Parental Couple and Child Relation: A Longitudinal Swedish Cohort Study

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## ABSTRACT (ENGLISH)

*Objectives.* Many women do not reach their own breastfeeding goals regarding duration of breastfeeding. Different factors influence breastfeeding, and to learn more about breastfeeding within a multidimensional and longitudinal perspective, further research is needed. Therefore, the aim of the present study was to investigate diverse factors correlated with first-time mothers' enjoyment of breastfeeding and breastfeeding duration, between childbirth and two years after birth. *Methods.* In a prospective longitudinal cohort study, 324 newly become mothers were followed. The Spearman correlation test was used to investigate factors correlated with the degree to which mothers enjoy breastfeeding and the duration of breastfeeding. The Mann–Whitney test was conducted for comparisons of demographic characteristics between mothers who did or did not breastfeed. *Results.* Among the mothers, 99.2% initiated breastfeeding after birth. Frequencies of breastfeeding were 54.8% at six months, 9.1% at one year, and 1.0% at two years. The degree to which the mother enjoyed breastfeeding was correlated positively with (1) the duration of breastfeeding, (2) more positive feelings for and relation to the child, (3) the partner's perceived relation to the child, (4) a higher sense of coherence, and (5) stronger perceived parental couple's relationship. Longer breastfeeding duration was correlated positively with (1) a higher degree of enjoyment of breastfeeding, (2) more positive relation to the child, and (3) stronger perceived parental couple's relationship. Additionally, breastfeeding during the first two hours after birth, more positive feelings for and relation to the child, and a higher degree of enjoyment of breastfeeding were more frequently reported among breastfeeding mothers, in comparison with not breastfeeding mothers. *Conclusion.* Mothers' subjective experience from breastfeeding, sense of coherence, and couple relationship with partner and relationship with the child are valuable factors in regard to breastfeeding.

## FULL TEXT

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### 1. Introduction

Various studies show that many women are unable to reach their own breastfeeding goals regarding duration of breastfeeding [1–3]. In an American study, 60% of mothers had a shorter breastfeeding duration than they had wanted [4]. Breastfeeding is recognised as promoting various health benefits for mother and child, and the World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life and at least some breastfeeding during an infant's first years [5, 6]. Breastfeeding duration in line with WHO's recommendations, however, is uncommon in developed countries [7, 8]. One explanation to this could be that mothers from higher income families have better financial conditions to procure breast milk substitutes [8].

In 2016, almost 95% of infants born in Sweden were breastfed at the age of one week [9]. As in other developed countries around the world, breastfeeding rates in Sweden drop considerably until the age of six months, with exclusive breastfeeding dropping from 74% at one week to 14% at six months and 50% of children receiving any

breastfeeding at six months [9].

The percentage of mothers breastfeeding one year after birth varies internationally with, for example, 35% in Norway, 27% in the USA, 16% in Sweden, and 1% in the United Kingdom [8]. Most women in developed countries have ended their breastfeeding when the child reaches the age of one year. A review of the literature studying breastfeeding beyond one year of age in western countries revealed that women who breastfeed after one year of age and therefore do not follow the norms of breastfeeding can experience judgement, negative comments, stigma, and the need to conceal their breastfeeding [7].

When initiating breastfeeding, many women experience some type of barrier to success, such as the perception of insufficient milk supply and difficulties to latch [10]. Research from recent qualitative studies in Sweden connects breastfeeding difficulties to a feeling of lostness as a mother, feelings of loneliness, and the need to deal with shattered expectations and thoughts, such as being of no use to the infant. The studies highlight the importance of seeing breastfeeding not merely as a way to feed the child, but also as an existential challenge for the mother and as a way towards closeness between mother and child [11, 12].

While breastfeeding is one of the challenges confronting new parents [10], research has also shown that breastfeeding is capable of reducing a mother's physiological and experienced stress, facilitating positive affect, and having a positive effect on maternal sensitivity and care [13].

An individual's ability to cope with the stressors encountered in life has previously been explained through the person's sense of coherence (SOC) [14]. Previously, it has been described that high SOC can help parental couples conceptualise the world as meaningful and manageable, including how parents perceive and cope with the challenges that come with childbirth and parenthood [15–17]. Also, mothers with higher SOC are more likely to breastfeed for a longer period [18]. While previously a person's life in which no radical life events had occurred was considered stable [19], later studies have described SOC as a continuously changing process throughout a person's life [20], where life events such as childbirth and the first years of parenthood can change SOC within both a positive and negative direction [21, 22]. A study following a group of parents from pregnancy until six months of age showed an increase in both quality of the couple's relationship (QDR36) and SOC, during the first week after childbirth. Thereafter, the measures for the QDR36 and SOC decreased significantly when the child had reached six months of age [23]. However, which factors influence mothers' breastfeeding may vary both individually among the mothers and nationally and internationally. It is clear that breastfeeding is a complex phenomenon and knowledge is lacking about diverse factors influencing mothers' enjoyment of breastfeeding and the breastfeeding duration. To learn more about breastfeeding within a multidimensional and longitudinal perspective, further research is needed. Therefore, the aim of the present study was to investigate diverse factors correlated with first-time mothers' enjoyment of breastfeeding and breastfeeding duration, between childbirth and two years after birth.

## 2. Methods

The present study is a prospective longitudinal cohort study that is a part of a larger ongoing study: the *Study of Parental Support*, a study that follows first-time mothers and their partners from pregnancy until eight years after birth. The overall aim with the *Study of Parental Support* is to explore parents' individual resources and experiences from childbirth, as well as effects of professional and social support. The larger research study consists of both qualitative research with interviews and written narratives and quantitative research with follow-up questionnaires. Some research has been previously published within the *Study of Parental Support* [23–27]. Specifically, the quantitative research with follow-up questionnaires from the first week until two years after birth is considered for the present study.

### 2.1. Setting and Participants

The present study was conducted in a county in southwestern Sweden, with approximately 280,000 inhabitants. The county includes urban as well as suburban and rural areas and is in that way representative of the general Swedish population. In the area, there is one hospital with a labour ward and a postnatal unit with approximately 2700 births per year. The participants in the present study were mothers recruited by midwives at the county's postnatal unit during the first week after birth. The recruitment took place between June 2014 and April 2016. The inclusion criteria

for the study were Swedish-speaking, first-time mothers who gave birth to a singleton infant. No further exclusion criteria were used.

## **2.2. Data Collection**

Data for the present study were collected at four different points in time (Q): first week after birth (Q1), six months after birth (Q2), one year after birth (Q3), and two years after birth (Q4). The questionnaires included several different measurements. From the questionnaires used in the larger research study, the “*Study of parental support*,” only those that were in line with the aim of the present study were investigated.

The participants filled out web-based questionnaires created in the computer system *Education Survey Automation Suite (EvaSys)*. At Q1, the participants could answer the questionnaire at the postnatal unit. For those participants who did not complete Q1 at the postnatal unit, they received it via email during the first week after birth. The following questionnaires (Q2–Q4) were sent via email. Up to three reminders for each time point were sent to the participants that had not yet filled out the questionnaires. The number of participants who accepted to take part in the study and the response rate for each questionnaire are presented in Figure 1.

[figure omitted; refer to PDF]

## **2.3. Pilot Studies**

Two pilot studies were conducted before the present study to explore parents’ experiences from responding to the questionnaires. Within the first pilot study, 16 parents filled out the questionnaires in paper form. Within the second pilot study, 22 parents filled out the questionnaires in the web-based form, which the present study later used. Some of the participants from each study (five in total) described their experiences of responding to the questionnaires. The results of the pilot studies showed that the information given to the participants and composition of the questionnaires were generally understandable and manageable. Before data collection for the present study started, minor changes were made within the questionnaires to incorporate participant information. The participants included within the pilot studies were not included in the present study.

## **2.4. Questionnaires**

### **2.4.1. Sociodemographical Factors**

Questions concerning the following sociodemographical factors were included in the questionnaires at different time points throughout the study: age of the participant, years of education attained before first child’s birth, years of couple relation with partner, and perceived economy (four-graded scale: 1=I perceive my financial situation as strained; 4=I perceive my financial situation as very good).

### **2.4.2. Duration of Breastfeeding**

Questions concerning if the mothers were breastfeeding or not were included in the questionnaires throughout the study (Q1–Q4). The mothers were asked regarding exclusive or partial breastfeeding. Within the current study, exclusive breastfeeding is defined as mothers exclusively giving their child breast milk as the only nutrition. Mothers who responded that they gave their child breast milk in combination with formula and/or solid foods (such as porridge and/or “normal food”) were defined as partially breastfeeding their children. Breastfeeding in this study refers to any breastfeeding if not otherwise specified. In Q1, the mothers were asked whether or not they breastfed their child during the first two hours after birth. Included within Q4 was also a question concerning whether or not the mothers were willing to breastfeed again, in case they would have another child.

### **2.4.3. Mother to Infant Relations and Feelings Scale (MIRF-Scale) and Enjoying Breastfeeding**

To assess the mother’s relation to and feelings for her child, the MIRF-scale was used [28–30]. The MIRF-scale is a validated [28, 30] seven-graded Likert scale (ranging from 1 to 7) consisting of two different parts: (1) the first part assesses the mother’s perceived relation to her child (7 items) and (2) the second part assesses the mother’s perceived feelings for her child (7 items). Within the first part, the mother’s perceived relationship to her child is questioned, followed by different statements such as “I know what my baby wants/I do not know what my baby wants.” Originally, the index is calculated by summarising the seven statements. Within the present study, however, the index of the first part of the MIRF-scale is analysed both with and without the item concerning breastfeeding: “I enjoy breastfeeding/I do not enjoy breastfeeding,” which means that the score index for the mother’s perceived

relation to her child (the first part of the MIRF-scale) is based on six (score range 7–42) or seven (score range 7–49) items within the present study. The higher the score, the stronger the mother's perceived relation to child. Within the present study, the variable that describes the index score of the first part of the MIRF-scale is named "*Mother's perceived relation to the child ("Enjoyment of breastfeeding included" or "Enjoyment of breastfeeding not included")*." In the present study, the item "I enjoy breastfeeding/I do not enjoy breastfeeding" is also analysed separately and used as a variable named "*Enjoyment of breastfeeding*" (score range 1–7); the higher the score, the more did the mother perceive herself enjoying breastfeeding.

Within the second part of the MIRF-scale, the mother's feelings for her child are assessed with a question concerning the mother's perceived contact with her child. This question is followed by seven items constructed of opposing word pairs, such as "secure/insecure." The items consist of a seven-point response scale ranging from 1 to 7. The index score (score range 7–49) summarises the mother's feelings for her child. The higher the score, the stronger the mother's perceived feelings for the child. Within the present study, the variable that describes the index score of the second part of the MIRF-scale is named "*Mother's perceived feelings for the child.*"

To assess how the mother perceived the partner's feelings for the child, the same questions (items) given to the mother about her contact with the child (the second part of the MIRF-scale) were also given to the mother regarding how she perceived her partner's contact with their child. Those seven items were developed for the present study and tested within the two pilot studies. The index score (score range 7–49) summarises how the mother perceived the partner's feelings for their child. The higher the score, the stronger the partner's perceived feelings for the child. The variable that describes the index score is named "*Mother's partner's perceived feelings for the child.*" The MIRF-scale and the questions regarding the "Mother's partner's perceived feelings for the child" are included within Q1–Q4.

#### **2.4.4. Sense of Coherence (SOC-13)**

The mother's SOC was assessed with the instrument named SOC-13. It consists of 13 items divided into three dimensions: *Comprehensibility* (e.g., "Do you have very mixed-up feelings and ideas?"), *Manageability* (e.g., "How often do you have feelings that you are not sure you can control"), and *Meaningfulness* (e.g., "Until now your life has had no clear goals—very clear goals and purpose"). Each item is scored with a Likert scale, ranging from 1 to 7 [14, 31]. The Swedish version has been used for several years [32], and a validation study on SOC-13 used on pregnant women has been carried out earlier [33]. SOC-13 is assessed with an index for the whole scale (score range 13–91); the higher the score, the higher the SOC. SOC-13 was included within Q1–Q4.

#### **2.4.5. Quality of the Couple's Relationship (QDR36)**

The mothers' perceived quality of the couple's relationship was assessed with the scale *Quality of Dyadic Relationship* (QDR36) [34–36]. QDR36 has been tested and validated regarding its psychometric properties [36]. It consists of 36 items divided into five dimensions: *Dyadic Consensus* (e.g., "How often do you and your partner agree or disagree handling family finances"), *Dyadic Cohesion* (e.g., "How often do you think you and your partner have a stimulating exchange of ideas"), *Dyadic Satisfaction* (e.g., "How often do you and your partner quarrel?"), *Dyadic Sensuality* (e.g., "How often do you hug your partner now?"), and *Dyadic Sexuality* (e.g., "How often do you think your partner pays attention to your sexual needs?"). Each item is scored with a Likert scale, ranging from 1 to 6. The perceived quality of the couple's relationship is assessed with an index for the whole scale, created by the sum of the mean values from the separate dimensions [36] (score range 5–30); the higher the score, the higher the perceived quality of couple relationship. QDR36 is included within Q1–Q4.

### **2.5. Statistical Analysis**

The Statistical Package for the Social Sciences (SPSS), version 25, was used for the statistical analyses of the data. Inconsistent and possibly incorrect answers were controlled for and eliminated for the statistical analysis. Descriptive statistics were carried out in order to present the sociodemographics and other measures for the participants (Table 1). Index and dimensions for measurements included were calculated. Cronbach's alpha was calculated to evaluate internal consistency for *SOC-13*, *QDR36*, *MIRF-scale part one and two*, and *Mother's partner's perceived feelings for the child* (Table 2).



Table 1

Overview of characteristics at different times (Q) throughout the study.

	First-time mothers ( <i>n</i> )	<i>M</i> (SD)	MD, range	Frequencies in percentage (%)
<b>Age</b> (years) at Q1	310	27.9 (4.1)	27, 18–43	
<b>Country of birth</b> at Q4	<b>191</b>			
Sweden	178			93.2
Nordic country	1			0.5
Europe, other than Nordic country	3			1.6
Non-European country	8			4.2
Missing	1			0.5
<b>Education</b> (years) at Q4	184	14.4 (2.0)	15, 9–19	
<b>Civil status</b> at Q1	<b>325</b>			
Married	72			22.2
Cohabiting	212			65.2
Not living together	4			1.2
Missing	37			11.4
<b>Length of parental couple relationship</b> (years) at Q4	146	7.7 (3.4)	7.3–24	
<b>Still in the same parental couple relationship</b>				
At Q3	239			98.8
At Q4	185			96.9
<b>Perceived economy</b> at Q1	<b>325</b>			
Very good	54			16.6

Good	148			45.5
Sufficient	75			23.1
Strained	10			3.1
Missing	38			11.7
<b>Perceived economy at Q2</b>	<b>269</b>			
Very good	16			5.9
Good	112			41.6
Sufficient	109			40.5
Strained	32			11.9
Missing	0			0.0
<b>Perceived economy at Q3</b>	<b>242</b>			
Very good	16			6.6
Good	85			35.1
Sufficient	105			43.4
Strained	35			14.5
Missing	1			0.4
<b>Perceived economy at Q4</b>	<b>191</b>			
Very good	32			16.8
Good	97			50.8
Sufficient	50			26.2
Strained	12			6.3
Missing	0			0.0
<b>On parental leave</b>				

At Q2	258			95.9
At Q3	167			69.0
At Q4	50			26.2
<b>Weeks of any breastfeeding</b>	<b>248</b>	27.5 (19.0)	27.0, 0–105	
First week after birth (at Q1)	246			99.2
4 weeks after birth	223			89.9
11 weeks after birth	186			75.0
21 weeks after birth	149			60.0
26 weeks after birth (at Q2)	136			54.8
36 weeks after birth	74			29.8
42 weeks after birth	50			20.2
57 weeks after birth	10			4.0
67 weeks after birth	5			2.0
91 weeks after birth	2			1.0
<b>Breastfeeding first week after birth</b>				
Exclusive breastfeeding	218			67.1
Partial breastfeeding	50			15.4
<b>Breastfeeding six months after birth</b>				
Exclusive breastfeeding	35			13.0
Partial breastfeeding	136			50.1
<b>Breastfeeding one year after birth</b>				
Partial breastfeeding	22			9.1

<b>Breastfeeding two years after birth</b>				
Partial breastfeeding	2			1.0
<b>Pregnant</b>				
At Q3	20			8.3
At Q4	52			27.2
<b>Given birth to a second child</b>				
At Q3	2			0.8
At Q4	40			20.9
<b>Breastfed a second child at Q4</b>	<b>191</b>			
Yes, one child	41			21.5
Yes, two or more children	2			1.0
<b>Willingness to breastfeed a second child at Q4</b>	<b>191</b>			
Yes	153			80.1
No	10			5.2
Do not know	16			8.4
<b>Missing</b>	<b>12</b>			6.3

*Questionnaires:* Q1: first week after birth; Q2: six months after birth; Q3: one year after birth; Q4: two years after birth. *Values:* *n*=number of participants; *M*=mean; *SD*=standard deviation; *MD*=median.

Table 2

Overview of index, dimensions, and outcome measures at different times throughout the study.

Measurement	Q1: first week after birth	Q2: six months after birth	Q3: one year after birth	Q4: two years after birth
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$n$	$M(SD)$	MD	Range	$\alpha$	$n$	$M(SD)$	MD	Range	$\alpha$	$n$	$M(SD)$	MD	Range	$\alpha$	$n$	$M(SD)$	MD	Range	$\alpha$	Enjoyment of breastfeeding
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278	5.6 (1.4)	6.0	1.0-7.0		148	5.9 (1.2)	6.0			26	6.1 (0.9)	6.0			4.0 (0.7)		2.0 (0.0)	6.0 (0.0)	6.0 (0.0)	M I R F - s c a l e p a r t o n e , i t e m " E n j o y m e n t o f b r e a s t f e e d i n g " i n c
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271	42.4 (4.4)	43.0	25.0-4 9.0	0.62	187	406 (32)	410 (490)	240 (54)	65	443 (44)	450	290 (57)	422 (38)	430	320 (480)	0.33	M I R F - s c a l e p a r t o n e , i t e m " E n j o y m e n t o f b r e a s t f e e d i n g " n o t
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																						<i>i n c l u d e d</i>
284	36.8 (3.6)	37.0	23.0-4 2.0	0.56	265	38	39.0	0.52	240	38	39.0	240	0.69	191	38	39.0	250	0.44				M I R F - s c a l e p a r t t w o

277	44.7 (4.8)	46.0	19.0-4 9.0	0.90	263	473	49.0	320	0.91	240	472	49.0	290	0.91	188	472	49.0	230	0.88	Mother, spartner, sperceived feelings for the child
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269	46.3 (3.4)	48.0	32.0–49.0	0.85	260	223	48.0	0.88	240	46.4	49.0	0.92	188	49.0	0.92	SOC-13
276	71.0 (10.7)	73.5	31.0–89.0	0.86	263	212	71.0	0.89	239	73.1	73.0	0.91	189	74.0	0.91	QDR36

Score range: *Enjoyment of breastfeeding index*: one dimension: range 1–7. *MIRF-scale part one, item “Enjoyment of breastfeeding” included: Mother’s perceived relation to the child index*: theoretical range 7–49. *MIRF-scale part one, item “Enjoyment of breastfeeding” not included: Mother’s perceived relation to the child index*: theoretical range 7–42. *MIRF-scale part two: Mother’s perceived feelings for the child index*: theoretical range 7–49. *Mother’s partner’s perceived feelings for the child index*: theoretical range 7–49. *SOC-13 index*: theoretical range 13–91; *dimensions*: comprehensibility range 5–35; manageability range 4–28, meaningfulness range 4–28. *QDR36 index*: theoretical range 5–30; *dimensions*: range 1–6. *Values*:  $n$ =number of participants,  $M$ =mean;  $SD$ =standard deviation;  $MD$ =median;  $\alpha$ =Cronbach’s alpha.

To consider the distribution of the variables, histograms and scatter plots were made. These showed that the following variables were not normally distributed: “*Enjoyment of breastfeeding*” (at Q1-Q2); “*Duration of breastfeeding*”, *SOC-13* (at Q3 and Q4); “*Mother’s perceived relation to the child*” (at Q1–Q4); and “*Mother’s perceived feelings for the child*” (at Q1–Q4). Since neither of the two variables “*Enjoyment of breastfeeding*” or “*Duration of breastfeeding*” was normally distributed, the nonparametric Spearman’s correlation test was used to analyse correlated factors with (1) the degree to which mothers enjoy breastfeeding at six months and one year of age and (2) the duration of breastfeeding from childbirth until two years of age.

The Mann–Whitney test was conducted for comparison between first-time mothers who did or did not breastfeed: (1) during the first two hours after birth (Q1), (2) at six months after birth (Q2), and (3) at one year after birth (Q3) (Table 3). Analyses for comparison were carried out for the mothers’ *Age; Education; Perceived economy; Years of parental couple relationship; MIRF-scale part one and two; Mother’s partner’s perceived feelings for the child; SOC-13; and QDR36*.

Table 3

Results from the Mann–Whitney test between first-time mothers who did and did not breastfeed at different points of time throughout the study.

	Q1: breastfeeding during the first two hours after birth	Q1: breastfeeding at the first week after birth	Q2: breastfeeding at six months after birth	Q3: breastfeeding at one year after birth
Z (p value), <i>n</i> breastfeeding/not breastfeeding	Z (p value), <i>n</i> breastfeeding/not breastfeeding	Z (p value), <i>n</i> breastfeeding/not breastfeeding	Z (p value), <i>n</i> breastfeeding/not breastfeeding	MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" not included)
Q1	-0.45 (0.654), 59/171	-1.15 (0.250), 267/13	-0.50 (0.614), 154/92	-1.30 (0.194), 34/190
Q2	-0.20 (0.842), 50/152	-0.41 (0.682), 237/10	-0.62 (0.534), 166/97	-1.14 (0.253), 35/195
MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" included)				
Q1	-0.66 (0.512), 55/169	-0.11 (0.915), 265/5	-0.20 (0.841), 153/84	-1.45 (0.148), 33/183
Q2	-0.43 (0.664), 34/107	-0.62 (0.538), 166/1	-2.49 ( <b>0.013*</b> ), 165/13	-2.10 ( <b>0.036*</b> ), 34/121
MIRF-scale part two: Mother's perceived feelings for the child index				
Q1	-1.36 (0.174), 56/168	-0.42 (0.674), 260/13	-0.54 (0.589), 149/91	-1.39 (0.164), 33/186
Q2	-0.12 (0.903), 50/152	-1.62 (0.104), 235/10	-0.07 (0.943), 166/95	-2.18 ( <b>0.030*</b> ), 34/195
Mother's partner's perceived feelings for the child				
Q1	-0.32 (0.751), 52/165	-0.41 (0.683), 252/13	-0.19 (0.848), 144/90	-1.51 (0.131), 31/184
Q2	-0.66 (0.510), 49/151	1.04 (0.300), 232/10	-0.73 (0.463), 162/96	-1.38 (0.166), 34/194
Breastfeeding or not at				

Q1: first two hours after birth		-3.31 ( <b>0.001**</b> ), 228/6	-0.34 (0.732), 136/68	
Q1 first week after birth	-3.31 ( <b>0.001**</b> ), 59/175		-3.58 ( <b>&lt;0.000**</b> ), 158/91	-1.06 (0.288), 28/158
Q2	-0.34 (0.732), 51/153	-3.58 ( <b>&lt;0.000**</b> ), 239/10		-0.33 (0.741), 34/193
Q3	-1.06 (0.288), 45/141	-0.33 (0.741), 218/9	-4.26 ( <b>&lt;0.000**</b> ), 144/87	-4.23 ( <b>&lt;0.000**</b> ), 35/196
Enjoyment of breastfeeding				
Q1	-1.74 (0.082#), 55/175	-1.76 (0.079#), 271/5	-2.17 ( <b>0.030*</b> ), 157/85	-1.60 (0.110), 33/188
Q2	-0.26 (0.791), 34/108	0.00 (1.00), 167/1	-2.78 ( <b>0.005**</b> ), 166/13	-2.72 ( <b>0.007*</b> ), 34/122
Q3	-1.18 (0.239), 14/32	-0.88 (0.376), 55/1	-2.07 ( <b>0.038*</b> ) 46/11	-1.09 (0.278) 36/24
Willingness to breastfeed a possible following child, Q4	-0.64 (0.523), 45/140	-4.75 ( <b>&lt;0.000**</b> ), 215/9	-4.72 ( <b>&lt;0.000**</b> ), 143/85	-2.07 ( <b>0.038*</b> ), 36/201
Has had another child two years after birth, Q4	-1.4 (0.154), 35/111	-0.42 (0.672), 177/7	-0.41 (0.686), 130/56	-2.06 ( <b>0.040*</b> ), 25/150
SOC-13 index				
Q1	-0.63 (0.532), 55/169	-0.51 (0.609), 261/12	-0.27 (0.791), 151/89	-0.55 (0.586), 33/187
Q2	-0.43 (0.532), 49/152	-0.78 (0.434), 237/9	-0.03 (0.978), 164/98	-0.18 (0.852), 34/195
Q3	-0.78 (0.436), 44/140	-0.40 (0.687), 216/9	-0.30 (0.762), 142/87	-0.25 (0.803), 36/203
Q4	-0.48 (0.634), 35/110	-0.42 (0.676), 176/7	-0.46 (0.649), 130/55	-0.13 (0.894), 25/149
QDR36 index				

Q1	-0.96 (0.338), 41/131	-1.28 (0.201), 203/9	-0.18 (0.855), 119/67	-1.40 (0.163), 25/145
Q2	-0.63 (0.532), 47/149	-0.87 (0.382), 225/9	-0.77 (0.439), 154/95	-0.41 (0.683), 33/186
Q3	-0.48 (0.633), 42/133	-0.87 (0.385), 207/8	-1.22 (0.224), 138/82	-0.88 (0.378), 33/195
Q4	-0.07 (0.945), 33/107	-1.44 (0.149), 169/6	-0.52 (0.603), 123/55	-0.37 (0.710), 23/145

*Questionnaires:* Q1: first week after birth; Q2: six months after birth; Q3: one year after birth; Q4: two years after birth. *Measurements:* MIRF-scale part one, *item "Enjoyment of breastfeeding" included:* Mother's perceived relation to the child index; MIRF-scale part one, *item "Enjoyment of breastfeeding" not included:* Mother's perceived relation to the child index; MIRF-scale part two: Mother's perceived feelings for the child index; and Mother's partner's perceived feelings for the child index. Sense of Coherence (SOC-13); Quality of Dyadic Relationship (QDR36).

*Values:* Z: z-approximation test. p values: \*p<0.05; \*\*p<0.0, #p<0.1; n: number of participants.

Using the nonparametric Friedman's test, comparisons were made between Q1 and Q2; Q2 and Q3; Q3 and Q4; Q1 and Q3; Q1 and Q4; Q2 and Q4, in relation to the variable "Enjoyment of breastfeeding." These analyses were carried out to explore changes over time in regard to first-time mothers' enjoyment of breastfeeding. After a statistically significant Friedman's test, the Wilcoxon signed rank test for post hoc testing was performed. The results of the Wilcoxon signed rank test are presented within the results section.

p values <0.05 were considered significant and p values <0.1 were interpreted as tendencies. For this study, the STROBE guidelines for cohort studies have been used (see "Supplementary material (available here)").

## 2.6. Nonrespondents

To investigate differences between respondents who filled in both the first (Q1) and the last (Q4) questionnaire and nonrespondents who did not fill in both Q1 and Q4, the Mann-Whitney test was used for ordinal variables (*Age, Marital status, Perceived economy, SOC-13, QDR36, MIRF-scale part one and two, and Mother's partner's perceived feelings for the child*) and chi-square test for discrete variables (*Skin-to-skin contact after birth and Any breastfeeding*).

## 2.7. Ethical Statement

This study was approved by the Regional Ethical Review Board in Gothenburg (Dnr 197-14; Dnr T 623-14). All participants received information both verbally and in writing about study rationale, the anticipated benefits and potential risks of the study, the right to refuse to participate, and the right to withdraw at any time. The identities of the participants were kept confidential, and in the reporting of the data, none of the participants could be identified.

## 3. Results

### 3.1. Participants

In total, 325 first-time mothers accepted to participate in the present study. The number of participants eligible for each analysis is presented in Figure 1 and Table 1. The characteristics of the participants are presented in Table 1. When comparing participants who filled in both Q1 and Q4 with participants who did not fill in both Q1 and Q4, there were no significant differences in relation to their age, marital status, perceived economy, SOC-13, perceived quality of parental couple relationship (QDR36), mother to infant relations and feelings (MIRF-scale), and skin-to-skin contact after birth nor to their breastfeeding at Q1.

### 3.2. Breastfeeding Frequencies between First Week and Two Years after Birth

Among the mothers, 99.2% responded that they were breastfeeding at Q1 and 54.8% were breastfeeding at Q2. The frequencies of breastfeeding mothers were 9.1% at one year after birth (Q3) and 1.0% at two years after birth

(Q4). Frequencies of exclusive and partial breastfeeding are presented in Table 1.

At Q4, 80.1% of the mothers answered that they were willing to breastfeed again if they would have a second child; 5.2% of the mothers responded that they were not willing to breastfeed again; and 8.4% of the mothers did not know whether they would be willing to breastfeed again or not. At Q4, 20.9% of the mothers responded that they had given birth to a second child and 22.5% of the mothers responded that they had been breastfeeding a second child, which indicates that more mothers answered the breastfeeding question in comparison with the amount of mothers who answered the question regarding if they had given birth to a second child (Table 1).

### 3.3. Enjoying Breastfeeding

The mothers rated how much they enjoyed breastfeeding on a seven-graded Likert scale: "Enjoyment of breastfeeding," within the MIRF-scale. The mothers reported the highest values in relation to "Enjoyment of breastfeeding" at Q3 ( $M=6.1$ ) and the lowest values at Q1 ( $M=5.6$ ), in comparison with the other points of time (Q2:  $M=5.9$ ; Q4:  $M=6.0$ ) (Table 2). Results from the Wilcoxon signed rank test showed that the mothers reported significantly higher values in relation to "Enjoyment of breastfeeding" at Q4 compared to Q1 ( $p<0.000$ ) and Q2 ( $p=0.008$ ). No other significant results were shown from the Wilcoxon signed rank test regarding "Enjoyment of breastfeeding" at different points in time. Results from the Wilcoxon signed rank test are not presented in tables.

#### 3.3.1. Factors Correlated with Mothers' Enjoyment of Breastfeeding and the Duration of Breastfeeding

Results from Spearman's correlation analysis showed that the mothers' rated enjoyment of breastfeeding at Q2 was correlated positively with (1) higher rated enjoyment of breastfeeding at Q3 ( $r_s=0.529$ ,  $p=0.006$ ); (2) a longer breastfeeding duration ( $r_s=0.241$ ,  $p=0.005$ ); (3) a higher SOC-13 at Q1 ( $r_s=.263$ ,  $p<0.000$ ) and Q2 ( $r_s=0.233$ ,  $p=0.007$ ); and (4) a stronger perceived parental couple's relationship (QDR36) at Q1 ( $r_s=0.240$ ,  $p=0.002$ ). Likewise, mothers' relation to the child (MIRF-scale part one) was correlated positively with the mothers' rated "Enjoyment of breastfeeding" at Q2 (item "Enjoyment of breastfeeding" included at Q3:  $r_s=0.473$ ,  $p=0.002$ ; Q4:  $r_s=0.505$ ,  $p=0.012$ ; item "Enjoyment of breastfeeding" not included at Q2:  $r_s=0.314$ ,  $p<0.000$ ; Q3:  $r_s=0.252$ ,  $p=0.005$ ; Q4:  $r_s=.215$ ,  $p=0.022$ ). In addition, the mothers' higher rated enjoyment of breastfeeding at Q2 correlated positively with mothers' higher rated perceived feelings for the child (MIRF-scale part two) (Q2:  $r_s=0.359$ ,  $p\leq 0.000$ ; Q3:  $r_s=0.257$ ,  $p=0.004$ ; and Q4:  $r_s=0.190$ ,  $p=0.046$ ) and mothers' higher rated partner's perceived feelings for the child (Q2:  $r_s=0.235$ ,  $p=0.005$ ) (Table 4).

Table 4

Results from Spearman's correlation analysis for correlated factors with first-time mothers' enjoyment of breastfeeding at six months (Q2) and one year after (Q3) birth, as well as first-time mothers' duration of breastfeeding.

	Enjoyment of breastfeeding at Q2 $r_s$ (p value), $n$	Enjoyment of breastfeeding at Q3 $r_s$ (p value), $n$	Duration of breastfeeding $r_s$ (p value), $n$
Enjoyment of breastfeeding, Q2	—	0.529 (0.006**), 25	0.241 (0.005**), 133
Enjoyment of breastfeeding, Q3	0.529 (0.006**), 25		0.347 (0.090#), 25
Duration of breastfeeding (weeks)	0.241 (0.005**), 133	0.347 (0.090#), 25	—
Age of participant	-0.146 (0.126), 111	-0.208 (0.424), 17	-0.059 (0.430), 179
Years of education	-0.005 (0.956), 110	-0.264 (0.307), 17	0.043 (0.573), 175

Perceived economy, Q2	0.014 (0.861), 149	0.021 (0.921), 25	0.072 (0.268), 241
Perceived economy, Q3	-0.110 (0.223), 125	-0.092 (0.663), 25	0.045 (0.501), 225
Perceived economy, Q4	-0.020 (0.832), 113	-126 (0.631), 17	0.002 (0.976), 182
Years of parental couple relationship	0.143 (0.191), 85	-0.416 (0.139), 14	0.102 (0.233), 138
MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" included), Q2	-0.048 (0.548), 156	0.361 (0.076#), 25	-0.155 (0.050*), 159
MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" included), Q3	0.473 (0.002**), 39	0.589 (0.002**), 25	-0.003 (0.985), 51
MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" included), Q4	0.505 (0.012*), 24	0.167 (0.789), 5	0.527 (<0.000**), 45
MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" not included), Q2	0.314 (<0.000**), 148	0.445 (0.026*), 25	-0.006 (0.931), 237
MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" not included), Q3	0.252 (0.005**), 124	0.424 (0.035*), 25	0.050 (0.460), 224
MIRF-scale part one: Mother's perceived relation to the child index ("Enjoyment of breastfeeding" not included), Q4	0.215 (0.022*), 113	0.352 (0.165), 17	0.074 (0.318), 182
MIRF-scale part two: Mother's perceived feelings for the child index, Q2	0.359 (<0.000**), 148	0.198 (0.354), 24	0.017 (0.801), 235
MIRF-scale part two: Mother's perceived feelings for the child index, Q3	0.257 (0.004**), 126	0.172 (0.400), 26	0.048 (0.471), 224
MIRF-scale part two: Mother's perceived feelings for the child index, Q4	0.190 (0.046*), 111	-0.011 (0.968), 16	0.103 (0.171), 179
Mother's partner's perceived feelings for the child index, Q2	0.235 (0.005**), 144	-0.236 (0.267), 24	-0.048 (0.462), 234
Mother's partner's perceived feelings for the child index, Q3	0.115 (0.200), 126	-0.097 (0.639), 26	-0.029 (0.665), 225



Mother's partner's perceived feelings for the child index, Q4	0.138 (0.146), 112	-0.309 (0.227), 17	-0.043 (0.568), 179
SOC-13 index, Q1	0.263 (<0.000**), 264	0.002 (0.978), 130	0.093 (0.178), 213
SOC-13 index, Q2	0.223 (0.007**), 146	0.059 (0.786), 24	0.021 (0.743), 236
SOC-13 index, Q3	0.110 (0.225), 124	0.127 (0.537), 26	-0.012 (0.853), 223
SOC-13 index, Q4	0.122 (0.199), 113	-0.005 (0.986), 17	-0.010 (0.898), 181
QDR36 index, Q1	0.191 (0.006**), 204	-0.043 (0.664), 102	0.240 (0.002**), 164
QDR36 index, Q2	0.097 (0.260), 137	-0.060 (0.780), 24	-0.002 (0.971), 226
QDR36 index, Q3	0.034 (0.712), 119	0.005 (0.793), 25	0.006 (0.932), 214
QDR36 index, Q4	0.069 (0.480), 106	-0.040 (0.884), 16	-0.012 (0.878), 174

*Questionnaires:* Q1: first week after birth; Q2: six months after birth; Q3: one year after birth; Q4: two years after birth. *Measurements:* MIRF-scale part one, item "Enjoyment of breastfeeding" included: Mother's perceived relation to the child index; MIRF-scale part one, item "Enjoyment of breastfeeding" not included: Mother's perceived relation to the child index; MIRF-scale part two: Mother's perceived feelings for the child index; Mother's partner's perceived feelings for the child index; Sense of Coherence (SOC-13); Quality of Dyadic Relationship (QDR36). *Values:*  $r_s$ : correlation coefficient; p values: \*p\*\*ppn : number of participants.

At Q3, the mothers' higher rated enjoyment of breastfeeding was correlated positively with mothers' higher rated (1) enjoyment of breastfeeding at Q2 ( $r_s = 0.529$ ,  $p = 0.006$ ); (2) perceived relation to the child (MIRF-scale part one, item "Enjoyment of breastfeeding" included) at Q3 ( $r_s = 0.589$ ,  $p = 0.002$ ); and (3) perceived relation to the child (MIRF-scale part one, item "Enjoyment of breastfeeding" not included) at Q2 ( $r_s = 0.445$ ,  $p = 0.026$ ) and Q3 ( $r_s = 0.424$ ,  $p = 0.035$ ) (Table 4).

A longer breastfeeding duration was correlated positively with mothers' higher reported (1) enjoyment of breastfeeding at Q2 ( $r_s = 0.241$ ,  $p = 0.005$ ) and (2) perceived relation to the child (MIRF-scale part one, item "Enjoyment of breastfeeding" included) at Q4 ( $r_s = 0.527$ ,  $p \leq 0.000$ ). Significant and nonsignificant results from Spearman's correlation analysis are presented in Table 4.

### 3.3.2. Comparisons between Breastfeeding and Not Breastfeeding from Birth until Two Years of Age

There were significantly more mothers who breastfed during the child's first period awake after birth who also breastfed at one week after birth (Q1), compared to those mothers who did not breastfeed during the first hours after birth ( $z = -3.31$ ,  $p = 0.001$ ) (Table 3).

A larger amount of the mothers who were breastfeeding at Q2 reported higher scores for "Mother's perceived relation to the child" ( $z = -2.49$ ;  $p = 0.013$ ) in comparison with mothers who did not breastfeed at that point in time. Furthermore, a larger amount of the mothers who breastfed at Q3 did report higher scores for (1) "Mother's perceived relation to the child" ( $z = -2.10$ ;  $p = 0.036$ ) and (2) "Mother's perceived feelings for the child" at six months (Q2) ( $z = -2.18$ ;  $p = 0.030$ ) (Table 3).

A larger amount of the mothers who breastfed at Q1 were willing to breastfeed a possible following child, compared with mothers who did not breastfeed at Q1 ( $z = -4.75$ ;  $p = 0.000$ ). Likewise, a larger amount of the breastfeeding mothers at Q2 responded that they were willing to breastfeed a possible following child ( $z = -4.72$ ;  $p = 0.000$ ). More

mothers who breastfed the child at Q3 were willing to breastfeed a possible following child ( $z=-2.07$ ;  $p=0.038$ ) and more of them had given birth to another child at Q4 ( $z=-2.06$ ;  $p=0.040$ ) (Table 3).

When comparing breastfeeding mothers with nonbreastfeeding mothers in relation to their SOC-13 and QDR36, no significant differences were found at any point in time (Table 3). Significant and nonsignificant results from the Mann–Whitney tests are presented in Table 3.

#### 4. Discussion

For the present study, the aim was to investigate diverse factors correlated with first-time mothers' enjoyment of breastfeeding and breastfeeding duration, between childbirth and two years after birth. The results revealed that mothers' higher reported enjoyment of breastfeeding was correlated positively with a longer breastfeeding duration, higher perceived relation to and feelings for the child, as well as higher SOC, higher quality of parental couple relationship, and higher perceived partner's feelings for the child. A longer breastfeeding duration was also correlated with mothers' higher perceived relation to the child and quality of parental couple relationship. In addition, breastfeeding during the first two hours after birth, more positive feelings for and relation to the child and a higher degree of enjoyment of breastfeeding were more frequently reported among breastfeeding mothers, in comparison with not breastfeeding mothers, at different points in time.

In this study, the results showed that more mothers were breastfeeding at one week after birth (99.2%), in comparison with previous reports on Swedish first- and multipara mothers (95%) [9]. At six months, the amount of mothers breastfeeding was slightly higher (54.8%) in comparison with previous reports (50%) [9]. The results from the present study revealed that a longer duration of breastfeeding correlated positively with the mothers' higher reported enjoyment of breastfeeding, which is in line with earlier research [34]. The majority of mothers breastfeeding at all points of time in the study scored high on the subscale "*Enjoyment of breastfeeding*" in the MIRF-scale. Regardless of the seemingly positive experience of breastfeeding, most of the mothers breastfeeding at six months and at one year after childbirth weaned within the following months. The possible influence of a stigma regarding breastfeeding until and beyond one year [7] might be the explanation for this, which future studies could investigate further.

Earlier research shows that just as breastfeeding is seen as a protective factor against developing postpartum depression [37], early breastfeeding difficulties have been suggested as a risk factor for depression [38] as well as for stress and other forms of psychological distress for the mother [39]. At the same time, maternal psychological distress has also been shown to be a risk factor for breastfeeding difficulties [40, 41]. Results from this study showed that higher rated SOC correlated positively with a higher rated enjoyment of breastfeeding at six months after birth. It might be that a first-time mothers' higher SOC could strengthen her ability to cope with the challenges that come with parenthood and initiating breastfeeding, resulting in an easier path towards being able to enjoy breastfeeding. In addition, previous research has shown that mothers with a higher SOC are more likely to breastfeed for a longer time, compared with mothers with a lower SOC [18]. Taking into consideration these results, a mother's SOC seems to be related to both her breastfeeding duration and her breastfeeding experience. Therefore, healthcare professionals should strive to strengthen the mothers' sense of coherence during the childbearing period, particularly since SOC previously has been shown to decrease during the first months after childbirth [20–22].

The positive correlation at six months after birth between "*Enjoyment of breastfeeding*" and "*Mother's partner's perceived feelings for the child*" could mean that first-time mothers who experience that the other parent has a well-functioning relationship with the child can more easily share both the enjoyment and the challenges that come with the transition to parenthood and can therefore enjoy breastfeeding more. It might also be that a partner who is perceived as having a better relationship to the child takes more responsibility in the family with the child, and therefore, the mother might experience more support from her partner, as shown in an earlier study [34].

Nevertheless, the mother's capacity for being sensitive to her child's needs and signals is vital for the attachment [42]. Professional support from healthcare professionals has been proven to be important in facilitating both a mother's sensitivity to her child's signals as well as for the child's needs and the mother's caring response [43]. Furthermore, professional support is helpful for the mother to adapt to her new role [44] and her well-being [45].

Therefore, health professionals should see breastfeeding not merely as a way to feed the child, but also as an existential challenge for the mother and as a way towards closeness between mother and child [11, 12]. However, further exploration is needed in relation to associations between perceived parent-to-child relations and mothers' enjoyment of breastfeeding.

Interestingly, the present study showed a significant correlation between the first-time mothers' perceived quality of parental couple's relationship (QDR36) and their breastfeeding duration as well as enjoyment of breastfeeding. This highlights the relevance of healthcare professionals supporting the parental couple's in their relationship to each other, especially since it is known that the perceived parental couple's relationship decreases after the birth of the first child [23]. In addition, earlier research has shown that the time during which the partner was present after labour was correlated with the duration of breastfeeding in first-time mothers. Feelings of confidence when the baby was six to twelve months were retrospectively correlated with the mother's feelings of confidence with the partner during childbirth [46].

Among the mothers breastfeeding one year after birth, the degree to which they enjoyed breastfeeding was positively correlated with how they had perceived the relation with their child at six months, in the MIRF-scale. While most studies investigating breastfeeding and the relation between mother and child focus on characteristics of the mother and factors influencing the mother, there is also research suggesting that characteristics of the child, such as the child's temperament, can have an effect on breastfeeding practices [47]. There are also studies showing that how the mother experiences breastfeeding can have a causal effect on the mother's relation to the child. An intervention study from Sweden revealed that professional breastfeeding support can affect the mothers' feelings for their infants and enjoyment of breastfeeding [29] which indicates the need of satisfactory professional support.

The socioeconomic factors (age, education, perceived economy, and length of parental couple relationship) that are commonly reported to be associated with the duration of breastfeeding [48–50] were analysed within this study. Remarkably, in this study, none of the included socioeconomic factors were significantly correlated with neither the duration nor the enjoyment of breastfeeding. Earlier research has highlighted the importance of placing the relationship between educational level and breastfeeding in a social context [51] which could be an explanation of the lack of significant correlations. In a Swedish study examining breastfeeding until six months of age in a sample of 51–415 children, born between 2004 and 2011, the researchers found that the socioeconomic gap between the mothers' duration of breastfeeding had been narrowed, though it still existed. In that study, they hypothesised that the narrowed gap could be explained by the fact that highly educated women, who once started the trend of longer breastfeeding in Sweden during the 1980s and 1990s, now might be the first to follow a new trend of breastfeeding for a shorter time [50]. While the present study has a much smaller sample and therefore might not find small correlations, the results still suggest that it is unlikely that socioeconomic factors can explain much of what affects the mothers' experience of and the duration of breastfeeding in Sweden. When considering these results within an international perspective, it is valuable to note that the mothers included within the present study were living in Sweden which is a country that provides parents with a relatively long period of parental leave. Parents living within other countries may not have the same opportunities for parental leave, and therefore, the breastfeeding in other countries might be more affected by socioeconomic factors.

Result from this study showed that there were significantly more mothers who breastfed during the child's first period awake after birth who also continued to breastfeed at one week after birth. In addition, mothers who were breastfeeding at six months reported higher scores for "Mother's perceived relation to the child," compared to mothers who did not breastfeed during the first hours after birth. These results are in line with previous findings [29]. Since earlier studies show a relation between the duration of breastfeeding and the mothers' attitude towards breastfeeding [52, 53] and breastfeeding behaviour, such as breastfeeding in public [54], it would be interesting to further investigate the relationship between enjoyment of breastfeeding and the more societal and culturally related attitudes and experienced norms towards breastfeeding.

When studying the descriptive data for some of the measurements, it can be noted that most of the participants had scored the maximum score or close to the maximum. This is true both for the item "*Enjoyment of breastfeeding*" and

the three measurements “*Mother’s perceived relation to the child,*” “*Mother’s perceived feelings for the child,*” and “*Mother’s partner’s perceived feelings for the child,*” within the MIRF-scale. This was dealt with by using nonparametric tests in the statistical analysis. However, for future studies, it could be relevant to modify these measurements or develop other measures to be able to catch the full spectrum of the variation intended to be studied.

Cronbach’s alpha was calculated to evaluate internal consistency, and the results showed high values for several of the included measures (*SOC-13, QDR36, and MIRF-scale part two*) and lower values for the MIRF-scale part one. For future studies, the MIRF-scale part one is in need of development. This scale would, perhaps, benefit from improvement with a few items such as “*I enjoy spending time with my child*” or “*I feel secure in my relation to my child.*”

Comparing the mothers’ answers from different questions and from Q1–Q4, the answers were not always coherent. For example, regarding the duration of breastfeeding and partial and exclusive breastfeeding. One explanation for this could be that later given answers tended to be less trustworthy because it is difficult to remember behaviours many months after, especially those charged with emotion [55] which breastfeeding memories could be. However, the longitudinal design of this study made it possible to discover these patterns and it is recommended that such challenges are considered when designing future studies about breastfeeding. A limitation of a longitudinal design is, though, the reduced number of participants to follow up. For the present study, 48.2% of the mothers responded at Q4, which corresponds to a total loss at 51.8%. However, the results from analyses between respondents who answered at Q4 and nonrespondents who did not answer at Q4 showed no differences which could be considered as a study strength.

## **5. Conclusions**

A large majority of the first-time mothers in the study enjoyed breastfeeding and would choose to breastfeed again if they had another child. The degree to which the mother enjoyed breastfeeding was correlated with the duration of breastfeeding, a higher SOC, more positively perceived feelings for and relation between mother and child, and a more positive perception of how the mother perceived her partner’s relation to the child. A more positively perceived couple’s relation was correlated to both a longer duration of breastfeeding and a higher degree of enjoyment of breastfeeding.

The present study indicates that health personnel who are interested in supporting the first-time mothers’ coping ability and a positive relationship between parent and child could benefit from asking more about the subjective experience a mother has breastfeeding her child. Such questions could be, for example, “How do you experience breastfeeding?” “What does breastfeeding mean to you and your family?” and “In what way are you and your wellbeing affected by the breastfeeding?” From learning more about the mother and families’ subjective experiences, the support for the family should include a focus on how feelings of meaningfulness, manageability, and enjoyment can be found in the experience of breastfeeding and parenting in general. It is also important for health professionals to take into consideration the quality of the couple’s relationship, which can, for example, be strengthened by an environment that enables the family to stay together after birth, providing a unique opportunity for the newly becoming parents to establish bonds with each other and with the child.

## **Disclosure**

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# Collaboration among Registered Nurses and Licensed Practical Nurses: A Scoping Review of Practice Guidelines



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## ABSTRACT (ENGLISH)

Professional associations, nurse scholars, and practicing nurses suggest that intraprofessional collaboration between nurses is essential for the provision of quality patient care. However, there is a paucity of evidence describing collaboration among nurses, including the outcomes of collaboration to support these claims. The aim of this scoping review was to examine nursing practice guidelines that inform the registered nurse (RN) and registered/licensed practical nurse (R/LPN) collaborative practice in acute care, summarize and disseminate the findings, and identify gaps in the literature. Ten practice guidelines, all published in Canada, were included in the final scoping review. The findings indicate that many of the guidelines were not evidence informed, which was a major gap. Although the guidelines discussed the structures needed to support intraprofessional collaboration, and most of the guidelines mention that quality patient care is the desired outcome of intraprofessional collaboration, outcome indicators for measuring successful collaborative practice were missing in many of the guidelines. Conflict resolution is an important process component of collaborative practice; yet, it was only mentioned in a few of the guidelines. Future guidelines should be evidence informed and provide outcome indicators in order to measure if the collaborative practice is occurring in the practice setting.

## FULL TEXT

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### 1. Background

Over the past two decades, the health care system has undergone a significant transformation which has required that all team members work to their full scope of practice. In order to practice to full scope, registered nurses (RNs) and registered/licensed practical nurses (R/LPNs) are required to work together using a collaborative practice model of care to meet the needs of complex patients [1]. Collaboration among health care providers has long been regarded as a means for ensuring optimal quality patient care [2]. As such, the profession has developed guidance documents such as practice guidelines to support nurses to strengthen their collaborative practice skills.

Collaboration in the context of health care delivery is described as working together with one or more members of the health care team with each member making a unique contribution toward achieving a common goal [3].

Collaboration between team members from the same profession is referred to as intraprofessional collaboration [3], and among nurses, it is viewed as a relational process between colleagues who share common professional education, values, socialization, identity, and experience [4]. Engaging in collaborative practice is a professional expectation and is a required competency for all categories/designations of nurses in many countries [5–8].

The nursing profession in Canada is comprised of four different categories of nurses including registered nurses (RNs), registered/licensed practical nurses (R/LPNs), registered psychiatric nurses (RPNs), and nurse practitioners (NPs). The term LPN is used extensively across North America except in the province of Ontario, Canada, where LPNs are referred to as registered practical nurses (RPNs). The basic entry to practice educational requirements for RNs and R/LPNs varies across Canada. However, in most provinces, entry to practice for an R/LPN is a two-year college diploma program and RN entry to practice is a four-year baccalaureate program. All nurses must then successfully pass a registration examination in order to practice. While there are differences in educational preparation and scope of practice, the core values of nursing remain the same for both RNs and R/LPNs. Core

values include providing safe, compassionate, competent, and ethical care; promoting health and well-being; promoting and respecting informed decision-making; preserving dignity; maintaining privacy and confidentiality; and being accountable [6, 9].

Registered nurses and R/LPNs have a long history of collaborative practice in rehabilitation and long-term care settings and more recently in acute care hospitals. Despite requirements for collaboration, studies show that there is tension between nurses working on teams [1]. Oelke et al. [10] noted that unclear role definitions and heavy workload pressures were barriers to effective teamwork. Kalisch and Begeny [11] reported that large team size, lack of familiarity among team members, team instability (high turnover), lack of a common purpose and goals, and clinical unit structure were all factors that inhibited high-performing nursing teamwork. Moore et al. [12] found that a lack of working to the full scope of practice, role ambiguity, age and generational differences, and interpersonal skills discouraged collaboration among RNs and R/LPNs. Undergraduate nursing education provided in silos and the lack of specific curriculum addressing intraprofessional practice were also cited as significant barriers [13, 14].

The Registered Nurses Association of Ontario (RNAO) [15] suggests that guidelines offer instruction on creating, enhancing, and sustaining collaborative relationships among nurses that promote high-quality patient care. They also provide guidance for nurses to engage in collaborative practice and reinforce professional and regulatory responsibilities to make ethical and safe decisions [15]. As such, resources such as collaborative practice guidelines have been developed to assist in improving collaboration among nurses. Given the complexity of patient care needs, increasing workloads and efforts to maintain quality patient care, there is a need to review existing evidence on nursing collaborative practice among RNs and R/LPNs.

The purpose of this scoping review was to examine the practice guidelines related to RN and R/LPN collaborative practice in acute care, summarize and disseminate the findings, and identify any gaps in the literature. This paper reports on findings related to nursing practice guidelines that emerged from the original scoping review [16].

## **2. Method**

Arksey and O'Malley's [18] framework for scoping reviews was used for this study. Their framework encompasses five steps: (a) identifying the research question, (b) identifying studies relevant to the research questions, (c) selecting the studies, (d) charting the data, and (e) reporting the results. The main research question for the scoping review was as follows: *What is known from the existing guidelines about the structures, processes, and outcomes of RN and R/LPN collaboration in acute care settings?*

### **2.1. Search Strategy**

The search strategy for the initial scoping review included all published and unpublished data including grey literature from 1990 to July 2017 in the following databases: OVID Medline, CINAHL, the Cochrane Library, ProQuest/Allied Health, APA PsycNET, OVID HealthSTAR, Web of Science Complete, and EMBASE. In addition, key journals were hand searched. Nursing Association websites from across North America were also accessed for relevant literature. During this search, ten practice guidelines were identified. Practice guidelines offer nurses' instructions or a roadmap for enabling collaborative practice. Practice guidelines also address collaboration as a competency required for clinical practice, an important part of the nursing role that is required to provide safe and quality patient care. Since ten guidelines were identified and because they addressed collaboration in a unique manner, the research team decided that a separate review of these guidelines was warranted. Information regarding the initial scoping review has been previously published and focused solely on the studies reviewed [16].

### **2.2. Analysis**

Donabedian's [19] quality framework that assesses structure, processes, and outcomes was used as a framework for analysis and reporting of the findings. For this review, structure encompassed factors that influence collaboration among RNs and R/LPNs such as role descriptions, staffing models, collaboration models/frameworks, education and training, policies, and regulations. Processes included factors that influence collaboration among RNs and R/LPNs such as communication, interpersonal skills, clinical competency (e.g., knowledge and technical skills), facilitators, and barriers. Outcomes of RN and R/LPN collaboration referred to the quality of patient care, satisfaction (patient or nurse), morbidity rates, mortality rates, near-miss/error/adverse events, nurse-recruitment and retention,

absenteeism, satisfaction, conflict, and bullying. Two members of the researcher team independently reviewed the 10 guidelines using Donabedian's [19] framework, compared individual results, and used consensus decision-making when needed (Table 1).

Table 1

Summary of findings.

Lead author/year country	Title of guideline	Aim	Category: structure (S) process (P) outcome (O)
Alberta Association of Registered Nurses, College of Licensed Practical Nurses (CLPNA), and the Registered Psychiatric Nurses Association of Alberta (RPNAA) [20], Canada	Collaborative Nursing Practice in Alberta	To describe collaborative practice for the three categories of nurses in Alberta and the responsibilities of each nurse's role (RN, registered psychiatric nurse & LPN)	S, P, O
Association of Registered Nurses of Prince Edward Island (ARNPEI), the Licensed Practical Nurses Association of Prince Edward Island (LPNA), and the Prince Edward Island Health Sector Council (PEIHSC) [17], Canada	Exemplary Care: RNs and LPNs Working Together	To clarify the roles of the RN and LPN in clinical practice	S, P, O
Canadian Nurses Association [21], Canada	Staff Decision-Making Framework for Quality Nursing Care	Provide a staff-decision-making framework about staff mix	P, O
College of Nurses of Ontario [3], Canada	Practice Guideline RN and RPN Practice: The Client, the Nurse, and the Environment	To assist nurses, employers, and others make decisions about the utilization of nurses in the provision of care	S, P, O
College of Registered Nurses of BC, College of Registered Psychiatric Nurses of BC, and the College of Licensed Practical Nurses of BC [22], Canada	Collaborative Nursing Practice in BC Nurses Working Together for Quality Nursing Care	To provide support for collaborative nursing practice for the three categories of nurses in BC	S, P, O

College of Registered Nurses of Nova Scotia and the College of Licensed Practical Nurses of Nova Scotia [4], Canada	Guidelines for Effective Utilization of RNs and LPNs in a Collaborative Practice Environment	To provide information for RNs and LPNs regarding their own and each other's roles To assist managers in making decisions for care assignments	S, P, O
Nurses Association of New Brunswick and Association of New Brunswick Licensed Practical Nurses [23], Canada	Guidelines for Intra-Professional Collaboration Registered Nurses and Licensed Practical Nurses Working Together	To clarify the roles of the RNs and LPNs and assist employers in making decisions about effective utilization of nursing resources	S, P, O
Registered Nurses Association of Ontario [15], Canada	Healthy Work Environments Best Practice Guideline and Intra-Professional Collaborative Practice among Nurses 2 <sup>nd</sup> edition	Describe intraprofessional collaboration among nurses	S, P, O
Registered Nurses Association of Ontario [24], Canada	Healthy Work Environments Best Practice Guideline and Collaborative Practice among Nursing Teams	Focus was on developing collaborative practice among nurses	S, P, O
The Association of Registered Nurses of Newfoundland and Labrador (ARNNL) and the College for Licensed Practical Nurses of Newfoundland & Labrador (CLPNL) [25], Canada	Collaborative Nursing Practice- Guiding Principles	To provide guiding principles to facilitate a collaborative practice environment	P, O

### 3. Findings

The 10 documents retrieved from the original search represented practice guidelines from seven Canadian provinces, a staff mix decision-making framework published by the Canadian Nurses Association (CNA) [21], and two practice guidelines published by the Registered Nurses Association of Ontario [15, 24] with the latter being a revision of an earlier version. Publication dates for the documents ranged from 2003 to 2017.

Although all 10 documents were presented as guidelines, there was variability among the documents. The CNA [21] document was developed by a panel of registered nurses, registered/licensed practical nurses, registered psychiatric nurses, and unregulated care providers from across Canada and presents a framework for decision-makers for staffing decisions. Furthermore, the authors of the document assert that it is "a comprehensive and evidence-informed resource presenting a systematic approach to staff mix decision-making that can be used in all clinical practice settings" (p. 5). The RNAO guidelines [15, 24] were developed by a panel of experts including staff RNs and R/LPNs, practice leaders, nurse executives, and academic educators and based on a systematic review of evidence. The RNAO guidelines also provided recommendations for a healthy work environment based on the evidence. Prior to publication, the RNAO guidelines were reviewed by another panel of stakeholders. The seven remaining guidelines provided information or guiding principles to promote collaboration but did not state that they were based on available evidence.

Six out of seven provincial guidelines were coauthored by their respective RN and R/LPN associations/regulators. One practice guideline (Ontario) was authored by the provincial nurse regulator because at the time when the scoping review was conducted, the College of Nurses of Ontario was the only nursing regulatory body in Canada that represented both RNs and R/LPNs.

Six of the guidelines published by provincial regulators provided a definition of collaborative practice [3, 4, 17, 20, 22, 23] as did the two healthy work environments best practice guidelines [15, 24].

### **3.1. Structure**

Six of the provincial nursing association/regulator documents discussed the roles of the RN and R/LPN, provided clarification about the different nursing roles, and outlined the responsibilities of each nursing role when working collaboratively [3, 4, 17, 20, 22, 23].

Five of the guidelines outlined the applicable legislative components for each category of nurses [4, 17, 20, 23]; however, Ontario was the only province where one legislation represents both RNs and R/LPNs practice [3]. Four guidelines specifically addressed the scope of practice for each category of nurses [3, 4, 17, 23]. In two provincial guidelines [17, 23], the R/LPN works under the direction of an RN or another medical practitioner, and in the Nova Scotia [4] and Ontario guidelines [3], R/LPNs are expected to consult with an RN if the client becomes unstable and thus requires more complex care. In one guideline [17], the R/LPN is able to work as a team member only, whereas the RN can work as an independent practitioner or as a team member in all clinical settings. Although the legislation was defined in the CNA [21] document, the actions and responsibilities of each nurse or caregiver were not well described.

The difference in educational qualifications for each category of nurses was addressed in the provincial guidelines from British Columbia, New Brunswick, Nova Scotia, and Prince Edward Island. A baccalaureate degree in nursing was required for entry to practice for registered nurses in all provincial guidelines noted above. Although the R/LPNs' entry to practice requirements varied slightly, all four guidelines noted that program completion from an approved practical nursing school and successful completion of the registration exam is necessary for entry to practice. Only one guideline from the province of British Columbia stipulated a program length of 12 months for R/LPNs [22].

While not specifically outlining the roles of the RNs and R/LPNs, the RNAO's [15, 24] best practice guidelines for healthy work environments recommended that all nursing regulatory bodies work together and cover the roles and responsibilities of different health care providers and the educational preparation for each role and outline the scope of practice for each role.

The utilization of the different categories of nurses in the practice settings was discussed in six of the documents [3, 4, 17, 20, 21, 23]. However, the CNA [21] provided the most comprehensive framework for making staffing utilization decisions. In their Staff Decision-Making Framework, the CNA [21] provides nursing administrators with a list of factors to consider at the client, staff, and organization levels, when determining staff utilization as well as outcome indicators for each level. Two provincial nursing regulator documents [3, 4] provided a framework for the utilization of RNs and R/LPNs which considered the client, nurse, and environment when making staff utilization decisions. Both editions of the RNAO [15, 24] healthy workplace best practice guideline provided a comprehensive, evidence-based model that examined factors that influenced healthy work environments, specifically a framework to promote collaborative practice among nurses. This framework consists of three major areas: physical/structural/policy components, cognitive/psycho/socio/cultural components, and professional/occupational components. Moreover, the framework examined these factors at a micro (individual), meso (organizational), and macro (external factors) level. The second edition of the RNAO healthy workplace environment best practice guideline [15] also noted that organizations may promote collaborative practice by implementing shared governance models and supporting all staff to work to the full scope of practice. Another suggestion was to develop competencies for intraprofessional practice that are linked to performance appraisals [15].

### **3.2. Process**

After a review of the ten documents, it was noted that guiding principles for effective collaboration were present in five of the provincial guidelines [3, 4, 22, 23, 25].

The need for effective communication among nurses was noted in nine of the 10 documents [3, 4, 15, 17, 20–24], and the requirement for nurses to respect each other during the collaborative process was also mentioned in nine guidelines [3, 4, 15, 17, 20–24]. Consultation with other nurses, when deemed necessary, was discussed in six of the guidelines as an essential component of collaboration, [4, 17, 20, 21, 23, 25]. Surprisingly, conflict resolution was only addressed in three of the guidelines [15, 21, 24].

The RNAO [15, 24] healthy workplace guidelines provided recommendations to promote a collaborative workplace. One example of a recommendation at the individual level is that a nurse must be willing to communicate with others and value teamwork. At the organizational level, recommendations included the promotion of respectful communication, articulation of the scope of practice of each nurse, and development of clear processes that promote collaboration including conflict management resolution structures [15, 24]. The RNAO guidelines [15, 24] also recommended that management support teamwork with the resources to promote collaborative practice; nurse managers should model effective team behaviors [15] and also have nurses mentor students to create supportive learning environments that are collaborative in nature [15]. Several guidelines addressed clinical competency as essential to collaboration [3, 4, 17, 20–23, 25]. Clinical competency refers to the theoretical knowledge and technical skills nurses need to provide safe patient care. These clinical competencies are important components as they contribute to the development and maintenance of mutual trust and respect and are critical requirements of successful collaborative practice.

### 3.3. Outcome

All 10 papers referred to *quality client outcomes or safe patient care* as important outcomes of collaborative practice. The Canadian Nurses Association [21] in their staff mix decision-making framework provided detailed outcomes for the client (e.g., safe quality patient care, satisfaction, morbidity, and mortality); the nursing staff (e.g., job satisfaction, decreased turnover, and decreased absenteeism); and the organization (e.g., safe patient care, quality of work environment, and human resources costs). The RNAO's [24] healthy workplace guideline noted that healthy work environments benefit the client with respect to quality patient care and patient satisfaction, job satisfaction for nurses, improvements in patient outcomes, and reduction in absenteeism and costs from adverse patient outcomes for organizations. The RNAO also cautions that team outcomes need to be measured and monitored.

The analysis of the 10 intraprofessional guidelines using Donabedian's framework demonstrated considerable variability in both content and format of the guidelines. The structures involved in collaboration were discussed in all guidelines, while the processes involved in intraprofessional communication were somewhat covered by mentioning the need for respect and effective communication. However, the outcomes of intraprofessional collaboration were only comprehensively addressed in three of the guidelines. These findings will be explored further in the next section.

## 4. Discussion

The purpose of this scoping review was to examine practice guidelines related to RN and R/LPN collaborative practice in acute care, summarize and disseminate the findings, and identify gaps in the literature. Surprisingly, all guidelines found in the initial search were Canadian based. One could posit that this may be due to Canada's national health care system [26], which is taxpayer funded. Due to rising health care expenditures, there is a constant need to scrutinize costs and ensure that the right nurse is taking care of the right client at the right time. Alternatively, in many jurisdictions in Canada, the R/LPN is an autonomous nursing position and collaborates with the RN but does not work under the direction of an RN (e.g., [3, 27]) which may differ from other countries. A noticeable gap was that only three of the ten guidelines [15, 21, 24] were based on available evidence. In the case of the remaining seven provincial guidelines, there was limited use of supporting evidence or literature to substantiate their recommendations or their guiding principles for ensuring a collaborative practice setting. The guidelines discussed many of the *structures* required to support a collaborative work environment. However, to promote a collaborative work environment, there needs to be sufficient resources in terms of nurse staffing levels and an articulated nursing care delivery model to ensure an appropriately skilled workforce [28, 29]. This has policy implications for organizations because although there are guidelines to promote collaboration, each organization

must value collaborative practice and incorporate it into their patient care philosophy first and then ensure that the workplace has sufficient nursing resources in place to meet patient needs and provide a collaborative work environment. As fiscal constraints continue in the health care setting, maximizing nursing resources including having all nurses working to their full scope of practice will be essential.

Although most of the guidelines mention the need for respectful and effective communication, another gap is that many do not detail what effective and respectful communication should look like. Given that nursing is a relational profession, specifically detailing the expected competencies related to effective communication is important [30]. Moreover, only three of the guidelines addressed conflict resolution, an essential component of collaboration. Conflict is not always negative, it can be constructive, and as such addressing conflict can enable improved decision-making, can improve individual nurse and team performance, and can result in the development of a better approach to patient care [31–33]. The authors recommend that all collaborative practice guidelines should include conflict resolution as a component.

It is not surprising that all 10 guidelines at least mentioned the need for collaboration to ensure the best possible patient outcomes, since patients who are cared for by nurses who work collaboratively on teams have reportedly more improved safety outcomes [34]. Moreover, the quality of patient care and improved outcomes are better in settings where nurses are engaged and satisfied with the workplace environment [35–37]. However, only three of the documents [15, 21, 24] provided more robust outcomes that could be measured as a result of intraprofessional collaborative practice. Providing structures and processes for collaboration as well as outcome measures to ensure collaboration is recommended. High functioning teams are more likely to have reduced incidence of errors and missed nursing care [38, 39].

As evidenced by the findings of this scoping review, there are guidelines from nursing regulatory bodies that outline structures and some processes for intraprofessional collaboration. However, the reality is that collaboration in the workplace is not always happening. Some studies have shown that barriers to collaboration are nurse based. Collaboration must be valued by the nurse, and it is essential that the nurse has the interpersonal skills to engage in collaboration [12, 40]. Yet not every nurse may possess the interpersonal skills or the desire to collaborate. From an organizational perspective, the RNAO [15] suggests that each nurse should be evaluated based on their collaboration skills. This may necessitate the need to develop tools that can be added to performance appraisals to measure individual nurse's collaboration in the workplace. Tying performance to collaboration may also have an impact on the individual's perception of its value to nursing practice, workplace satisfaction, and patient outcomes. Essentially, the data from performance appraisals could be used by the organization for quality assurance to assess how well they are doing and where additional training and education are required. Further research would be important to examine if the use of performance appraisal tools is effective in enhancing collaborative practice longitudinally.

Clear policies and position descriptions must be available for all categories of nurses in hospitals, so they can understand each other's role and scope of practice. Given that scope of practice and roles of various nurses may not be discussed in nursing curricula, another potential solution is for policymakers in hospitals to include this as part of orientation for new nursing employees.

Finally, some of the guidelines were published over ten years ago, one in 2003 [20] and the other in 2009 [16]. Furthermore, other guidelines are at least five years old. Given the changes in the scope of practice for the R/LPN position in many provinces, there is a need to update and revise the guidelines to ensure that the practice standards reflect the current state of the nursing positions in acute care settings.

#### **4.1. Limitations**

There are several limitations to our scoping review. We limited our search to full-text and English language only documents; therefore, some guidelines may have been missed. In addition, the reviewed guidelines and practice standards were developed by nursing regulatory bodies and professional organizations which may not represent actual collaboration processes in acute care settings. While we searched North American nursing websites, we did not search internationally and therefore may have missed collaboration guidelines from other countries.

## 5. Conclusion

Intraprofessional collaboration is an essential element of a healthy workplace environment. Although there are written guidelines for *how* to collaborate and utilize nursing resources effectively, they need to be evidence informed and provide resources for nurses who work in the clinical setting. Findings from this scoping review of practice guidelines indicate that intraprofessional collaboration is the responsibility of all nurses at the bedside, at the organizational level, and at the policymaking level. Since the conclusion of the scoping review, the province of British Columbia and the province of Nova Scotia have merged all nursing professionals under one college which will further collaborative efforts. However, this does not guarantee that any changes will be seen in clinical settings. The authors recognize that while these guidelines were published in Canada, they are relevant to other countries where different categories of nurses are employed and there is a need to promote effective intraprofessional collaboration.

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## DETAILS

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Document 19 of 23

# The Face of Workplace Violence: Experiences of Healthcare Professionals in Surgical Hospital Wards

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## ABSTRACT (ENGLISH)

*Background.* Though workplace violence (WPV) is a global problem for healthcare professionals, research within in-hospital care has mainly focused on WPV in emergency healthcare settings. Thus, the number of qualitative studies that explores experiences of WPV in general hospital wards with a longer length of stay is limited. *Aim.* The aim of this study was to explore how healthcare professionals in surgical hospital wards experience and manage WPV perpetrated by patients or visitors. *Method.* The study applied a qualitative, inductive approach using focus group interviews for data collection. A purposeful sample of 16 healthcare professionals working in surgical wards was

included. Data were analysed using a thematic analysis. *Findings.* The analysis resulted in four main themes: workplace violence characteristics, partly predictable yet not prevented, approaching workplace violence, and consequences from workplace violence. During the focus group interviews, the healthcare professionals described various acts of physical violence, verbal abuse, and gender discrimination perpetrated by patients or their visitors. Despite the predictability of some of the incidents, preventive strategies were absent or inadequate, with the healthcare professionals not knowing how to react in these threatful or violent situations. They experienced that WPV could result in negative consequences for the care of both the threatful or violent person and the other patients in the ward. WPV caused the healthcare professionals to feel exposed, scared, and unprotected. *Conclusion and clinical implications.* Exposure to WPV is a problem for healthcare professionals in surgical wards and has consequences for the patients. Preventive strategies, guidelines, and action plans are urgently needed to minimise the risk of WPV and to ensure a safe work and care environment.

## FULL TEXT

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### 1. Background

Workplace violence (WPV) perpetrated by patients or visitors in healthcare settings is a well-known and global problem with several negative consequences for healthcare professionals. Reports show that WPV increases the risk for ill-health, high staff turnover, and a deterioration in the quality of care [1]. Research has also shown that healthcare professionals refrain from reporting incidents because they feel that threats and violence have become a part of the job [2–4] or because they believe that reporting would not lead to any change [5]. This may indicate a high number of unreported incidents, thereby potentially leading to WPV towards healthcare professionals being underestimated or disregarded. Therefore, it is important to highlight this problem and its consequences. Workplace violence is generally defined as “Incidents where staff are abused, threatened, or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being, or health” [1; p.3]. The particular characteristics of WPV towards healthcare professionals, perpetrated by patients or visitors, have been described in several studies [6–9]. Therein, the physical violence described includes patients punching, kicking, pushing, pinching, scratching, or spitting at the healthcare professionals. It also involves patients throwing things at them. However, verbal abuse has shown to be the most common act; examples would be patients or relatives yelling or swearing at the healthcare professionals, threatening them with physical harm, or pronouncing verbal threats or sexual harassment. According to a study by Avander et al. [10], verbal threats can also be expressed indirectly, for example, when disgruntled patients talk to relatives and friends on the phone in “a certain tone of voice” indicating that they hold the nurses responsible for matters about which they are dissatisfied.

In earlier studies [10–14], healthcare professionals in EDs and in trauma units who have been subjected to WPV describe that the experience gave rise to stress, insecurity, anxiety, and fear, all of which negatively affected their well-being. The stress caused physical symptoms such as headaches, stomach problems, sleeping disorders, loss of appetite, and difficulties in concentrating; this could also have a negative effect on the healthcare professionals’ level of skill and efficiency at work. Moreover, stress relating to WPV affects not only the healthcare professionals’ work life but also family and social life: it is difficult to ignore the stress, worry, and fear even on a day off. The healthcare professionals may even be afraid to leave the house [10–14].

Internationally and in Sweden, healthcare professionals working in emergency departments (ED), psychiatric and paramedic settings have been regarded as particularly at risk for exposure to WPV [15]. However, all healthcare professionals are at risk and not only those who work in EDs, within psychiatry or paramedics. In fact, in a study by Odes et al. [16], it was reported that professionals working in an ED were less likely to be physically injured by WPV than professionals working in an inpatient unit (i.e., a medical-surgical hospital unit). Healthcare professionals working in general hospital wards provide treatment and care to patients with a wide range of medical and surgical conditions, and available research indicates a high exposure to WPV. Hahn et al. [17] performed a systematic

literature review on patient and visitor violence in general hospitals. In the review, it was reported that, on an average, 50% of the healthcare professionals had experienced verbal abuse, and 25% had been subjected to physical violence. The highest incidence was reported in surgical and medical wards and in intensive care units [17]. This finding is confirmed in a later meta-analysis by Spector et al. [18] who showed that an average of 26.7% of the nurses working in hospitals had been exposed to physical violence and 65.5% to nonphysical violence, ranging from rude remarks to serious verbal abuse. Despite the fact that WPV commonly occurs in general hospital wards, the majority of research has been conducted in settings regarded as particularly at risk, for example, in EDs [11–14]. Consequently, there is little understanding about how WPV affects the healthcare professionals in a setting where both care and work environment differ, as in surgical wards where patients can be cognitively affected by opioid medications or surgery, thereby acting in an aggressive manner. One of the largest differences is that patients admitted to surgical wards are cared for during a longer time than in, for example, EDs. Hence, the healthcare professionals on the ward must interact with a potentially harmful patient or visitor on a daily basis, and the risk of an incident will be constantly present. This may lead to an unhealthy work environment, but research addressing the problem in a surgical in-hospital setting seems to be sparse, and available research focuses more on the prevalence of WPV. This implies that there is a need to collect experiences derived from healthcare professionals working in surgical hospital wards, which can contribute to a deeper understanding of their situation. Such knowledge can be used in the development of hospital routines and interventions to prevent and handle WPV. Therefore, the aim of this study was to explore how healthcare professionals in surgical hospital wards experience and manage WPV perpetrated by patients or visitors.

## **2. Material and Method**

A qualitative design with an inductive approach was used; data were collected by focus group interviews, as described by Krueger and Casey [19]. Given the dynamics and interactions of the focus groups, rich and varied descriptions of WPV were expected. Data were then analysed using a thematic analysis [20].

### **2.1. Setting**

The study was conducted at a surgery department located in a university hospital in Sweden that serves about 1.7 million inhabitants. Approximately 350 assistant nurses, registered nurses, and physicians work at the department, which has a total of seven wards. The healthcare professionals provide both emergency and elective care to patients with a disease or injury in the upper or lower abdominal area. Patients are admitted to the wards if they have a disease or injury that requires either medical or surgical treatment, and they commonly suffer from pain or undergo surgery. Therefore, they can be cognitively affected due to anaesthesia, surgery, or opioid medication that can result in very aggressive behaviour. Healthcare professionals working in the surgical wards sometimes also care for patients who have been subjected to lethal violence, for example, gun violence. Often, those patients are still under threat at the ward and therefore require the presence of security guards or the police.

### **2.2. Participants and Recruitment**

A purposeful sampling procedure that aimed for variation in age, gender, and profession was used [21]. Therefore, assistant nurses, registered nurses, and physicians working on the surgical wards were approached for recruitment. The healthcare professionals were provided with verbal and written information by the researchers during their regularly scheduled workplace meetings, with a gatekeeper distributing information to those who could not attend. Moreover, a form was provided, in which the healthcare professionals could show interest in participating and give their contact information. Four focus group interviews were scheduled for the study, with the date, time, and place decided in advance, a strategy that is recommended by Krueger and Casey [19]. The first author contacted the professionals who showed interest in participating with an invitation to choose one of the sessions. The day before each session, a text message reminder was sent out. After recruitment in four of the seven wards, the four scheduled focus group interviews were saturated with participants. In total, 16 assistant nurses, registered nurses, and physicians from four of the seven wards participated. The background characteristics are presented in Table 1.

Table 1

Background characteristics of the participants ( $n=16$ ).

Age, mean (SD)	37.3 (12.9)
-	
Gender, <i>n</i> (%)	
Male	3 (18.8)
Female	13 (81.2)
-	
Education/occupation, <i>n</i> (%)	
Assistant nurse	4 (25.0)
Registered nurse	11 (68.8)
Physician	1 (6.2)
-	
Number of years working at the ward, mean (SD); min-max	7.0 (8.4); 0.5–32.0

*n*=number; SD=standard deviation.

### 2.3. Data Collection Procedure

In April 2019, the focus group interviews were conducted in a secluded conference room near the surgical wards. The interviews were held by the researchers who took turns in being moderator who directed the discussions and assistant moderator who handled practical matters observed the interaction between participants and asked additional questions if needed. The four focus groups consisted of 2–5 participants and were of mixed professions given that the intention was to capture an interprofessional interaction. Before each interview, written consent was obtained along with the background characteristics of the participants. A semi-structured interview guide was used and included the opening question “Can you please explain what ‘threats’ and ‘violence’ means to you?” This was followed by four key questions addressing the participants’ experiences of threats and violence. Additional probing questions were used to clarify or deepen the reasoning, for example, “Could you please explain...?,” “Could you tell more...?,” and “Is there anyone else who has had this experience?” The length of the interviews ranged from about 1–1.5 hours, and they were audio recorded and transcribed verbatim.

### 2.4. Data Analysis

Data were analysed using a thematic analysis, as described by Braun and Clarke [20]. This constitutes the analysis being conducted in five phases, with the sixth phase, described by Braun and Clarke [20], being the writing of the report.

The analysis commenced with a reading of the transcribed interviews individually to become familiar with the content (phase 1). During the next phase (phase 2), the data were reread, and a preliminary coding of the content was generated by tagging the text within the transcripts. Thereafter, the preliminary codes were compared and discussed in relation to the original data and the aim of the study. This generated a list of initial codes. In the following phase (phase 3), all the initial codes were written on self-adhesive notes and sorted into a map of preliminary themes and subthemes. The themes, subthemes, and codes were then reviewed to ensure that the themes accurately described patterns in the data (phase 4). In this phase, the transcribed data were reread. Also during this review, new codes

were identified in the original text, and some codes were moved to another theme, while others were removed because they did not match the aim. In addition, some of the themes were merged together or separated into different themes. When the thematic map had been satisfactorily reviewed and refined, the title and essence of each theme was articulated (phase 5).

## 2.5. Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki [22] and approved by the Regional Ethical Review Board in Lund, Sweden (no 2018/800). In addition, the study was approved by the senior area manager of the surgery department who also facilitated access to the healthcare professionals.

The participants received both verbal and written information explaining that participation was voluntary, with the right to withdraw from the study at any time without explanation. The information was repeated verbally, and written consent was collected from the participants before each session. All data were handled confidentially.

## 3. Findings

Experiences describing the face of WPV at surgical wards resulted in four main themes and eleven subthemes (Table 2). In the following section, each theme is described in more detail.

Table 2

Overview of main themes and subthemes.

Main theme	Subtheme
Workplace violence characteristics	(i) Physical violence
(ii) Verbal abuse	(iii) Gender discrimination
-	
Partly predictable, yet not prevented	(i) Early signs
(ii) Unpredictability	(iii) Organisational flaws
-	
Approaching workplace violence	(i) Preventive strategies
(ii) Acting during incidents	-
Consequences of workplace violence	(i) For the care of the threatening or violent patient
(ii) For the care of the other patients	(iii) For the professionals

### 3.1. Workplace Violence Characteristics

The workplace violence experienced by the healthcare professionals was characterised by physical violence, verbal abuse, and acts of gender discrimination. Physical violence was most likely to be perpetrated by patients with dementia, in emergence delirium after surgery, or in delirium related to drug or alcohol abuse. However, these types of incidents were experienced as unintentional and not personally directed; therefore, the healthcare professionals in general did not perceive them as particularly frightening:

With these patients who are confused or who have dementia, I think, yes, sure, you are shocked in that moment, and it remains for a short while. But afterwards, you let it go quite quickly because you feel that you understand the

situation. And, yes, it was nothing personal ... there was no threat to me personally (Focus Group 2).

Nevertheless, situations could become unpleasant and sometimes dangerous, as healthcare professionals have been injured from attacks by delirious patients. Some of the most common violent acts committed against the healthcare professionals were when patients threw items such as shoes or medicine cups, hit them with their fist or cane, or pushed, bit, or grabbed them. More serious situations have arisen that involved confused or delirious patients who chased the healthcare professionals or broke windows, doors, or furnishings in acts of aggression or confusion.

Although acts of physical violence left the healthcare professionals feeling shaken, verbal abuse was perceived as potentially more frightening, as it could be more personally directed. Furthermore, the healthcare professionals described that the most serious and disrespectful form of verbal abuses involves threats made by relatives or other visitors, sometimes in combination with showing a knife, approaching the staff in a threatening way, or blocking the door. Such situations often appeared at the end of visiting hours when visitors were asked to leave. Healthcare professionals have been told by patients or visitors that they knew where they lived, when they quit their shift, and that family or friends would be looking for them after work. This causes feelings of not being safe, and healthcare professionals will sometimes call security for protection when walking to their cars after work.

Had the abuse only been about one's professional role, then I think it would have been easier to be less concerned. But when you start to feel that "Oh, they might actually know where I live," then you feel a little vulnerable. I think that is more difficult and much scarier (Focus Group 4).

Not all verbal abuse was perceived as threatening. Frustrated patients or visitors and patients with substance or alcohol abuse craving for opioids among other things, might raise their voice and yell at the healthcare professionals, calling them incompetent, and using other disparaging words. However, such words were perceived as not personally directed, and they did not affect the professionals as much as verbal abuse of a more personal nature.

Some may often call you by your name ... which becomes much more personal. And it is also more uncomfortable compared to the usual (attitude that) "everyone here is a bitch" ... and well, you can somehow dismiss that in another way (Focus Group 4).

During the focus group interviews, the healthcare professionals also shared their experiences of gender discrimination behaviour from the patients and visitors. Acts of gender discriminatory were perceived as mostly, but not always, performed by male patients or visitors. This involved some female healthcare professionals being offended by sexually derogative words or their being touched in inappropriate places on the body.

Someone said that I should wear a tighter dress, something like that. It then becomes about how I am as a woman (instead of a professional), I felt ... Would he say these exact words to my male colleagues? Well, I do not know (Focus Group 3).

They also experienced that their professional skills and judgements were challenged because of their gender, thereby causing feelings of being disrespected and degraded.

### **3.2. Partly Predictable, yet Not Prevented**

The healthcare professionals described that WPV sometimes could be predicted by early signs of impending aggression. Despite this, it was experienced that situations were not sufficiently prevented and that a lack of organisational guidelines left the healthcare professionals without knowing what course of action to take.

When caring for patients with dementia or patients with emergence delirium, the healthcare professionals explained that physical violence could be expected to a certain extent. Therefore, they were careful to monitor changes in the behaviour of these patients. Early signs could also be recognised in patients with substance withdrawal symptoms related to drug or alcohol abuse, as they may become irritated, raise their voice, or act angrily when they cannot obtain any more opioids, for instance. In those situations, the healthcare professionals emphasised the importance of preventing them from escalating, for example, by giving the patients the medical treatment to reduce their substance withdrawal symptoms. However, this request was not always recognised or the decision was made too late, thus putting the healthcare professionals in a vulnerable position because they eventually would have to handle



the violent patient:

It was really problematic when we had many patients with alcoholism or other types of abuse, and the doctors did not respond when we pointed out they needed some (additional) treatment because they (the patients) were starting to get a little agitated, and so on. But it was just like—“No.” They ignored it (Focus Group 1).

Even though some threatening or violent situations were described as predictable, an atmosphere of unpredictability sometimes permeated the workplace, especially when caring for patients who act irrationally and unpredictably due to emergency delirium or substance withdrawal symptoms. Furthermore, when patients who had been subjected to gang-related violence were cared for, the presence of security guards and the police created an atmosphere in the ward that was described as “strange” and “uncomfortable.” Because of the nature of the patient’s injuries (e.g., gang-related violence), the healthcare professionals were more wary when encountering the patient and the patient’s visitors because of the potential threat they posed. One participant explains:

You do not know them, and you do not know their relatives. You do not know what kind of person they are and what they are capable of—you just do not know (Focus Group 2).

Although WPV was experienced by healthcare professionals as predictable to some extent, preventive strategies at the organisational level were perceived as absent or inadequate. They also felt that there was an unspoken attitude that one should accept threats and violence as being a part of the work. When WPV occurred more regularly, it became normalised, and the healthcare professionals described that they ceased seeing it as an event outside the norm of what is acceptable:

On becoming a nurse or assistant nurse, you note there is a culture that makes you feel that you should accept these things. Some things in healthcare you just have to deal with, like that ...Some things are obviously not accepted. There are boundaries, but much is accepted by rationalising, (such as) “Yes, he is in pain” or “She is confused,” and so ...I think there is a very clear culture where you just have to put up with certain things. And there is the feeling that you are a little troublesome if you make a big deal out of something you do not think is okay (Focus Group 3).

The healthcare professionals related that despite having access to relevant voluntary online education, they did not know what to do in a threatening or violent situation. One option was to call for a security guard. However, this was also perceived as false security because it takes time for the guards to come to the ward, and by then, the damage may have already been done. The healthcare professionals called for not only preventive strategies and clear guidelines but also for a joint effort within the organisation and in society in general to not accept WPV in healthcare.

### **3.3. Approaching Workplace Violence**

Approaching WPV involves more than solely understanding the healthcare professionals’ strategies to prevent incidents. It also concerns how they acted in situations that had become threatening or violent. The healthcare professionals explained that they applied individual strategies based on their own personal approach and work experience, while simultaneously working together and taking care of each other in the spirit of supporting colleagues with joint, contextual strategies. However, how they approached threatening or violent situations depended on the situation. This was often described as acting in an ad hoc manner. A primary strategy was to avoid conflicts. For potentially violent patients, the healthcare professionals tried to stay one step ahead by being observant and calm as they interacted with the patient or visitor. They also allowed the patients to decide more and were quicker to, for example, administer opioids if this was requested.

You try to encounter the patient calmly and maybe with a little understanding. You notice that the patient may start to feel pain ...and instead of letting it get to the point where they have more pain, maybe you decide to administer pain relief earlier ... so it does not escalate. You try to always keep it at a manageable level (Focus Group 1).

When a threatening or violent situation occurred, the healthcare professionals felt unprepared. However, they tried to remain calm and solve the situation by reasoning with the patient or visitor. If that did not work, it was sometimes necessary to back off and let the patient or visitor get what they wanted, for example, by giving the patients more opioids or letting the visitors stay longer.

In threatening or violent situations, colleagues supported each other. For example, some explained how they would

enter the patients' rooms in pairs or take turns seeing the patients:

If you have a patient and you feel threatened, afraid, or doubtful, then you bring it up in the group. Then you know that, okay, yes ...you should not go in alone if the alarm goes; then we enter in pairs (Focus Group 2).

They also avoided unnecessary contact with the patient and the visitors. Moreover, calling a security guard for help only happened when the situation was out of control, for example, when patients with delirium or severe substance withdrawal symptoms raged and went on a physical attack. Sometimes, as the healthcare professional waited for the guard to arrive, they fled and locked themselves in the ward office.

### **3.4. Consequences from Workplace Violence**

WPV was described by the healthcare professionals as having several negative consequences not only for them but also for both perpetrators and the other patients on the ward.

For the patients and the visitors who were threatening or violent, the care was described as affected both positively and negatively. On one hand, the patients received more attention, got help more quickly and were able to make more decisions themselves as a result of the healthcare professionals trying to prevent conflict or keeping a situation from escalating. On the other hand, the healthcare professionals avoided contact with the patients or their visitors, and consequently, there was a risk that the patients received less care. For example, they could miss out on information and important physical assessments.

You have to go in there and then ...you really just try to think, "I have to do this ...I will have to do it as quickly and smoothly as possible, and then I'll just try to leave the room again." You might not hang around in there just to talk to the patient. Instead, you just go in, do it as quickly as possible and then leave (Focus Group 2).

The healthcare professionals maintained that the other patients in the wards became negatively affected by WPV. For example, because threatening or violent patients received more attention, other patients risked receiving less attention and information. They had to wait longer to receive analgesics, and physical assessments were delayed or even not performed. Another possible negative result is that the healthcare professionals are distracted and lack concentration, thereby increasing the risk of an error being made:

It is difficult to put the threatening or violent person aside and give the other patients the attention they need. You are still left in the other room. And it is possible to miss important things regarding the other patient (Focus Group 4). Furthermore, the ward environment in general became affected, particularly with the presence of security guards and the police who make the patients feel worried:

The other patients do not know why there are a lot of police officers about. It may be that we have someone who is very dangerous in the room. They do not know, and it is clear that it is stressful for them (Focus Group 4).

It was explained that some patients had trouble sleeping and did not want to leave their ward rooms. There had even been occasions where a patient with emergency delirium after surgery had attacked another patient during night.

The healthcare professionals believed that WPV could not be completely avoided because they often had to be in proximity of the patients when caring for them. For example, they had to work physically close to patients with dementia despite the risk of being kicked or bitten. Therefore, these sort of threats and violence were considered as part of the job. Nevertheless, other situations of WPV had consequences for the healthcare professionals, as it gave rise to feelings of being exposed, vulnerable, unprotected, and hopeless:

I know I still have to take my shift tomorrow and take care of the patients in exactly the same way, but there is no plan, no guidelines or anything. And that is difficult to handle (Focus Group 4).

When a threatful or violent patient was cared for in the ward, especially longer periods, the healthcare professionals felt anxious, which could result in the reluctance to work. Some of the healthcare professionals had even recognised a pattern of avoidance among colleagues as they called in sick.

There is avoidance, as we talked about before. One might decide, "I'm sick today, I'm not going in. Then, I do not have to deal with this" (Focus Group 4).

Many healthcare professionals blamed themselves for being incapable of handling situations in a professional manner. They reflected on whether a man or an older, more experienced person would be better suited in their job:

I always wonder if a man or a larger person or an older person would have handled this situation better than I did. It becomes a question of not having the right personality to handle this profession, or so I can think. Or (is it) this place? I think, "Should I work elsewhere?" (Focus Group 4).

Physical violence, verbal threats, or dispraising words from patients or visitors were perceived as unacceptable by the healthcare professionals. Still, they often felt alone and vulnerable in these situations because they did not know how to act or what to do. If security guards or the police were present on the wards, they mainly stayed outside of the room, leaving the healthcare professionals alone with the patients or visitors. Furthermore, some of the security guards were regarded as physically too small and not commanding authority, which left the healthcare professionals feeling unprotected. For patients who had been involved in gang-related violence, the healthcare professionals reflected on the risk of getting in the way if someone should try to access the ward to harm the patient further: What is so sick is that the patient who is the victim or the injured person is guarded by the police, and there they sit with bulletproof vests and weapons. And we are running around in our pajamas (referring to work clothes) (Focus Group 3).

#### **4. Discussion**

This study aimed to explore how healthcare professionals in surgical wards experienced and managed WPV perpetrated by patients or their visitors. During the focus group interviews, the healthcare professionals described WPV as consisting of physical violence, verbal abuse, and exposure to gender discrimination perpetrated by patients or the patients' visitors. Sometimes, threatening or violent incidents could be foreseen by early signs of aggression, but preventive strategies were experienced as absent or inadequate. Moreover, the healthcare professionals did not know what to do if they were exposed. WPV resulted in negative consequences for the healthcare professionals and for the care of both the threatening or violent person and the other patients on the ward.

The participants of this current study experienced being on the receiving end of physical violence, such as hitting, pushing, biting, and having objects thrown at them or deliberately broken in front of them. In addition, the participants encountered verbal abuse, which was described as patients or visitors yelling or calling the healthcare professionals disparaging words or speaking in a way that would be considered pronounced sexual harassment. Similar examples of WPV have also been described in earlier studies but in other settings [6–9]. Furthermore, physical violence is described in this current study as perpetrated by patients with dementia, emergence delirium after surgery, or delirium related to drug or alcohol abuse, while verbal abuse and gender discriminatory acts were pronounced mostly by seemingly rational patients or visitors. This is in line with Bigham et al. [2] whose research on paramedics gives the same description of WPV. Additional studies describe the perpetrators of WPV. In a study by Hyland et al. [6], a total of 91.6% of the participants in an ED with an experience of physical violence reported that the aggressor was a patient. This finding agrees with the result in the meta-analysis by Spector et al. [18] showing that the majority of physical violent acts (64.3%) were performed by patients. In contrast, in a questionnaire study by Kitaneh et al. [23] involving physicians and nurses in public hospitals, both physical and nonphysical violence—that is, verbal threats, verbal abuse, and sexual harassment—were shown to be the most frequently perpetrated by visitors or relatives of the patients. Other studies show a gender difference in the exposure of WPV, although research results are incongruent. For example, Acquadro Maran et al. [24] report that female healthcare professionals were more often exposed to WPV perpetrated by patients' relatives than their male counterparts, while Li et al. [25] found no significant gender differences. Edward et al. [26] reported that male nurses were at higher risk to the exposure of physical violence while female nurses had a higher risk of verbal abuse. This difference was also indicated in the study by Magnavita and Heponiemi [27], although it was not a statistically significant difference. In this current study, female participants had experiences of sexual harassment and reflected on whether a male colleague would have to endure the same sexually derogative words as they had experienced.

The current study shows how the healthcare professionals are affected by WPV differently, depending on the situation and the perpetrator. Hence, the healthcare professionals differentiated between types of WPV that frightened them and WPV that did not. For example, physical violence from patients with dementia or delirium was

experienced as unintentional and perceived as not particularly frightening. This view has also been reported in other studies [3, 7, 10, 12]. In contrast, in the current study, personally directed verbal threats were perceived as more frightening, and such threats could be from both patients and visitors. The most frightening verbal threats were those that indicated that the professionals might be sought out and harmed outside of work. This finding is confirmed by a study by Hyland et al. [6], in which participants ranked verbal abuse as the most difficult to deal with compared to physical violence.

In earlier studies [10–14], healthcare professionals in EDs and in trauma units describe the consequences of WPV as feelings of insecurity, anxiety, and fear, and these fall in line with what the healthcare professionals in this current study also describe. However, the effect on the professionals' well-being in this current study was not highlighted as clearly as it has been in other studies. Other studies show conflicting results regarding the impact of WPV on health and well-being; for example, in a study by Shi et al. [28], participants who had experienced and been exposed to WPV were more likely to suffer from depression and anxiety symptoms than those who had not. On the other hand, Reknes et al. [29] showed that aggressive behaviour from patients or relatives had less of an impact on reported physical- and mental health-related quality of life than exposure to behaviour involving workplace bullying. Rather than focusing on well-being, some participants in the current study acknowledged that a higher rate of sick leave could be seen when the ward cared for a threatening or violent patient—sick leave that was discussed as not related to ill-health but rather to avoidance. In a study by Lancman et al. [30], ED staff experienced fear that the threatening or violent patient would return to the ED. In contrast to an ED, the healthcare professionals in a surgical ward know that the threatening or violent patient or visitor will be present over a longer time. It could be argued that the healthcare professional's choice to call in sick may be a consequence of organisational shortcomings in preventing and handling WPV, as the healthcare professionals also disclosed that they did not know what to do when such a situation occurred. Moreover, this type of "sick leave" will not be reported in statistical records as an effect of WPV or as an effect of the professional's assessment that there is risk of potentially being exposed to WPV, thus adding to the undervaluation of the problem.

The healthcare professionals in this current study perceived organisational strategies to prevent or handle WPV to be absent; moreover, they experienced the unspoken view that one should accept WPV as a part of the job. This unspoken view was also reported in a study by Wolf et al. [31] where ED nurses experienced that the hospital administration discouraged them from pressing charges against perpetrators. Additional studies on ED nurses [3, 6] have reported that WPV was regarded as part of a normal working day. Moreover, the nurses in the study by Hyland et al. [6] considered that if nobody got hurt, it was not worth reporting. It may be that this unspoken view, along with an undervaluation of the problem, could be a reason why strategies to prevent or handle WPV often seem absent or inadequate. This could lead to a vicious circle, with feelings of discouragement among healthcare professionals and a risk of an increased staff turnover. WPV has been described as positively correlated with a higher rate of turnover intentions and job burnout in physicians working in hospitals [32]. Moreover, research has shown that medical-surgical nurses with employers that did not listen to them regarding preventive strategies were less likely to feel safe at work [33]. Accordingly, a study by Lamont and Brunero [34] found a significant increase in nurses' confidence when dealing with patient aggression after attending a WPV training workshop.

In summary, it is clear that WPV prevention is a necessity, and it is equally important that employers acknowledge the problem. It is also essential that employers provide sufficient support for abused employees, but, even more importantly, employers should act more proactively to avoid WPV. The implementation of preventive measures to protect healthcare professionals so they feel safe and can do their job properly is an urgent need, in addition to the need to equip the healthcare professionals with strategies on how to act in situations of WPV.

In the focus group discussions, the healthcare professionals explained that WPV had consequences for the patients, both for the threatening or violent patient and the other patients in the ward. The former received more attention, and they got it faster because the healthcare professionals tried to avoid an escalating conflict. This was also described in a study by Avander et al. [10] involving trauma nurses who reprioritised their work to satisfy some patients' demands. This priority contrasted with the normal approach, whereby medical and nursing assessments determined

how they worked. However, in this current study, the healthcare professionals described that, despite the increased attention they gave to the threatening or violent patients, they actually provided less care because they only did what was the most necessary and nothing more. In a study by Han et al. [13], nurses in an ED related that their coping strategies were to lower the standards of appropriate patient care, which is a strategy also described in a review by Lancôt and Guay [35] that shows the impact on the amount of time nurses spent with patients and what tasks were performed. According to Lancôt and Guay [35], not only were the threatening or violent patients affected but also the other patients in general. This was also related by the healthcare professionals in the current study. Given the great amount of attention directed to the threatening or violent patients, the other patients had to wait for their turn, thereby running the risk of not receiving, for example, analgesics or important physical assessments in time. In addition, the healthcare professionals found it difficult to leave a threatening or violent situation behind when they went to the next patient. This was also described by nurses in the study by Hassankhani et al. [11] who explained that WPV made them lose their concentration, thus affecting levels of skill and efficiency in the work, which in turn may compromise patient safety.

For this study, data were collected through conducting focus group interviews. Focus group interviews are often used within nursing research and are beneficial when investigating certain experiences [19, 36]. The method enables a group with a common experience to be heard, which was a focal point in the research conducted. Though talking about WPV may be sensitive and difficult, the opportunity to discuss experiences in a group could also be helpful for the individual participants. The focus group interview method was also considered pertinent because the professionals work closely with each other as a team and thus share experiences, though from different points of view. The focus group interviews conducted for this study were mixed regarding professions; however, the participants were used to work in interprofessional teams, which could prevent eventual problems with power hierarchy during interviews. The researchers also sensed that the participants felt comfortable to freely discuss the subject within the focus groups. In the results, the healthcare professionals pointed out that when threatening and violent situations occurred, they supported each other as colleagues. They all shared experiences of WPV regardless of profession, and this can be regarded as a factor strengthening the transferability of the result. Nevertheless, it was challenging to recruit participants to the study. Although each focus group was intended to include approximately six participants, the workload of the professionals prohibited them from leaving the ward despite their interest in participating. Other reasons may be that certain threatening or violent incidents were experienced as part of the job and, therefore, not identified as WPV. Although every individual story is unique, a sample of 16 is small and only one physician participated, which could be seen as a limitation in this study. Nevertheless, we received deep and rich narratives concerning the healthcare professionals' experiences. The participants illuminated similar experiences, which justified the researchers' decision to not continue recruitment. In addition, the findings in our study correspond well with findings of earlier studies. Therefore, we are confident that the result of our study is trustworthy and transferable despite the small sample.

## **5. Conclusion and Clinical Implications**

This study found that healthcare professionals working on surgical wards are at risk to be exposed to WPV, much like those who work in settings that are traditionally regarded as particularly at risk. Therefore, the problem should be equally acknowledged. Though both healthcare professionals and patients were found to be negatively affected by WPV, there seemed to be insufficient organisational strategies to prevent and handle WPV. Given that WPV concerns a variety of threatful or violent acts perpetrated by different persons and during different circumstances, this study suggests that healthcare organisations should act urgently to address the problem by working out strategies to prevent WPV and by tailoring guidelines about what to do when a situation occurs. Regular training activities that include the interprofessional team and incorporating interprofessional simulation exercises within healthcare educations could be beneficial.

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# Psychometric Properties of the Moore Index of Nutrition Self-Care in Arabic: A Study among Saudi Adolescents at King Saud University, Riyadh, Saudi Arabia

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## ABSTRACT (ENGLISH)

*Background and Objective.* The Moore Index of Nutrition Self-Care (MIN-SC) questionnaire has been used widely in both English and Spanish languages. The purpose of this study is to convert MIN-SC into the Arabic language and to test the translated tool for validity and reliability among adolescents in Saudi Arabia. *Method.* The psychometric characteristics of MIN-SC were assessed using college freshman students at King Saud University in Riyadh, Saudi Arabia. The validity and reliability were examined using Cronbach’s alpha coefficient. The construct validity was examined through principal component analysis. *Results.* The MIN-SC instrument was shown to be internally consistent with reliable scoring (Cronbach’s alpha=0.910). Exploratory factor analysis resulted in 42 items loading on three main components: estimative, production, and transitional, with a factor loading of eigenvalues >2. The final model explained 38% of the variance. *Conclusion.* The Arabic version of MIN-SC was shown to be a valid and reliable tool for assessing attitude toward nutrition among adolescent students.

## FULL TEXT

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### 1. Introduction

It is vital for adolescents to practice well-balanced nutrition. This is particularly important for school students who are still in their development stages [1, 2]. Nutrition may significantly affect student performance in both physical and mental applications, including those related to performance in the educational setting [1–3]. Adequate dietary intake

is thus regarded as a fundamental factor for delivering high-quality health care to adolescents. Here, self-care practices are important. This include healthy eating habits, sufficient physical activity, proper nutritional intake, risk reduction, and healthy coping habits [4]. Individuals should also monitor their weight and perform activities designed to manage the symptoms of unnecessary weight gain and obesity. Previous studies have reported that adequate self-care practices can recover metabolic control [5] and help individuals regain their quality of life [6]. These activities also reduce the risk of chronic diseases and disease-related complications [7]. Rapid economic changes in Saudi Arabia and many other countries are increasingly contributing to chronic diseases resulting from obesity and weight gain [8–10]. The World Health Organization (WHO) has reported that over 39% of adults are overweight and 14% are obese worldwide, with nearly 41 million children suffering from these problems [11]. In Saudi Arabia, the overall prevalence of obesity is 52.9% for both genders; this number may reach 59.5% by 2022 [12]. Factors contributing to these chronic conditions include lack of physical activity, consumption of high-fat foods, and behavioral and environmental changes [13].

Consistent with the Saudi Vision 2030, the Saudi Food and Drug Authority (SFDA) has launched its Strategy of Regulating Healthy Food Habits, which aims to encourage adequate caloric and nutritional intake by decreasing the levels of dietary sugar, salt, and saturated and trans fats in food products. The strategy also raises awareness and urges food product manufacturers and importers to reduce these contents. Meanwhile, restaurants and cafes are encouraged to include caloric information on menus so that consumers can more easily determine their daily intake. Efforts also include a nationwide survey to identify individual community nutritional status [14].

Health care professionals play a vital role in promoting healthy eating. Adequate nutrition is essential for the obese and critically ill as well as for those with eating disorders, food allergies, and other clinical problems [15, 16]. However, nutritional care is a complex, multidisciplinary approach that involves physicians, nurses, nutritionists, and other health care providers. Previous studies have documented the role of nursing in nutritional care, particularly for health education, nutrition planning, and guiding patients in their dietary habits [15–17].

Valid and reliable tools are fundamental needs for assessing nutritional self-care among individuals who are at risk of poor health outcomes. The MIN-SC questionnaire was developed in 2005 by Jean Burley Moore and was based on Dorothea Orem's conceptual framework, the Theory of Self-Care Deficit, which has been applied among schoolchildren in the United States, Nicaragua, and Chile [13, 18, 19]. MIN-SC consists of 50 items designed to measure regular dietary intake, planning, and adjustment [19].

Nutritional skills are needed in educational curricula throughout Saudi Arabia. Another critical need is the ability to reliably assess nutritional attitudes, particularly among Saudi adolescents. A tool such as MIN-SC would aid in gathering baseline data for understanding attitudes toward nutritional status and emphasizing the need to design appropriate educational programs. However, MIN-SC has been investigated in different countries and languages with mixed results [20]. For instance, different reliability and validity estimates across countries can affect the significance of comparisons. Furthermore, the psychometric characteristics of the Arabic version of the tool have not been examined in Saudi Arabia. This study was designed to translate and culturally validate MIN-SC among a sample of Saudi students.

## **2. Methods**

### **2.1. Design and Setting**

This was a descriptive, cross-sectional study of the MIN-SC instrument conducted among college freshman students at King Saud University (KSU) in Riyadh, Saudi Arabia, over a one-month period in February 2019. It was designed to evaluate the psychometric properties of the Arabic version of the questionnaire.

The KSU College of Nursing was established in 1976. It currently offers programs in maternal and child health nursing, medical surgical nursing, community and mental health nursing, and nursing administration and education. The college also offers a master's degree in nursing science. All students who enroll in a nursing program at KSU must first be accepted to the integrated one-year program for health sciences. The criteria for acceptance in the unified program are based on the applicant's scores from a capability exam, cumulative exam, high school, and interview. All students who successfully complete the unified program are directed to one of four health faculties

(medicine, dentistry, pharmacy, and applied medical sciences) based on their desire, cumulative average, and program capacity. KSU operates on a single-gender basis.

## **2.2. Population and Sampling**

Approximately, 400 students are admitted to the KSU College of Nursing as freshmen, and that number was used to estimate the required sample size. Sample size was calculated using the Raosoft sample size calculator (<http://www.raosoft.com/samplesize.html>) with a 95% confidence level and a 5% predetermined margin of error. Response distribution for each question was estimated to be 50%, which gave a larger sample size for this research. The calculated sample size was 197, but it was decided that 200 students would be surveyed in an attempt to ensure higher reliability.

## **2.3. Data Collection Procedure**

Data were collected by visiting the students at the KSU campus through paper-based questionnaires using convenience sampling. Convenience sampling is a nonprobability sampling technique where study subjects are selected based on certain criteria such as availability at a given time, willingness to participate, easy accessibility, and geographical proximity to the researchers [21].

## **2.4. Data Collection Instrument**

MIN-SC was initially developed for use in English and Spanish by Jean Burley Moore et al. in 2005 [19]. The items were developed based on Orem's Self-Care theory, which proposed three domains of self-care (estimative, transitional, and productive). Here, estimative items describe activities related to gathering information and making choices among alternatives (e.g., "I read about nutrition in books"); transitional items describe behaviors designed to plan actions or make decisions (e.g., "I plan my meals so that they are healthy"); and production items describe activities that involve taking actions and evaluating the outcomes (e.g., "I eat breakfast every day"). A follow-up study expanded and validated a newer scale composed of 50 items answered on a five-point Likert-type scale ranging from 1 (never) to 5 (always). This was designed to measure the frequency of nutrition-based behaviors. Higher scores signify healthier child nutrition practices [20].

The contents of the original English instrument were previously validated according to expert opinion, while instrument reliability was established through an alpha coefficient of 0.83 [20, 22]. The translation procedure followed forward-backward translation which was carried out by professional bilingual speakers of English and Arabic, while backward translation was conducted by another set of bilingual professionals. Both versions (the original and back-translated) were adjusted for quality and accuracy by a group of experts. Psychometric properties of the consensus version of the Moore index questionnaire in Arabic were then examined. We evaluated content, face, and construct validity of MIN-SC as follows. Once the tool was prepared in the Arabic language, it was sent to independent reviewers. The reviewers were a senior professor in nursing and an assistant professor and a senior researcher with considerable experience in preparing and designing research questionnaires. Opinions and suggestions about the suitability of the questionnaire were collected from the review team, and changes were made according to the feedback provided by the review team. Face validity of the questionnaire was performed by conducting a pilot study at KSU College of Nursing, under the supervision of the investigator, for the purposes of evaluating the responses of the subjects, measuring the validity of the questionnaire, testing the study tools, and choosing the best methods for data collection and management. The pilot study was completed in one week and involved 67 subjects. After the conclusion of the pilot study, all necessary additions or changes to the study tools were made. The results of the pilot study were not included in the main study.

## **2.5. Data Analysis**

Data were analyzed using SPSS, Version 22.0. Exploratory factor analysis (EFA) was applied to determine the factorial structure of MIN-SC. To run factor analysis, we assessed the Kaiser Meyer-Olkin (KMO) and Bartlett's test measures to assess the sample adequacy and sphericity of the Arabic version of MIN-SC, respectively. To explore the structure of survey component, Varimax rotation was used. Items that loaded with eigenvalues  $>2$  were retained in the analysis. Items that loaded with a factor of less than 0.3 were deleted from the analysis. Items that loaded with two or more factors of 0.3 or greater were deleted from the analysis. To keep a factor in the analysis, it must load 3

or more items with no loading on other factors. Items were considered for deletion if their correlation with an item within the same factor was too high (>0.8) or too low (<0.2). The reliability of the Arabic version of MIN-SC was measured through internal consistency using Cronbach's  $\alpha$  (Cronbach's  $\alpha$  of  $\geq 0.70$  is considered good reliability) [23, 24].

### 2.6. Ethical Considerations

The study was approved by the Institutional Review Board of King Saud University College of Medicine, Saudi Arabia (E-19-3979). All participants provided their written informed consent to participate in this study.

### 3. Results

A total of 200 students were approached during the data collection period. Of those, 60 students (30%) answered incompletely and were therefore excluded from the study. A total of 140 students responded to the Arabic-translated MIN-SC instrument, yielding a response rate of 70%. The content and face validity were established using experts' opinions and students' feedback, respectively. The MIN-SC instrument was shown to be internally consistent with reliable scoring (Cronbach's  $\alpha = 0.910$ ). Exploratory factor analysis resulted in 42 items loading on three main components (estimative, production, and transitional), with a factor loading of eigenvalues >2. The final model explained 38% of the variance.

As shown in Table 1, Factor 1 contained a total of 18 subscale items. However, Item 49 from Factor 1 is not loaded on the subscale and was deleted from the analysis. Therefore, the final number of items in Factor 1 is 17 and labeled "Productive." Productive items describe activities that involve taking action and evaluating the outcome (e.g., "I eat breakfast every day").

Table 1

Total number of items used in scale.

Factor	Items	No. items	After deletion Cronbach's $\alpha$
F1 production	(5) I learn about healthy food from watching TV	18	17
(6) I suggest healthy foods for my family to buy	(9) I ask my teacher about healthy food to eat	(13) I ask my grandparent's questions about healthy eating	(17) I find out about healthy eating from nurses

(19) I study nutrition in school	(24) I talk to my friends about which healthy foods to eat	(35) I obtain information about nutrition from the Internet	(36) I read public announcements about nutritious foods
(40) I read about nutritious food to eat in magazines or newspapers	(41) I help my family select food to buy	(42) I ask other adults questions about healthy eating	(43) I eat fruit
(44) I eat green vegetables	(45) I eat other vegetables	(46) I eat meat	(47) I drink milk
(49) I eat cereal, bread, or tortillas	F2 production	(2) I read about nutrition in books	17
15	(4) I study food labels to learn about nutrients in food	(8) I try new foods	(10) I eat foods containing iron
(11) I choose to eat foods that contain vitamins	(21) I eat foods that are good sources of vitamin C	(18) I make sure the water I drink is clean	(22) I wash fruit before eating it

(23) I make sure that meat I eat is cooked enough	(25) I eat protein at every meal	(26) I try to eat food and drink beverages with calcium	(27) I eat foods that are good sources of vitamin A
(28) I consider whether my meals have enough protein	(29) I eat breakfast every day	(32) I think about whether what I eat is healthy	(34) I choose to eat foods that are low in fats
(37) I eat a variety of foods	F3 transitional		
	(1) I plan my meals so that they are healthy	12	10
(3) I choose to drink soda instead of water	(7) I eat foods that I know are good for me even if I do not like them	(14) When I buy a snack I choose a soda rather than fruit	(15) I put a lot of salt on the food that I eat
(16) I eat the same foods every day	(20) I ask my mother which foods are healthy	(30) I drink soda instead of fruit juices	(31) I would choose to eat sweets instead of a piece of fruit

(39) I choose to eat chips and other snacks instead of fruit	(48) I eat sweets	(50) I eat high-calorie snack foods	Deleted from PFA
	(12) If I think I'm gaining too much weight I eat fewer sweets	47	42

Factor 2 contained a total of 17 items. Among those, 2 items were not loaded, or loaded in a factor with less than 0.3, and were deleted from the analysis. The final number of items in Factor 2 is 15 and labeled "Estimative." Estimative items describe activities related to gathering information and making choices among alternatives (e.g., "I read about nutrition in books").

Factor 3 contained a total of 12 items. Among those, 2 items were deleted from the analysis. The final number of items in Factor 3 is 10 and labeled "Transitional." Transitional items describe behaviors related to planning actions and making decisions (e.g., "I plan my meals so that they are healthy").

We conducted an exploratory factor analysis (principal components analysis) and subsequent Varimax rotation to evaluate construct validity. Kaiser-Meyer-Olkin (KMO) and Bartlett's test indicated that the data were adequate for conducting a principal component analysis (PCA; KMO index=0.779, P<0.001). The final model retained three factors with eigenvalues >2 and factor loading equal to or greater than 0.43, which explained 38% of the variance. The final validated Arabic MIN-SC contained 42 items loaded among the three components.

### 3.1. Reliability

In terms of internal consistency, Cronbach's alpha scores for the Arabic MIN-SC subscales ranged from 0.831 (Factor 1) to 0.80 (Factor 3). A detail description of factor loading and Cronbach's alpha scores for various subscale of MIN-SC are given in Table 2. A Pearson correlation coefficient was performed to estimate the significance among all items in the nutritional scale. Results indicated that all items were significant at the 0.001 level (Table 3).

Table 2

Factor loadings (rotated) and Cronbach's alpha for each subscale of nutrition.

Factor	Items		Factor loading	Cronbach's $\alpha$
Production	5	I learn about healthy food from watching TV	0.509	
6	I suggest healthy foods for my family to buy	0.653	9	I ask my teacher about healthy food to eat
0.573	13	I ask my grandparents questions about healthy eating	-0.493	17

I find out about healthy eating from nurses	0.600	19	I study nutrition in school	0.480
24	I talk to my friends about which healthy foods to eat	0.619	35	I obtain information about nutrition from the Internet
0.528	0.831	36	I read public announcements about nutritious foods	0.642
	40	I read about nutritious food to eat in magazines or newspapers	0.469	41
I help my family select food to buy	0.540	42	I ask other adults questions about healthy eating	0.552
43	I eat fruit	0.495	44	I eat green vegetables
0.390	45	I eat other vegetables	0.376	46
I eat meat	-0.485	47	I drink milk	0.337
49	I eat cereal, bread, or tortillas	0.576	.	



Estimative	2	I read about nutrition in books	0.506	4
I study food labels to learn about nutrients in food	0.336	8	I try new foods	0.578
10	I eat foods containing iron	0.624	11	I choose to eat foods that contain vitamins
0.720	21	I eat foods that are good sources of vitamin C	0.301	22
I wash fruit before eating it	0.340	0.848	23	I make sure that meat I eat is cooked enough
0.470		25	I eat protein at every meal	0.6.6
26	I try to eat food and drink beverages with calcium	0.584	27	I eat foods that are good sources of vitamin A
0.617	28	I consider whether my meals have enough protein	0.00	29

I eat breakfast every day	0.460	32	I think about whether what I eat is healthy	0.515
34	I choose to eat foods that are low in fats	0.657	.	
Transitional	1	I plan my meals so that they are healthy	0.318	3
I choose to drink soda instead of water	0.526	7	I eat foods that I know are good for me even if I do not like them	0.436
14	When I buy a snack I choose a soda rather than fruit	0.703	20	I ask my mother which foods are healthy
0.426	0.802	30	I drink soda instead of fruit juices	0.387
31	I would choose to eat sweets instead of a piece of fruit	0.401	39	I choose to eat chips and other snacks instead of fruit
0.453	48	I eat sweets	0.571	50

Table 3

Spearman correlations between the Moore Index of Nutrition Self-Care scale items.

		Items	Pearson correlation	Pvalue
--	--	-------	---------------------	--------

Production	5	I learn about healthy food from watching TV	0.546	≤0.001
6	I suggest healthy foods for my family to buy	0.648	≤0.001	9
I ask my teacher about healthy food to eat	0.607	≤0.001	13	I ask my grandparents questions about healthy eating
-0.314	≤0.001	17	I find out about healthy eating from nurses	0.678
≤0.001	19	I study nutrition in school	0.557	≤0.001
24	I talk to my friends about which healthy foods to eat	0.673	≤0.001	35
I obtain information about nutrition from the Internet	0.589	≤0.001	36	I read public announcements about nutritious foods

0.725	≤0.001	40	I read about nutritious food to eat in magazines or newspapers	0.628
≤0.001	41	I help my family select food to buy	0.567	≤0.001
42	I ask other adults questions about healthy eating	0.648	≤0.001	43
I eat fruit	0.462	≤0.001	44	I eat green vegetables
0.556	≤0.001	45	I eat other vegetables	0.501
≤0.001	46	I eat meat	0.427	≤0.001
47	I drink milk	0.394	≤0.001	
			2	I read about nutrition in books
0.578	≤0.001	4	I study food labels to learn about nutrients in food	0.583
≤0.001	Estimative	8	I try new foods	0.465

≤0.001	10	I eat foods containing iron	0.593	≤0.001
11	I choose to eat foods that contain vitamins	0.600	≤0.001	21
I eat foods that are good sources of vitamin C	0.755	≤0.001	22	I was h fruit befo re eatin g it
0.482	≤0.001	23	I make sure that meat I eat is cooked enough	0.478
≤0.001	25	I eat protein at every meal	0.557	≤0.001
26	I try to eat food and drink beverages with calcium	0.643	≤0.001	27
I eat foods that are good sources of vitamin A	0.660	≤0.001	28	I cons ider whet her my meal s have eno ugh prot ein
0.693	≤0.001	29	I eat breakfast every day	0.340
≤0.001	32	I think about whether what I eat is healthy	0.538	≤0.001
34	I choose to eat foods that are low in fats	0.534	≤0.001	

			1	I plan my meals so that they are healthy
0.597	≤0.001	Transitional	3	I choose to drink soda instead of water
0.549	≤0.001	7	I eat foods that I know are good for me even if I do not like them	0.646
≤0.001	14	When I buy a snack I choose a soda rather than fruit	0.717	≤0.001
15	I put a lot of salt on the food that I eat	0.616	≤0.001	16
I eat the same foods every day	0.706	≤0.001	20	I ask my mother which foods are healthy

0.607	≤0.001	30	I drink soda instead of fruit juices	0.645
≤0.001	31	I would choose to eat sweets instead of a piece of fruit	0.627	≤0.001
39	I choose to eat chips and other snacks instead of fruit	0.640	≤0.001	48
I eat sweets	0.483	≤0.001	50	I eat high-calorie snacks

#### 4. Discussion

This study investigated the psychometric properties of the Arabic version of MIN-SC. Construct validity and PCA revealed a three-component structure (knowledge, estimative, and productive).

This study's reliability coefficient was similar to that of a previous Spanish-language study conducted by Moore [19]. However, it was more reliable than that of an English-language study conducted by Jean Burley Moore et al. in 2005. We believe there are two main reasons for these different MIN-SC results. First, the validity and reliability of MIN-SC in the original study [19] were determined based on a 36-item questionnaire with a smaller sample size, whereas this study used a larger sample size and an expanded 42-item questionnaire. Second, several factors in the Arabic questionnaire were revised, restructured, or removed to obtain a more reliable and valid measurement scale. Variations may also have resulted from cultural or contextual differences.

Spearman and Pearson correlation values for all 42 items were significant at the 0.01 level. In addition, all scaling success rates were excellent based on an assessment of both validities. These results indicate that all questionnaire items represented the underlying construct.

MIN-SC has proven to be a valuable tool in numerous investigations. For instance, it has been used to describe and measure nutritional practices, compare adolescent and parental behavior, examine self-care operations among youth, assess nutritional intake, and determine nutritional effectiveness [19]. At the time of this study, no published research had assessed the psychometric properties of MIN-SC among an Arabic-speaking community. It is with this goal that we translated, designed, and tested the psychometric properties of the Arabic MIN-SC, which was determined to be a valid and reliable tool for assessing nutrition self-care among Saudi students.

The need for this investigation was supported by numerous studies showing that school students do not sufficiently adhere to recommended physical activity and healthy eating habits [25,26]. In one study conducted using a convenience sample of school children to measure self-care, only 2.5% of the children had healthy practices, while 6.9% showed unhealthy behaviors [25]. In 2018, Almutairi et al. conducted a study titled "Health Promoting Lifestyle of University Students in Saudi Arabia." The study reported that approximately 20% of participants were overweight, while 11.3% were obese [26]. Reports have revealed that a majority of both college and school students do not attend educational programs on health care [20,27].

Studies have shown the importance of nutritional self-care in promoting health quality for both children and adults. Encouraging healthy dietary habits in young children may prevent various chronic health disorders in both childhood

and adulthood, including obesity, diabetes, hypertension, cardiovascular disease, cancer, and dental caries [28,29]. Schools and universities may be instrumental in providing information and inculcating students with healthy habits through educational interventions designed to teach proper nutrition. Research has also found that schools and universities are accessible settings for interventions targeted at instilling healthy lifestyle habits among both children and parents [28,29].

The study had some limitations. First, it was conducted at a single institution; therefore, the findings may not be generalizable among other educational settings. However, the Arabic version of MIN-SC demonstrated good psychometric properties and is recommended for use in future studies designed to improve and refine it for greater application among Arabic-speaking communities.

## 5. Conclusion

The Arabic version of the MIN-SC represents a novel scale for the assessment of nutritional intake among adolescents. Unlike other nutritional scales available in other languages, it was designed to include the three main domains (knowledge, production, and estimative). The Arabic version of MIN-SC offers a simple self-care assessment tool that reflects current trends in food and dietary habits and should prove useful to a range of adolescents for achieving adequate health and quality of life.

## Ethical Approval

The study was approved by the Institutional Review Board of King Saud University College of Medicine, Saudi Arabia.

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# Expectation and Satisfaction with Nursing Care among Hypertensives Receiving Care at a Resource-Constrained Hospital in Ghana

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## ABSTRACT (ENGLISH)

**Background.** Hypertension accounts for a third of the global preventable premature deaths. In Sub-Saharan Africa, hypertension is the most rapidly increasing cardiovascular disease (CVD) and the second leading cause of death. Proper management of hypertension requires adherence to management by patients and this is partly possible if patients feel satisfied with the nursing care they receive. Satisfaction with nursing care is only possible if there is a congruence between the expectations of care and the actual care received from nurses. **Aim.** We explored the expectations and satisfaction of Ghanaian hypertensives with nursing care received at the Korle-Bu Teaching Hospital (KBTH). **Methods.** In this qualitative study, a phenomenological approach was used to gather data about the lived experiences of patients with hypertension about nursing care. In-depth interviews (IDIs) were conducted among sixteen (16) patients with hypertension from the hypertensive Out-Patient Department (OPD) Clinics of the Medical Department at the KBTH. Only patients with history of previous admission(s) at the KBTH during the immediate past six months were purposively recruited. The respondents were interviewed about the nursing care received during their immediate past admission(s) at the KBTH using an IDI-guide. The IDIs were recorded digitally, transcribed verbatim, and reviewed severally and thematic analysis was done. Nvivo 11 software was used to manage the data and aid with the thematic analysis. **Results.** The results of this study showed that Ghanaian hypertensive patients perceived nurses as key players in the management of patients. On the respondents' expectations from nurses prior to their immediate past admissions at the KBTH, the data revealed the responsiveness of nurses to patient needs, prompt pain management, high confidentiality level of nurses, rendering of efficient health education, maintenance of therapeutic work environment, and ensuring effective communication as well as professional/ethical practice from the nurses. On the question of what made nursing care satisfying, it was

observed from the respondents that they considered the competence of nurses, maintenance of therapeutic environment, and also effective handling of confidential information as determinants of their satisfaction with nursing care. Further, the respondents identified some key areas of dissatisfaction and these included the responsiveness of nurses to patient needs, prompt pain management, effectiveness of health education, and provision of culturally sensitive communication. Disproportionate distribution of nursing staff across the three nursing shifts, unethical practice among some nurses, inadequate resources for work, and low work morale of some nurses were identified as factors responsible for the gaps between patient expectations and actual care received. *Conclusion.* Our study concludes that continuous professional development programs for nurses should focus on the areas of dissatisfaction so as to improve care for hypertensives. We also recommend that nursing staff distribution across the various shifts should be of keen interest to nurse managers if hypertension care in particular and overall patient care in general are to improve.

## FULL TEXT

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### 1. Background

Currently, noncommunicable diseases (NCDs) like metabolic syndrome (MetS) are said to be rising alarmingly in the Ghanaian population particularly among females [1, 2] and there are fears that this could worsen in the not-too-distant future because current data is suggestive that young adults with parental history of hypertension have increased risk for MetS [2]. Nurses are influential members of the healthcare team and could play a critical role reversing this rising burden of NCDs [3]. Hypertension, a common NCD, characterised by sustained high blood pressure of above 140/90mmHg in an individual after three measures [2, 4] is now a global epidemic and nurses are crucial staff needed to confront this epidemic as well as its consequences [3, 5]. Proper management of hypertension requires adherence to management by patients [2, 4] and this is partly possible if they are satisfied with the nursing care they receive in hospitals [6]. There is a general consensus on the significance of nursing interventions in shaping the patients' total satisfaction with the health services they receive [3, 6] and they may influence patients' compliance with therapy particularly chronic-diseased patients [4]. Further, the awareness about the needs and expectations of patients with hypertension is important in improving the quality of the nursing services they are provided in hospitals [6, 7].

Patient satisfaction with nursing care was conceptualized by Risser [7, 8] as the degree of congruence between patients' expectations of ideal nursing care and his/her perception of the real nursing care he/she receives [8]. Most definitions have certain elements of subjectivity including one definition which states that it is a measure of a patient's or a family's opinion of the care received from the nursing staff [9]. It is envisaged that timely, accessible, appropriate nursing interventions and continuous and effective nursing service delivery are important components of healthcare quality [10]. It is no wonder that states, international organizations, corporate bodies, and even individuals are working tirelessly to promote quality care and patients' protection and safety from patients' perspective [7, 10]. In fact, it has been suggested the extent to which healthcare users are satisfied with their nurses may be a key factor underpinning their health behaviour and healthcare utilization [7]. It has been established that patients' satisfaction with nursing services is particularly important since the nursing staff constitute the majority of health professionals and are constantly by the patients' side in order to satisfy patients' needs [10, 11].

Hypertension is now classified as a public health emergency in Sub-Saharan Africa (SSA) [2, 5] and it is the leading risk factor for cardiovascular morbidity and mortality [1, 2]. In Ghana, hypertension accounts for 4% of all Out-Patient Department (OPD) attendance and 4.6% of all deaths [12]. At the KBTH, noncommunicable diseases (NCDs) continue to lead the top ten (10) causes of OPD attendance [13]. Hypertension and hypertension-related morbidities account for almost 35% of cases seen at the KBTH [13]. This high number of hypertension-related cases puts considerable pressure on nurses as these conditions require life-long management [2]. This is occurring against the backdrop of the persistent complaint from the management of the KBTH about inadequate nursing staff and this has the potential of predisposing the current nurses at the KBTH to high workload [13]. High workload among nurses is

known to carry the risk of burnout syndrome [14] which could have negative consequences for recipients of nursing care [10].

## **2. Aim**

We explored the expectations and satisfaction of Ghanaian hypertensives with nursing care at the Korle-Bu Teaching Hospital.

### **2.1. Method**

#### **2.1.1. Study Design**

We chose a descriptive qualitative approach for this study in order to obtain in-depth data [15]. The theoretical model underpinning the study was the Donabedian quality assurance framework [16]. The Donabedian quality assurance framework provides that relevant elements of care satisfaction may be categorized according to whether they are related to structure (facilities, personnel), process (technical process, interpersonal process), or outcomes (somatic, psychosocial, and financial) of care [17]. Thus, we sought to determine how structural, process-related factors or outcomes could influence satisfaction with nursing care among hypertensives. In this study, the phenomenology strategy was used to gain in-depth information [18] about the lived experiences of hypertensives about the nursing care received during the immediate past admission at the KBTH. "Phenomenology in qualitative research allows participants to share their perceptions, feelings, and lived experiences in a given situation and how these experiences affect their views about a given situation" [15, 18]. The philosophical approach that was chosen for this study was interpretivism. Interpretivism perceives that social events are created from perceptions of social actors [18, 19]. Some of the qualitative approaches associated with the interpretivist paradigm include focus group discussions, in-depth interviews, ethnographic case studies, among others [15, 19].

#### **2.1.2. Setting**

The study was conducted at the Korle-Bu Teaching Hospital (KBTH), a resource-constrained health facility in Ghana. The KBTH is located in the southern part of Ghana and it is the national referral hospital in Ghana. It is the third largest hospital in Africa [13]. The KBTH which was established in 1923 has grown from an initial 200 beds to 2000 beds and 17 clinical and diagnostic departments. The hospital is traditionally known to receive huge numbers of referral cases from across the country with daily average patient attendance of 1,500 with average daily admission of 250 patients [13]. The respondents were selected from the Hypertensive OPD Clinics of the Medical Department at the KBTH. These clinics run for four days in a week from 8am to 2pm. The working days for the clinics were Mondays, Tuesdays, Thursdays, and Fridays.

#### **2.1.3. Selection of Participants and Data Collection**

We included male and female hypertensive patients with previous history of admission at the KBTH within the immediate past six months who were now visiting the Hypertensive OPD Clinics of the Medical Department at the KBTH for review after discharge. Purposive sampling technique was used to select the respondents for the study. The inclusion criteria for the selection of the study participants included hypertensive patients between the ages of 35 and 65 years, history of previous admission with hypertension within the immediate past six months, and being well oriented to time and place with no signs of mental illness. We interviewed sixteen (16) respondents and each interview lasted between 30 and 45 minutes. All interviews were conducted in English or Ga or Twi, after which the data was transcribed. The Twi and Ga audio files were translated before transcription. Thus, patients who could not speak Ga or Twi or English were not included in the study.

Data collection was done with the aid of a tape recorder and an in-depth interview (IDI)-guide after obtaining voluntary written consent from each respondent. The IDI-guide was designed in English and translated into the two commonly spoken Ghanaian local languages, Twi and Ga, where necessary during the data collection. The IDI-guide was unstructured and consisted of open-ended questions about expectations about nursing care prior to immediate past admission at the KBTH, satisfaction with nursing care during the immediate past admission, and factors accounting for expectations about nursing care not being met during the immediate past admission at the KBTH. The data collection period was from October to November, 2017. The researchers maintained a nonjudgmental approach throughout the data collection.

#### **2.1.4. Data Analysis**

Huge data set is usually obtained when an investigator decides to use the phenomenological approach in any study [15, 16]. This qualitative data set normally comes as audio files of tape recordings, interview notes, and field notes which are often analyzed together to give meaning to the social construct of interest [15–17]. Thus, the IDIs in this study were recorded digitally with an audio recorder after seeking the respondents' permission and transcribed verbatim. All the transcripts were anonymized and no identities of the respondents were included in the notes. Each participant was given a unique identification number beginning with R meaning respondents followed by the number of the respondents as per their sequence during the interview. Hence all the transcripts were numbered from R1 to 16. An independent person at the Training and Research Unit of the Nursing Directorate at the KBTH reviewed all transcripts to ensure they reflected the views in the audio files/recordings. The transcripts were then entered into a word processor and imported into Nvivo 11.

Thematic analysis was employed so as to give meaning to the data as recommended for most qualitative studies [15, 16]. "Guest, Macqueen and Namey, summarizes the process of thematic analysis as consisting of reading through textual data, identifying themes in the data, coding those themes, and then interpreting the structure and content of the themes" [15, 18]. Based on the above, we developed a codebook first and went further to create nodes within NVivo 11 using the developed codebook. Then, we proceeded with line-by-line coding of the various transcripts. We had two of investigators doing the coding and coding comparison.

#### **2.1.5. Rigor**

Trustworthiness of the study was ensured by member checking from the participants at Hypertensive OPD Clinics of the Medical Department at the KBTH during the concurrent data analysis and it facilitated the full understanding of the participants. Also, writing detailed field notes and discussion of findings among the investigators helped to ensure trustworthiness of the study.

#### **2.1.6. Validity and Reliability**

Member checking was done by verifying from the respondents the data generated to maintain confirmability and credibility [18]. In order to ensure dependability, all respondents were interviewed using the same IDI-guide. Peer briefing was done among the investigators to ensure all aspects of the data were covered during the thematic analysis. Further, detailed description of the protocol was done in order to ensure replicability of the study [15, 18].

#### **2.1.7. Ethical Issues**

The study was approved by the Scientific and Technical Committee as well as the Institutional Review Board of the Korle-Bu Teaching Hospital (Protocol Identification Number: KBTH-IRB /00017/2017). Written voluntary informed consent was obtained from all participants and permission was obtained for audio-taping of IDIs. Also, permission was sought from the Deputy Director of Nursing Services at the Central OPD and the Medical Department of the KBTH prior to data collection. The researchers also maintained the confidentiality of the respondents throughout the data collection by assigning specific codes for each respondent. The authors ensured anonymity of respondents by representing interview transcripts of the respondents with R1, R2, R3, ..., R16. The audios and transcripts were placed under lock in a cabinet for research purposes at the Training and Research Unit of the Nursing Directorate at the KBTH with the key available to only the investigators. Also, respondents were further assured that they could opt out of the study at any time without any effect on their care.

### **3. Results**

The data was organized concurrently during the data collection by applying the process of thematic analysis. The themes that emerged from the data were the views of the respondents on the nursing care at the KBTH. During thematic analysis, the investigators are supposed to remain faithful to the respondents by using what is known as bracketing [15, 18]. "Bracketing is used to reduce personal biases in presenting the findings of a research" [15]. Hence, we summarized the results of our study using the themes that emerged from the data and supported by the narratives with illustrative quotes from respondents as required in phenomenology [18]. The respondents were numbered (R1–R16) and the number after each quotation shows which of the respondents was talking.

#### **3.1. Expectations of Clients with Nursing Care before Arrival in the Hospital**

When the respondents were asked about their expectations of nursing care, the responses were categorized and after open coding of the data, the researchers identified seven themes as the respondents' expectations of nursing care. These themes were responsiveness of nurses to patient's needs, prompt pain management, high confidentiality level of nurses, sufficient health education, ensuring satisfactory work environment, effective communication, and competence in general nursing work.

On the theme of nurses being responsive to their needs and pain concerns, the respondents reported that, prior to coming to the hospital and in fact coming into contact with nurses, they expected them to be very responsive to their needs and to act quickly in meeting those needs. They also claim that they expected nurses to treat pain as an emergency. They also expected them to console them when they were in pain.

"I expected that I would be attended to appropriately by nurses and my pain taken care of appropriately, nurses are always around us so I expect them to do more when am in pain" (R8).

"While waiting to see the doctor, I expect nurses take care of any pain I have, they are always with us" (R5).

"Nurses should help me get what I need, if am in pain, I believe it's their responsibility" (R14).

"The nurses need to attend quickly to us when we ask for something and not delay, when we are feeling pain, they have to be quick to give us our medications" (R3).

"The nurses should try to attend to our pain early and respond quickly when we need something since we are sick" (R15).

On the confidentiality level of nurses, it emerged from the respondents' narratives that they expected nurses to keep their information private and not broadcast it anyhow as some of such information was seen to be sensitive to them.

"Since Korle-Bu is a big place with so many people; I expect my information to be kept secret" (R13).

"Nurses have access to my private information so I expect them to be secretive" (R16).

"I expect nurses to keep our information secret" (R12).

"I expect the nurses not to share our information with other people" (R7).

"The nurses should try to keep our information private" (R6).

"In a big place like this, I think the nurses have to try to keep our private information secret between themselves" (R9).

The respondents claim they expected sufficient health education from nurses as most of them claimed nurses needed to educate them.

"The hospital is not my work place, so I expect nurses to talk to me on my condition" (R4).

"I have not gone to school, so I expected nurses who should know better and should talk to me on what is wrong with me" (R7).

"I expected that they should try to tell us what is happening/wrong with us because they are in the hospital and they know why some things are happening" (R1).

"as for me my expectation was that the nurses talk to me about what is wrong with me in simple manner" (R8).

"my expectation is that the nurses would teach me what to do and not to do so that i can get well" (R6).

Also, the respondents stated that they expected nurses to maintain a good working environment and communicate effectively with them as clients. They further expected a humane communication with mutual respect between the nurses and them, the recipients of care.

"I expected the nurses to make sure the place is clean and they must learn to talk to us at least we are also human beings" (R7).

"my expectation was that nurses are always with us on the ward so they should do well to ensure the cleaners do their work" (R12).

"I only expect nurses to talk to me and my relatives with dignity and respect because it is not a curse to be in the hospital" (R9).

"I expected the nurses would learn to be nice and smile towards us" (R4).

"I expected the nurses to talk nicely to us so that we too will be happy" (R1).

"The nurses have to make sure the place is smelling nicely and ready for work" (R2).

On the competence of nurses, the respondents claimed they expected nurses to assist them get well. Most of them said they expected nurses to help them see their doctors and to perform their work very well according to their training.

"I expected the nurses to assist me see the doctor so that I can go home early and do my work..... I don't want to delay/waste my time here" (R1).

"my expectation is for the nurses here to know their work, I expect them to be different and highly skillful" (R2).

"I expected the nurses to work hard and remain as professionals" (R6).

### **3.2. Aspects of Nursing Care That Respondents Seemed Satisfied or Dissatisfied**

After open coding of the data on aspects of nursing care that the respondents were satisfied or dissatisfied with as per their expectations prior to coming to the KBTH, the following was found:

On the responsiveness of nurses to respondents' needs and prompt pain management, it emerged from the respondents' narratives that nurses respond slowly to their needs with most of them ignoring their needs. They also claim pain management was very poor and that they had to answer several questions on whether they were really in pain before being given medication. The respondents also claimed nurses were not also compassionate enough, with most of them claiming the nurses did not really show the compassion expected of them as nurses. Some claim the nurses also did not pay attention to their mental/psychological pain especially for those with life-threatening diagnosis.

"You never get help with most of the things unless they see you as well to do or educated or if you give them tips/gifts" (R1).

"They are mostly friendly, kind and nice to only their friends and their relations or Church members, most of the young ones are always on their phones and seem not to care about you and they waste time when you request for something" (R11).

"They care less about our needs and they take so long before responding to your request" (R3).

"They think we are dramatizing when we say we are in pain so they don't give us the drugs ooo" (R2).

"Sometimes they won't even mind you when you ask for something especially the small ones"(R14).

"They come to only give you pain medication if they see that you are making so much noise" (R3).

"Even if they have drugs for pain, they delay before giving it" (R6).

On the confidentiality level of the nurses, the results indicated a general good confidentiality level of nurses. Most respondents claim nurses kept their problems and conditions well and private. Thus, the respondents were generally satisfied with the levels of confidentiality being maintained by nurses.

"The nurses here try paaa, they keep our information secret" (R8).

"I have not heard them talking about my things to any one" (R13).

"The nurses here are really secretive, they don't share our information" (R3).

"The nurses are good when it comes to keeping our information" (R2).

"Most of the nurses are really wonderful when it comes to keeping our information" (R8).

"The nurses here are people you can trust" (R5).

On the sufficiency of the health education received from the nurses, the respondents claim nurses did not do well with the health education given to them. The transcripts from the interviews indicated that nurses provided little or no health education and mostly did not have any time allotted to provide education to respondents.

"The nurses never spoke to me about my condition" (R1).

"The nurses don't have time to talk to us about our condition" (R2).

"The staff have never spoken to me about my disease, only once that they told me about the drugs" (R12).

"The nurses don't teach us here, they give us only our drugs" (R10).

"The place is full of people so they don't educate us" (R4).

"Sometimes they talk to us small about our condition but not so detailed" (R16).

"The nurses are too busy to teach us but sometimes the students do" (R6).

On the theme of maintaining a satisfactory work environment and therapeutic communication, the interview



transcripts revealed that the respondents were generally satisfied with the work environment.

“The place is neat” (R1).

“The place is looking better than I thought of Korle Bu. now Korle bu is good” (R3). “I think the nurses are doing well” (R4).

“The place is well arranged and fine” (R5).

However, there was gross dissatisfaction of respondents with the communication skills of nurses; most of them claim nurses lacked the key communication skills needed for their work. Most claim nurses spoke harshly to them or other clients and never showed any signs of remorse.

“They keep talking very loudly to you as if you have offended them” (R6).

“The nurses are simply not good when talking to even us the elderly, being sick is not a curse or a crime, the shouting and disrespect is too much” (R5).

“I think the nurses need to learn how to talk” (R12).

“The nurses do not really do not behave as if they have being trained well on how to talk to patients” (R15).

On the competency level of nurses, the transcript revealed that nurses were very competent in doing their nursing work. However, most of the respondents only stated that their nurses were competent but when asked about the specific nursing care, they could not say. They mostly saw the nurses as an assisting tool of the physician/doctor.

“Nurses are supposed to help me see the doctor” (R13).

“Nurses help clients see the doctors and give injections and drugs on the ward, I think they are doing well” (R14).

“The nurses here are good at what they are doing” (R7).

### **3.3. Possible Causes of Why the Expectation of Nursing Care Was Not Met**

On the factors harbouring the achievement of expected nursing care, the transcripts from the IDIs revealed that the factors below were responsible. Disproportionate distribution of staff for the various nursing shifts accounted for the respondents' expectations of nursing care not being met. Most of the nurses reported for morning shifts with few staff reporting for afternoon and night duties during their stay on the ward. This disproportionate distribution of the staff resulted in high workload for the night nurses. The workload on night nurses was one factor that led to the widened gap between respondents' expectations of nursing care and the actual nursing care rendered. The respondents claim that the workload on night and afternoon nurses was overwhelming and made it practically impossible for those nurses to render the supposed care they needed or should have received.

“the hospital has so many patients but the staff are few especially during the night, so they can't do what they should be doing” (R10).

“Nurses have a lot to do and even when they try their best to help, their work seem to be too much especially the night nurses. Most of the nurses come for morning duty with few reporting for night” (R14).

“They never get time to even relax; they have to run up and down especially when someone becomes an emergency and yet they are few at night.....” (R16).

“it seems most of them come for the morning and afternoon time with only few at the night duty, this actually burdens the night staff” (R9).

“How can you expect only three nurses to come for night and do all the work” (R3).

Low morale for nursing was identified as another factor responsible for why expectations could not be met. A good number of the respondents claimed some nurses had no motivation for getting into nursing or lost their interest in nursing and hence never acted professionally.

“They seem not to like what they are doing, so they just do it anyhow” (R11).

“The young ladies just don't smile when they are even attending to you, they feel like finishing quickly and going away, they don't care how they do it” (R13).

“Most people are in hospital work/nursing because of money so they even forget that we the patients have needs to be met.....hmmmm, it's a problem ooo” (R7). “It is like the nurses have lost the interest in nursing so they don't care” (R9).

Inadequate working equipment/low resources for work was identified as another factor accounting for respondents'

expectations not being met. Respondents claim they observed nurses complaining about the absence of one thing or another and that eventually affected the care they rendered.

“sometimes we don’t get the drugs from the hospital pharmacy and what can the nurses do..... so I will say its not their fault” (R2).

“Sometimes it’s not the nurses, they might want to help you but they don’t have the things to work with” (R6).

“At times, they don’t have the things to work with” (R12).

Age of the respondents was identified as being responsible for the contrast between respondents’ expectations with nursing care and their satisfaction with care; respondents claim they expected that the respect from home accorded to them be given to them by nurses and this was nonexistent.

“The young people like complaining about the nurses, we the old ones don’t care much; we see them as our children” (R5).

“We the older clients tend to have less satisfaction with nursing care than younger clients” (R6).

Noninvolvement of the respondents in care was identified as yet another factor causing the expectations of nursing care not being met. They stated that the nurses sometimes did not involve them and their relatives in care and hence they did not even understand what the nurses were doing and hence could not appreciate it or help.

“They just keep doing their things without even minding us, we don’t even know what they are doing and they don’t even bother to involve me or my wife” (R12).

“Nurses sometimes think they know best so they don’t even involve us, I just don’t understand” (R8).

Prolonged stay in the hospital was also identified as one of the factors responsible for the respondents’ expectations not being met. According to them, overfamiliarity made the environment boring, and prolonged stay made the nurses not concentrate on them as they had to attend to new clients with priority.

“When you stay for too long, sometimes they ignore you and complain that you are worrying them” (R1).

“Sometimes the environment is too boring for me and makes me not to appreciate the care I even get” (R8).

“its like they are angry, I stayed for long so they don’t care like when I came earlier” (R12).

#### **4. Conclusion**

The results of this study showed that Ghanaian hypertensive patients perceived nurses as key players in the management of patients. On the respondents’ expectations from nurses prior to their immediate past admissions at the KBTH, the data revealed the responsiveness of nurses to patient needs, prompt pain management, high confidentiality level of nurses, rendering of efficient health education, maintenance of therapeutic work environment, and ensuring effective communication as well as professional/ethical practice from the nurses.

On the question of what made nursing care satisfying, it was observed from the respondents that they considered the competence of nurses, maintenance of therapeutic environment, and also effective handling of confidential information as determinants of their satisfaction with nursing care. Further, the respondents identified some key areas of dissatisfaction and these included the responsiveness of nurses to patient needs, prompt pain management, effectiveness of health education, and provision of culturally sensitive communication.

Disproportionate distribution of nursing staff across the three nursing shifts, unethical practice among some nurses, inadequate resources for work, and low work morale of some nurses were identified as factors responsible for the gaps between patient expectations and actual care received.

#### **5. Discussion**

The study found an effective collaborative engagement between nurses and patients in which nursing care results in a sense of patients wellbeing which could be described as being free from the danger of hypertension-related complications and empowered to thrive by themselves [19, 20]. Thus, this overarching structure drives the patients’ desire to have their expectations for specific needs being met, reducing pain, provision of effective and culturally sensitive communication, and health education. It appears from the data therefore that a collaborative engagement with the patient as a whole and ensuring they flourish in the midst of the restrictions of their ailments is the basis of a satisfying nursing practice from the perspective of the patient.

The results of the study showed that the respondents were mostly satisfied with the technical aspect of care and

less with hotel services and that seems to be in line with the literature. Many researchers have found high satisfaction with the technical aspect of nursing care [19]. Respondents' satisfaction with the technical aspect of nursing care was highly ranked and that can be partly attributed to the great emphasis given by the working system to the technical aspect of care [19]. Evidence of satisfaction with the technical care and less with the information received is also reported in several European studies [20]. The implementation of the mechanistic working model leaves nurses with no room to develop an interpersonal aspect of care [19, 21].

### **5.1. Expectations of Clients with Nursing Care before Arrival in the Hospital**

On the responsiveness level of nurses, the data showed that respondents expected nurses to respond appropriately to their needs. The respondents also preferred prompt pain management when they were in pain. These findings are in line with the findings of [21] where it is argued that a basic expectation among hospital patients is prompt responsiveness of nurses to their needs, proper pain management, and assurance that they will be attended to by skilled and competent staff that will treat them professionally and efficiently and also with those by [19] in a study on patient's perception of nursing care in a large teaching hospital in India, where more than 95% of the patients had good expectation of "responsiveness," "availability," and "ward organization" as well as technical capability of the nurse [9, 20].

The findings on the confidentiality level of nurses revealed that respondents expected nurses to treat them with high level of privacy and to keep their information in confidence. These findings are in line with those identified by [10] in a study at a referral hospital in Alberta where patients said they expected to be treated as unique individuals with needs which required prompt attention and be known by more than a diagnosis and treated as a person.

The results also showed that respondents expected nurses to give them sufficient health education. The respondents said they expected nurses to give them simple explanations in a language they could understand on their conditions and options. These findings are in line with those by [21] involving 200 patients on their expectations with nursing care in the context of healthcare in a general hospital in Argentina; the researchers observed that 84% of patients claim that nurses needed to provide them with an effective health education regarding their conditions, but the findings are in contrast with those identified by [8, 19] where patients claimed nurses were to assist doctors translate health information for them and had no responsibility of giving health education.

The respondents also stated that they expected nurses to provide a clean work environment for their recovery. They also stated they expected nurses to provide effective communication. They expected nurses to be humane and treat them with dignity and respect. These findings are in line with those expressed by [10] in a study on patient's perception of nursing care in a large teaching hospital in India, where patients said they expected therapeutic and culturally appropriate communication with patients.

Respondents also stated they expected nurses to be professional in their dealings with clients and to deliver quality nursing care. These findings are in line with those expressed by [3] where patients stated they expected nurses to have a command of specific knowledge about each patient and his treatment. The finding is also in line with those expressed by [10] where clients point out that they expect to encounter with nursing staff that are proficient, professional, and knowledgeable to enhance their satisfaction with nursing care. The findings are also in line with those expressed by [19] that patients feel that their body is in safe hands if nurses are competent and skillful; and competence gives them a sense that the staff knows what they are doing.

### **5.2. Aspects of Nursing Care That the Patients Were Satisfied or Dissatisfied**

On the competence level and professional attitude of nurses, the study revealed that nurses were generally competent in nursing care and adhered to professional practice with respondents expressing satisfaction in these areas. This finding was in contrast with those identified by [7, 20] where clients reported incidents of nursing care providers being "unprofessional," "incompetent," "rude," and "snotty," nurses who "blew patients off," and staff who were "impatient" and altogether unsympathetic. However, the findings were in line with those expressed by [3] in a cross-sectional hospital-based study involving 180 in-patients, conducted in India, which found that, overall, most of the clients were satisfied with the competence of the hospital staff.

The results also depicted nurses to be confidential in their dealings with respondents' personal information. The

study found out that nurses kept personal information of patients well. These findings were in line with those expressed by [10] where patients for the most part in the study trusted that the nursing staff will maintain their dignity, privacy, and confidentiality of information as well as trusting that the staff knew what they were doing. The findings in this study are however in contrast with those identified by [21] involving six people who had experienced dissatisfaction during a hospital care episode; participants said they were treated disrespectfully, and their integrity was threatened and violated not only verbally but also physically. The results are also in contrast with those experienced by [10, 20] where the authors reported some lack of privacy with patients complaining that they had been overheard by people while discussing life-threatening issues as well as very confidential information. The findings also showed that the respondents were generally satisfied with the nurses' ability to maintain a therapeutic work environment. The respondents claim nurses ensured that the wards were generally clean and in good shape for patients even though some claim their washrooms were not in good shape. On the whole, respondents seem satisfied with nurses' maintenance of a therapeutic work environment. These findings are in line with those expressed by [3] where the organizational environment of the hospital was seen to be therapeutic. The researchers claim in their study the satisfaction of patients with the organizational arrangement in Yemen Central Hospitals included cleanliness of the environment, nutritious food, and low noise in the wards in particular. On the topic of effective communication of nurses, most of the respondents claim nurses were very unprofessional when communicating with patients. Nurses were said to have communicated harshly with patients and their relatives and in fact made them very dissatisfied. They said nurses were very rude and unsympathetic to them and their relatives when providing nursing care. The finding was in line with those expressed by [3, 21] where the patients reported nursing care providers who were "rude" and "snotty," nurses who "blew patients off," and staff who were "impatient" and altogether unsympathetic to client relations. The result is also in line with the findings by [19] where patients reported that they were misunderstood or not taken seriously because of one-way communication and that the communication they received was delivered in a technical language that was hard to understand and eventually led to dissatisfaction with nursing care. The findings are also in line with those expressed by [3] where surgical patients stated that they were least satisfied with provision of information to them especially before surgery, but in contrast with the findings by [11] where patients reported information/communication was given in a thoughtful way in a quiet area, which was appreciated by the concerned patients. The study established that the nurses did not provide sufficient and effective health education tailored towards meeting the needs of the patients. Patients claim nurses never had adequate time to educate them on their conditions. Even on the few occasions in which they were given education, they were rushed by the nurses and the language used was too technical. These findings are in line with those expressed by [19] where clients reported that sometimes they were misunderstood or not taken seriously because of one-way communication and that the communication they received was delivered in a technical language that was hard to understand and eventually led to dissatisfaction with nursing care. Finally, on the satisfaction of clients with the professional behaviour of nurses and their competence in delivering nursing care, most of the respondents found nurses to be highly trained with key competence at providing effective nursing care. They stated that nurses showed dexterity in their rendering of care. These findings are in contrast with those identified by [7, 11] who conducted a quantitative study to explore patients' perceptions of the quality of nursing care. They found, using descriptive statistics to analyze patients' data, that the overall mean score was low with regard to the professional attitudes of nurses. However, the findings are in line with those identified by [20] who noted that type of food served, competence level of nursing staff, responsiveness of nurses to patients' needs, and access to fresh air/therapeutic environment rather than remaining in an air-conditioned room were identified as key factors that influenced patients' satisfaction with nursing care as well as decision to return to a facility. Conclusively, respondents expressed satisfaction with nurses maintaining their confidentiality, maintaining a therapeutic environment, and being competent and professional in their rendering of nursing care. There was however dissatisfaction in the timely responsiveness of nurses to the needs of the respondents and prompt pain management, effective communication, and an efficient health education. It is thus necessary for nurse managers

and the institution to re-orient nursing staff in these key areas of dissatisfaction.

### **5.3. Possible Factors Limiting the Achievement of Expectations of Nursing Care**

On factors limiting the achievement of patients' expectations, the results revealed that disproportionate distribution of staff especially during the night duties resulted in high workload for the night nurses making them not meet the expectations of the respondents. The nurses especially on the wards during night duties were overburdened making them unable to meet all the needs of patients. The respondents further claim the hospital being a teaching and research facility placed a lot of demands on it making its workers overburdened especially at night where few staff were allotted without students. This finding is in line with those by [10] where it is reported that hospital context influenced the expectations of patients. In their study, patients complained that the size of the hospital also led to different patient expectations and perceptions of care with patients expecting a higher quality of care in a private or small hospital as opposed to a larger public hospital. The respondents claim larger hospitals led to increased work load on nurses and hence reduced quality of care.

Low morale of nurses for the profession was also identified as another factor accounting for respondents' expectations not being met. They stated that most of the new nurses were not "caring enough" and only entered the profession because of the financial gains and thus did their work unprofessionally/unethically or without passion. This finding is in line with those expressed by [11] where it was stated that staff morale affected their commitment to work.

Inadequacy of working resources was identified also as another factor accounting for nurses' inability to meet their expectations. They claim there were instances that nurses could not help them because they had insufficient materials to work with. This finding is supported by those expressed by [19] who stated that the nonavailability of consumables and requisite equipment for work resulted in poor service delivery for respondents.

Prolonged stay was seen as another factor accounting for nurses' inability to meet their needs. According to the respondents, nurses generally failed to ensure their needs were met because of prolonged stay leading to overfamiliarity and hence neglect. This finding is in line with those expressed by [10, 20] where overfamiliarity could lead to neglect as staff concentrated on new staff and emergency cases.

The noninvolvement of the respondents in their care was listed as one of the factors accounting for their expectations not being met. They stated that nurses failed to involve them when rendering care and this eventually led to reduced performance and hence their expectations not being met. This finding is in line with those stated by [20] who stated that patient participation in the care enhances patient satisfaction. Patients' ability to participate and be actively involved in their care and decision-making has an influence on their perception of satisfaction [5]. The findings are also in line with those identified by [3] in which the subjects reported that almost all of them want to participate in their care to the extent that they want accurate, honest, and complete information about their illness, treatment options, and prognosis. In addition, patients want their relations to be involved in their care but to take secondary role in decision-making.

### **6. Summary**

The study sought to explore the expectations of patients with hypertension on the nursing care prior to admission at the KBTH and satisfaction level of patients with nursing care and to find out the factors limiting the delivery of the expected nursing care by the nurses.

On the expectations of respondents with nursing care, it was realized that the respondents expected the following: prompt pain management and responsiveness of nurses to clients' needs, high confidentiality level of nurses with clients' information, provision of effective and understandable health education, maintaining a therapeutic environment, effective communication, and a competent, ethical, and professional practice of nursing.

The study found out that the respondents were satisfied with the competence of nurse and professional attitudes of nurses, maintenance of a therapeutic environment, and maintaining the confidentiality of clients' information.

However, respondents expressed gross dissatisfaction with prompt pain management of nurses and responsiveness of nurses to patient needs, effectiveness of health education, and efficient communication.

On the factors accounting for patients expectations of nursing care not being met, it was identified that the following

factors were responsible: disproportionate distribution of staff for all the shifts, low morale for nursing, inadequate working equipment, noninvolvement of patients in nursing care, prolonged stay in the facility, among others.

## **7. Recommendations**

The findings provide some insights about how to improve care for hypertensives in particular and all patients in general. It is recommended that regular in-service training in the areas of dissatisfaction must be pursued in order to improve the nursing care given to patients visiting healthcare organizations. Continuous professional development programs should target the areas of dissatisfaction such as prompt pain management, effective and culturally sensitive communication, and the techniques of delivering effective health education. Also, continuous monitoring of nursing professionals through regular appraisal systems should be adhered to so as to ensure nurses practice ethically and professionally since unethical behaviour of some nurses was cited as one of the reasons for substandard nursing care.

The findings of this study, even though relating directly to hypertensives, could be applied to other patients. Thus, regulatory body for nursing, the Nursing and Midwifery Council, needs to ensure proper supervision of nursing students and nurses especially during training so that those without the right attitude and passion for nursing are taken out of the noble profession. Courses like communication skills, sociology, and psychology need to be taken seriously and should be incorporated into the licensing examinations of nursing students. These courses would help the student nurses to understand clients better and communicate effectively before leaving school to practice as nurses.

### **7.1. Suggestions for Further Research**

The study could not produce a tool for measuring patients' satisfaction in the African context. It is suggested that further research should focus on producing a cultural specific tool for assessing patients' satisfaction in sub-Saharan populace.

### **Authors' Contributions**

KDK contributed to conception, design, data analysis, and drafting the manuscript and bears the primary responsibility for the content of the manuscript. RA collected the data and revised the manuscript. MA was involved in member checking, data analysis, and revision of the manuscript. TAA was involved in the revision of the manuscript. All the authors read and approved the content of the manuscript.

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### **Glossary**

#### **Abbreviations**

CVD:Cardiovascular disease

GHS:Ghana health service

KBTH:Korle-Bu Teaching Hospital

NCD:Noncommunicable disease

OPD:Out-Patient Department

SSA:Sub-Saharan Africa

WHO:World Health Organization.

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# Comparing Nursing Student Competence in CPR before and after a Pedagogical Intervention

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## ABSTRACT (ENGLISH)

Nursing students must be able to initiate and perform effective cardiopulmonary resuscitation (CPR) when they start their career in nursing. Studies show that students' competency in CPR is deficient, indicating that better training is necessary during nursing education. This study reports on the differences in nursing students' competence in CPR before and after a longitudinal pedagogical intervention across the curriculum. Changes in the curriculum were relocation and added testing of CPR skills, inclusion of a course in defibrillation, a knowledge test as stimuli before simulation, and more simulation practice with deteriorating patients. This was a comparative study between two cohorts of students in the bachelor in nursing education. We measured knowledge and compression performance in the students' final year of education. Students in cohort 2, who received the pedagogical intervention, had a significant higher total knowledge score than students in cohort 1. Students' mean depth and number of correct compressions was similar. Students in cohort 2 had a significantly higher mean rate of compressions, number of compressions per minute, and mean number of compressions with incorrect hand positions. Although the new curriculum afforded more hands-on practice of CPR, it was not enough to improve the students' performance to match the demands set out in national and international guidelines.

## FULL TEXT

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### 1. Introduction

Nursing students must be able to initiate and perform effective cardiopulmonary resuscitation (CPR) when they start their career in nursing [1, 2]. Often, the nurse arrives first at the scene of a cardiac arrest in the hospital [3, 4]. As it is the first few minutes with optimal CPR that are decisive for the patient's chances to survive the arrest, and for further quality of life, the nurse's competency in CPR is crucial. However, studies show that both nurses' and physicians' skill in CPR is deficient [5–7], indicating that better education in CPR and maintenance of skill is necessary. Educational institutions in nursing have a responsibility to qualify nursing students in CPR through well-developed basic life support programs. To our knowledge there are few studies that explore how different curricula in CPR affect students' learning outcomes. A pedagogical intervention across three years of bachelor nursing education was

developed to increase nursing students' learning outcomes in basic life support including CRP. In the present study, we compare nursing students' competence in CPR before and after the pedagogical intervention.

Due to the advancement of simulation technologies, several studies have explored the effect on nursing students' CPR skills when the teaching methods incorporate simulators with different levels of fidelity. Students training on a high fidelity simulator achieved significantly higher scores on knowledge and skill than students training on low fidelity simulators [8]. When high fidelity simulators were used as an enhancement in experimental groups, scores on both knowledge [9, 10] and confidence [10] were significantly higher, and the students' adherence to basic life support guidelines [9] was significantly better, compared to scores in the control groups. In general, learning with high fidelity simulators does not always yield better results than learning with low fidelity simulators. Both the type of skill and the learner's educational level will influence the results [11]. Confidence is a self-reported measure that may be of limited value [12]. For example, Liaw et al. [13] found no correlation between students' self-reported confidence and skills performance. Roh and Kim [14] introduced self-directed computer-based simulation training as an enhancement to one group of students after the traditional instructor-led simulation in both control and experimental group. No significant differences were found between the groups' scores on either team performance, self-efficacy, postcode stress, or satisfaction with simulation.

Aspects of the instructor in CPR teaching have been explored in several studies. Kim and Roh [3] stated that CPR education was vulnerable to the instructors' teaching quality and to the design of CPR education. They found a general mismatch between what the instructors claimed was important in CPR education and what they actually did. In other studies, findings have shown that self-directed learning was better than instructor-led learning [15], training with voice advisory manikins (VAM) was better than instructor-led training [4], and the debriefing after CPR was better if it was instructor-led than peer-led [16].

Retention of nursing students' CPR skills and knowledge has been tested in several studies, approximately 3 months after initial training. Mostly, both knowledge and skills deteriorate in students over time [8, 9, 17], although Partiprajak and Thongpo [18] reported that a group of 30 students included in their study on an average maintained their skill performance scores after 3 months. To test for improvement in skills retention, Oermann et al. [19] designed a study where students in the experimental group repeated CPR practice 6 minutes every month for one year on a voice advisory manikin. They concluded that only 6 minutes training resulted in maintenance of both compression rate and depth in the experimental group, while students in the control group maintained their compression rate. The aim of the present study was to compare nursing students' knowledge and skill in CPR before and after a pedagogical intervention. We hypothesized that students in cohort 2 would demonstrate more knowledge and skill in CPR after following the new CPR education program. We developed the following research question:

Is there a difference in nursing student competence in CPR before and after a pedagogical intervention, measured by a knowledge test and by compression parameters, available during CPR?

## **2. Material and Methods**

### **2.1. Design**

This is a comparative study [20] of skill and knowledge acquisition in CPR between two cohorts of students in the bachelor in nursing education. Cohort 1 followed the existing study program, while cohort 2 experienced CPR education based on a new pedagogical design. Data was collected from cohort 1 in spring 2014 and from cohort 2 in autumn 2014.

### **2.2. Participants and Setting**

The study was conducted at a university college in the southeastern part of Norway. A total of 145 students in their last year of a 3-year bachelor in nursing program were invited, and 142 students agreed to participate (98%). Cohort 1 comprised 60 students, 52 women, and 8 men from the part-time program. Average age of the students at completion of the program was 28 years (range 21–47). Cohort 2 comprised 82 students, 75 women, and 7 men from the full-time program. Average age at the completion of the program was 25.5 (range 21–54). During training, students in both cohorts were divided into groups of 6–10.

### 2.3. Description of the CPR Education Program

CPR was embedded in the basic life support (BLS) education program during the 3-year bachelor in nursing education. In Table 1, we present an overview of the program for the two cohorts that show the changes in the curriculum across three years. These changes were based on the lacking competence that graduating nursing students exhibited during the third year emergency exercise in our university college. The changes were also based on findings from the research literature highlighting the need for structured pedagogical programs especially including more practical training of skills [9, 19, 21].

Table 1

Structure of basic life support education including CPR.

	Cohort 1	Cohort 2
First year	Basic life support including CPR	Basic life support including CPR
		Self-organized practice with test in CPR (voice instruction)
-		
Second year	3 scenario simulations with deteriorating patients—one scenario including CPR	6 scenario simulations with deteriorating patients—one scenario including CPR
		Knowledge test as stimuli before simulation
		Course and certification of skill in CPR with automated external defibrillation (DCPR)
-		
Third year	Test in CPR (voice instruction)	Emergency exercise—4 scenario simulations of acute situations—one including CPR
	Emergency exercise—4 scenario simulations of acute situations—one including CPR	

First year: education in basic life support, including CPR, was similar in both cohorts and included five lectures: basic first aid (two lectures), first aid with children (two lectures), and foreign-body airway obstruction (FBAO) (one lecture). Students continued with three hours of training in the simulation center with an instructor. Training time in the simulation center was equally divided between CPR on Little Anne® Torso (Laerdal Medical, Norway) and techniques to remove FBAO simulated with peer students. Students in cohort 2 were granted a three-month license period to practice CPR on Resusci® Anne Skills Station (Laerdal Medical, Norway). The skills station was connected to a PC with software that provided feedback on compression and ventilation. When students satisfied the parameters of the European Resuscitation Council Guidelines [22], the test was approved.

Second year: both cohorts participated in instructor-led simulation scenarios where one scenario included CPR on a patient that developed a cardiac arrest. Both cohorts practiced on Resusci® Anne SkillReporter™ (Laerdal Medical, Norway). In addition, cohort 2 completed a knowledge pretest as stimuli for learning (the test included 3 questions on CPR) one week before the simulation and had a longer debriefing session. Cohort 2 also participated in a

defibrillation course (DCPR) consisting of an e-learning program and three hours of instructor-led training in CPR on Little Anne® Torso (Laerdal Medical, Norway). The defibrillator (AED) Trainer FR2 Norwegian version (Laerdal Medical, Norway) was used to practice defibrillation. Students had to practice until the instructor could certify their skills.

Third year: both cohorts participated in a nonhospital accident and emergency simulation that focused on nurses' special responsibilities in accidents and emergencies. Students rotated through four acute scenarios lasting approximately 60 min each, car accident, hypoglycemia and stroke, triage, and CPR on Resusci® Anne SkillReporter™ (Laerdal Medical, Norway). Students in both cohorts had the opportunity to try out the defibrillator AED Trainer FR2 Norwegian version (Laerdal Medical, Norway). Cohort 1 was tested in CPR earlier in the third year.

#### 2.4. Development of the Questionnaire

A knowledge test was developed based on the content in the Norwegian national course in CPR [23], including use of a defibrillator AED Trainer FR2 (Laerdal Medical, Norway). The course was based on the European Resuscitation Council Guidelines [22]. The test included eight questions covering the following content: (1) heart attack, (2) unexpected cardiac arrest, (3) vital signs, (4) ventilation, (5) AED's function on the heart, (6) when and who will use the AED, (7) placement of the AED electrodes, and (8) technical function of the AED. Each question had four possible answers. The students had to mark off two correct answers on each question. Both answers had to be correct for the student to get 1 point per question.

#### 2.5. Data Collection

Compression data were collected in both cohorts in the CPR scenario during the emergency exercise in the students' third year of education (Table 1). Prints of the following parameters were collected for comparison from all students: compression depth (depthc), number of compression per minute (numbercm), compression rate (ratec), correct compression (correctc), and compression with incorrect hand position (inadequate). Total number of compressions was not included because all students were tested for five minutes. Only one student compressed too deeply so that parameter was not included in the study. Students were tested on Resusci® Anne SkillReporter (Laerdal Medical, Norway). Data on ventilation were not included in the study as the ventilation readings from the manikin were not correct. The knowledge test was given directly after the CPR test as a paper and pencil test.

#### 2.6. Ethical Considerations

The study received institutional approval from the dean and was reviewed and approved by the Norwegian Centre for Research Data. Students were informed in class and on the internal learning platform. All participating students signed an informed consent.

#### 2.7. Analysis of Data

The SPSS version 23 was applied to examine the data. Compression data from the Resusci® Anne SkillReporter and knowledge scores was analyzed with descriptive statistics. The independent *t*-test was applied to assess the presence of any statistical significant differences between the two cohorts. The significance threshold was set at 0.05.

### 3. Results

Student scores on the knowledge test are presented in Table 2.

Table 2

Scores on the knowledge test (range 1–8).

	Cohort 1, <i>n</i> =60	Cohort 2, <i>n</i> =82	pvalues
Mean ± SD	Mean ± SD	Total knowledge score	4.75 ± 1.67
6.06 ± 1.99	≤0.001	Q1: heart attack	0.80 ± 0.40

0.87±0.34	ns	Q2: unexpected cardiac arrest	0.53±0.50
0.48±0.50	ns	Q3: vital signs	0.20±0.40
0.72±0.45	≤0.001	Q4: ventilation	0.93±0.25
0.88±0.33	ns	Q5: AED's function on the heart	0.53±0.50
0.80±0.40	=0.001	Q6: when and who should use the AED	0.40±0.49
0.65±0.48	=0.004	Q7: placement of the electrodes	0.73±0.45
0.91±0.28	=0.007	Q8: technical function of AED	0.62±0.49

Cohort 2 had a significantly higher total knowledge score than cohort 1 (Table 2). Table 2 also shows that cohort 2 had higher scores on six of the eight questions. In four of these questions, the difference in scores was significant in favor of students in cohort 2. Three of these concerned function and use of the AED defibrillator; the fourth concerned the ability to decide about performing CPR based on different vital signs.

The analysis of compression data showed that the students' mean depth of compression as measured in millimeters (mm) was quite similar; 55mm and 54.4mm in cohort 1 and 2, respectively. A comparison of the students' skill in the other compression parameters is presented in Figure 1.

[figure omitted; refer to PDF]

Figure 1 shows that students had a similar mean number of correct compressions (correctc). Students in cohort 2 had a significantly higher mean rate of compressions (ratec) and number of compressions per minute (numbercm) and also a significantly higher mean number of compressions with incorrect hand positions (inadequate).

#### 4. Discussion

The purpose of this study was to compare nursing students' competence in CPR in the form of cognitive knowledge and skills in compression before and after a longitudinal pedagogical intervention. Changes in the curriculum were firstly an increase and relocation in testing of CPR skills, increase from one to two tests, and relocation from 3<sup>rd</sup> year to 1<sup>st</sup> and 2<sup>nd</sup> year. Secondly, a course in defibrillation was added. Thirdly, students in cohort 2 conducted a knowledge test as stimuli before simulation, and lastly, they had more simulation practice with deteriorating patients. In the following, the possible impact of these curriculum changes on the students' results will be discussed.

##### 4.1. Students' Knowledge Scores

Students in cohort 2 had significantly higher overall knowledge scores than students in cohort 1. In general, a majority of studies show increased knowledge in students after attending simulation of varied fidelity [24, 25]. More recent studies corroborate these findings related to CPR knowledge [15, 18]. The increase in knowledge scores in cohort 2 in the present study are not related to differences in the type of simulation as all students used the same manikins from Laerdal. However, we suggest that the increase in knowledge scores is related to other aspects of the pedagogical intervention, a stimulus test, the course in defibrillation, and more simulated experiences with deteriorating patients. The stimulus test included three questions on CPR. A stimulus test intends to trigger students to brush up on lacking knowledge before simulation and was presented as a learning incentive in FIRST2ACT, a theory-based simulation model [26]. A stimulus test can uncover what the student knows and does not know,

stimulate the student to check knowledge before simulation, and also function as a trigger to remind the student about important knowledge during the actual simulation [27].

Significant higher scores on knowledge was evident among students in cohort 2 related to three of four questions on defibrillation. It is natural to relate this to the fact that students in cohort 2 had a special course on defibrillation in their second year, while students in cohort 1 had the common lectures on basic first aid including theory on defibrillation and an offer to try defibrillation during the emergency exercises. An interesting aspect of the significant scores among students in cohort 2 is that students had the course on defibrillation one year before the tests in the present study. Retention of both knowledge and skill in CPR is a contentious issue among practitioners as well as students because scores on knowledge invariably are reduced when students are tested at a later stage [9, 15, 18]. Since the scores in the present study were actually quite high (means between 0.65 and 0.91 on questions 5-7 in Table 2), this indicates that students retained much of the knowledge acquired one year earlier, about use of the AED.

Students in cohort 2 also had significant higher scores on the question about deciding about CPR based on knowledge about vital signs. We can only speculate with regard to this finding that the increased amount of scenario practice with deteriorating patients may have influenced students' knowledge positively. Although only one scenario concerned a patient with cardiac arrest, all the other scenarios stimulated the students to check on patients' vital signs and to deliberate on the relationship between deterioration in vital signs and the patient's health problem.

#### **4.2. Students' Skill in Compression**

Characteristics of the two student cohorts' compressions were both similar and significantly different. Interestingly, the mean depth of compressions was well within parameters set by the European Resuscitation Council Guidelines [22] and American Heart Association [28] in both cohorts. High quality CPR skills must provide chest compressions of adequate depth [29], but former research shows that this is one objective that many nursing students struggle to fulfill. In the studies by Roh and Lim [30] and Roh and Issenberg [29], 58% and 93% of the students had insufficient depth of chest compressions, respectively. Oermann et al. [21] reported from a large study in the USA that students' depth of compression was between approximately 41-42mm over a 12 month study with repeated practice. These numbers satisfied the AHA guidelines from 2005 [31], but only 11% of the students compressed to a level of 51 mm that would have satisfied the guidelines of 2010 [28]. A recent study from Thailand shows similar findings to ours; 87% of the students compressed sufficiently in a post-test after a 2-hour BLS course. A retest after 3 months showed even better results as 96.7% of the students' compressions were between 50–60mm. This was however a study with only 30 participating students [18].

The number of correct compressions was similar in the two cohorts while mean inadequate hand positioning was significantly higher among students in cohort 2 than in cohort 1. Only a few studies report on hand positioning, mostly as quite correct [18, 21]. Correct hand positioning will ideally secure more correct depth of the compressions, although in the present study all students performed acceptable and similar depth of compressions despite more incorrect hand positioning among students in cohort 2. This is probably related to the fact that students in cohort 2 also had a significantly higher rate and number of compressions per minute that probably compensated for inadequate hand positioning. Guidelines relevant for the student groups in this study advice a mean compression rate of 100–120 to secure enough actual compressions per minute in combination with ventilations [22, 28]; cohort 1 was within this range while cohort 2 was slightly above. Other studies show that students struggle to keep the rate of compressions within the appropriate range [18, 29]. The small differences detected between the two cohorts' compression scores indicate that the increase in practice of CPR in cohort 2 was not enough to improve the students' performance. Support for more and repeated practice of CPR is found in Oermann et al. [19] study, where students practicing CPR for six minutes a month for one year retained and improved their compression skills. In light of our findings, there is still a need for a continued focus on CPR education for nursing students. However, the need for continued training in CPR is evidently also an issue after students finish their education, as studies show deteriorating competence in CPR among professional nurses as well [5–7]. It is a paradox that there seems to be a greater focus on the public's competence in CPR than the competence among health care personnel. This

indicates the need for continued efforts to provide structured programs for CPR training in all clinical settings.

### **4.3. Strengths and Limitations**

To our knowledge, this is the first study that compares the effect of a longitudinal curriculum change in basic life support including CPR on students' knowledge and performance skills. The sample included two cohorts of students but was limited to students at one university college. The two cohorts participated in a full-time and a part-time program. This may have influenced the results. However, the students followed the same curriculum and used the same time for each course. Another limitation is related to the difficulties in extracting correct data on students' ventilation of the manikins used in the study.

### **5. Conclusion**

The present study reports on a comparison of students' knowledge and performance of CPR before and after a major change in the curriculum of basic life support including CPR. Students in cohort 2 followed a three-year curriculum with more practice and testing of CPR and more knowledge input. The findings show that changes in the curriculum positively influenced the knowledge scores of students in cohort 2. Both cohorts fulfilled the guideline claims of compression depth, but varied more concerning hand positioning and rate of compressions. Although the new curriculum afforded more hands-on practice of CPR, it was not enough to improve the students' performance to match the demands set out in national and international guidelines.

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# Improving Clinical Nurses' Development of Supervision Skills through an Action Learning Approach

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## ABSTRACT (ENGLISH)

The aim of this study was to investigate action learning as an implementation method in a large-scale project with many participants in several autonomous and geographically spread groups. The focus of the implementation was the Model of Practical Skill Performance as a learning and supervision tool in the clinical education of nursing students. Nineteen action learning groups were established, and a total of 129 clinical supervisors and 13 facilitators were involved. To evaluate the implementation process, qualitative data were generated through three focus group interviews, questionnaires, and notes. Data illuminate clinical supervisors' perceptions of value, impact, and sustainability when they participate in an action learning group to become familiar with the Model of Practical Skill Performance. The deductive data analysis was guided by central concepts from action learning. Action learning proved to be an engaging and effective tool in the implementation where the main strength seemed to be the autonomous local group supporting collective reflections on actions. Clinical supervisors had the right competences to adopt a reflective process-oriented approach, which is the hallmark of action learning. This study shows the necessity of collaboration between stakeholders in practice, education, and management to implement large-scale

projects in clinical practice. The findings imply that managers should choose participants on the basis of their motivation and their voluntary wish to participate and that nurses' immersion in the project over time aids implementation.

## FULL TEXT

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### 1. Introduction

It is a challenge to ensure that newly qualified nurses have sufficient competences in performing practical nursing skills [1–3]. A plethora of practical skills in clinical practice require both instruction and training, but only some of these are introduced and practiced during the nursing education program.

Clinical placements in nursing education provide students with varied but also limited opportunities to practice, train, and perform practical skills in a health sector characterized by a high degree of specialization and introduction of new medical technologies [4]. Patients present with medical illnesses and symptoms that are difficult to imitate in a simulated setting, and they represent interesting, complex learning situations for nursing students [5, 6]. Clinical supervisors thus play an important role in securing students' learning, helping them to build on previously acquired skills and knowledge, to obtain new skills, and to introduce models on how to become a proficient nurse [7]. At the same time, the supervisors have to ensure that learning activities are safe for both students and patients [8, 9]. Several studies highlight that nurses lack supervision skills [9–13] and that organization of the supervision could be improved [9].

To meet the challenges of supervision during the acquisition of practical skills in clinical practice, the group Research in Nursing Skills (RiNS; <http://www.rins.dk>) developed a supervision tool (Table 1) based on the normative, theoretical, and empirical Model of Practical Skill Performance [14]. The model was originally presented in a doctoral dissertation, aiming to show the complexity of practical skill performance in nursing [15, 16]. It was based on educational and caring theory, existing research on practical skill learning in nursing education, and empirical data from video recordings of nurses performing practical skills in the clinical setting [15, 16]. The supervision tool further developed by RiNS includes definitions of six central components of any practical nursing skill: substance, sequence, accuracy, fluency, integration, and caring comportment, as well as quality criteria for the evaluation of the performance of these elements [17]. The relevance and benefit of the supervision tool in formative assessment, supervision, and reflection have been tested in nursing homes, hospital wards, and simulated settings by nursing students, clinical supervisors, and faculty [18–21]. Since 2013, the model has been included in the nursing curriculum for 1500 annual students at VIA University College in Denmark, where the present study was conducted.

Table 1

Instrumental supplement to the Model of Practical Skill Performance (<http://www.rins.dk>).

Definition of categories in the model	Characteristics of quality performance
<p><i>Substance</i> and <i>sequence</i> are the core aspects of a practical skill. They imply that necessary steps in the skill are included and performed in a logical order.</p>	<p>Substance and sequence are determined on the basis of the content in clinical guidelines, professional standards, and principles. Substance and sequence are adapted to the patient and the situation where the skill is being performed.</p>
–	

<i>Accuracy</i> refers to exactness of each movement step, instruction, and information. Accuracy is important in order to ensure security of the patient, nurse, and environment.	Accuracy implies to act(i) Correctly(ii) PreciselyAccuracy implies to inform and instruct(i) What is necessary and sufficient(ii) Distinctly(iii) Understandably
-	
<i>Fluency</i> signifies that tempo and rhythm are adjusted to both the patient and the type of the practical skill being performed and that the practical skill is performed with smoothness.	Fluency implies to act, inform, and instruct(i) Without hesitancy(ii) Without unnecessary breaks(iii) With ease
-	
<i>Integration</i> signifies that all parallel aspects within the practical skill are harmonized.Integration also means that the practical skill, as a whole, is adjusted to the patient's current condition and situation.	Integration implies to(i) Time and coordinate the elements of actionIntegration related to adjustment implies to(i) Be attentive(ii) Have an overview(iii) Be flexible
-	
<i>Caring comportment</i> signifies to create an atmosphere where the patient's dignity is upheld, self-determination is ensured according to the patient's current condition and situation, and well-being is warranted.	Caring comportment implies to(i) Acknowledge(ii) Show respect(iii) Ensure patient participation(iv) Be empathic(v) Use appropriate touch(vi) Be engaged(vii) Use appropriate communication(viii) Work aesthetically

The Model of Practical Skill Performance has been developed and tested as a generic tool for learning, supervision, and formative evaluation of practical skill performance and has successfully been implemented in simulated settings and in small-scale clinical practice projects [18–21]. However, we experienced that widespread implementation of the tool was a challenge during students' clinical placement. Thus, a structured action learning approach was launched in 2013-2014 as a project that aimed to support a large number of clinical supervisors to implement the supervision tool in clinical practice.

Clinical supervisors are nurses working in clinical departments, and although many of them are familiar with the model, its use in clinical supervision is limited. Previous small-scale implementation studies using an action learning approach have been shown to be effective in strengthening implementation in local settings with few participants [18, 19]. Action learning has promoted implementation processes in several studies within the health care field, such as improvement of skills in clinical decision-making and leadership [22–24].

The present study investigated the usefulness of a structured action learning approach as a method to implement the Model of Practical Skill Performance [15, 16], a tool to support students during practical skill learning in nursing [18].

### 1.1. Aim and Research Question

The aim of this study was to investigate the impact of action learning as an implementation method in a large-scale project with many participants in several autonomous and geographically spread groups. The following research question was formulated: What are clinical supervisors' perceptions of value, impact, and sustainability when they participate in an action learning group to become familiar with the Model of Practical Skill Performance and its use as a learning and supervision tool?

### 2. Methods

This study has an exploratory and mainly qualitative research design [25] to illuminate participants' perceptions of attending an action learning project.

## 2.1. Setting and Samples

This study was conducted in Central Denmark Region, one of the five administrative units in Denmark responsible for the running of hospitals. The project leaders were faculty or clinical educators at VIA University College that offered the bachelor program in nursing for this region and were members of the research group RiNS. This study covered six hospitals, 19 municipalities, and six nursing education campuses.

The participants were clinical supervisors and facilitators included in the project through an open e-mail invitation in autumn 2013 and spring 2014. Participation was generally voluntary; however, a few nurses participated upon direct request from their manager. A total of 129 clinical supervisors and 13 facilitators were included. All participants were female. The clinical supervisors were experienced nurses with at least six weeks of pedagogical education (equivalent to 10 ECTS points), and several had previously participated in group-based nursing supervision. Their knowledge about the Model of Practical Skill Performance varied from little knowledge to some degree of certainty in applying the model as a supervision tool. Most of the facilitators had a master's degree and had skills in facilitating individual- and group-based reflective learning processes. Most of the facilitators were clinical nurses responsible for the clinical education environment in hospitals or municipalities.

## 2.2. Intervention

The primary intervention used in the implementation process of the Model of Practical Skill Performance was action learning. The idea in action learning is that the participants' skills develop in mandatory reflective action learning groups while participants obtain understanding by doing and develop when they are capable of doing on the basis of a better understanding [26]. Madsen and Birkelund [27] described a framework of action learning design inspired by systemic therapy and nursing supervision, including a case presenter, an interviewer, and a reflective team. All facilitators participated in a seminar where they practiced skills by leading reflection in action learning groups and acting as interviewers, as illustrated in Figure 1. The key elements were contextual learning gained from practice, collective reflection, feedback, encouragement, and a psychologically safe environment created for learning [22, 27, 28].

[figure omitted; refer to PDF]

At a kick-off seminar, all clinical supervisors and facilitators were introduced to the action learning framework including the structure of the action learning groups (Figure 1). Furthermore, the Model of Practical Skill Performance was presented by the creator of the model, and experiences from using the model in clinical supervision were presented.

Facilitators were responsible for establishing action learning groups, organizing meetings, maintaining the action learning framework in the group, and keeping contact with the project leaders. Nineteen action learning groups were formed. Six of the facilitators worked with two groups each. Each group included 5–10 members from one geographical area. The action learning groups held 4–5 meetings during the six-month course, and meetings were structured with agreed roles and procedures (Figure 1).

The framework in the action learning groups was structured as a cycle where each participant tries out the Model of Practical Skill Performance in clinical supervision (actions), reflects on the actions together with the participants in the action learning group (collective reflection), and commits to a new test of the model (new actions). Back-and-forth movement between action and reflection is central to this action learning concept (Figure 2).

[figure omitted; refer to PDF]

At each meeting, one clinical supervisor offered to discuss her action. The facilitator asked investigative and appreciative questions about the performed action. The reflective team was invited to contribute with statements and reflections to illuminate the action and possibly produce new approaches and nuances to be used in future actions. The clinical supervisor had the opportunity to think out loud, move between closeness and distance to her experiences, and receive constructive feedback. Thus, the clinical supervisor and the action learning group could develop new ideas for future use and testing of the Model of Practical Skill Performance as well as choose targets for new actions.

During the action learning phases, the four project leaders were primarily engaged in securing data for the research

project. Then, they offered supervision to the facilitators and groups if needed.

### **2.3. Data Collection**

The project leaders collected data for the present study before, under, and after the action learning activities. Data triangulation was performed [25] by including data from questionnaires, notes, focus groups, and individual interviews with critical voices.

Participants received a questionnaire at baseline and after the project period including two questions: (1) To which degree do you understand the Model of Practical Skill Performance? and (2) To which degree do you use the Model of Practical Skill Performance in your own work as a clinical supervisor? Answer categories were very much, much, some, a little, and not at all. Furthermore, the questionnaires provided an opportunity for qualitative comments. The questionnaires were sent by e-mail to 129 participants before the meetings in action learning groups started, and 79 were returned (61.2%). The questionnaires were sent again to the 110 participants who still had their institutional e-mail ½-1 year after project termination. Forty questionnaires were returned (36.4%). Questionnaires were returned by e-mail or ordinary mail.

Notes were written by members of the group after each meeting. The aim of the notes was to gather their experiences from the meetings and to strengthen the groups' understanding of their own learning processes. In the notes, the groups described (1) the supervision situation they reflected on, (2) how they assessed the dialogue in the action learning group, and (3) how they assessed their level of understanding and use of the Model of Practical Skill Performance.

Three focus group interviews were held at the end of the project period. Focus group interviews were chosen to provide a deeper insight into promoting and inhibiting aspects of the action learning process as well as the participants' overall assessment of what they had gained from the project. Focus group interviews facilitate dialogue between participants that can stimulate memory and associations in relation to the implemented action learning project [27, 29, 30]. Participants were asked to volunteer for the interviews, and the three groups were formed with 6 and 8 clinical supervisors and 10 facilitators. An interview guide was developed with open questions targeting the elements in the action learning concept: experiences with the process, dialogue, interaction in the group, and confidence with and impact of the model on participants' supervision practices with students. All interviews were conducted by two of the project leaders and lasted between 45 and 60 minutes. As focus group discussions may be biased by dominant individuals and group thinking where members tend to maintain group cohesion [31], we had special focus on a few critical voices during the interviews.

In addition, three critical voices were contacted for follow-up in individual telephone interviews. In the interviews, these participants were invited to add to the opinions expressed in the focus group interview. All telephone interviews were conducted by one of the project leaders and lasted between 12 and 15 minutes. All interviews were audiotaped, and key passages were transcribed.

### **2.4. Data Analysis**

The project leaders used deductive content analysis to analyze the qualitative data from questionnaires, notes, focus interviews, and telephone interviews [25, 32]. Deductive content analysis was chosen because we aimed to explore how clinical supervisors experiencing that action learning promoted their use of the Model of Practical Skill Performance under supervision of nursing students. The core concepts from action learning were used as lenses during the analysis: (1) reality close action, (2) alternation between action and reflection, (3) learning in community, and (4) personal ownership [26, 27]. Step 1: all four project leaders separately coded and categorized the data from questionnaires, notes, focus interviews, and telephone interviews related to these theoretical core concepts. Step 2: the whole group discussed and reached consensus on the data's categorization and validated findings by moving back and forth between the text and categories. Step 3: the texts were read again to identify promotional and inhibitory factors in the action learning process and their impact on the implementation of the Model of Practical Skill Performance as a supervision tool. Step 4: together, the four project leaders identified central citations from the data to illustrate connections between data and categories and increase the trustworthiness of the analysis. The in-depth dialogue between the four project leaders/researchers knowing the data in detail may promote content validity in the

analyses.

The quantitative data in the questionnaires were analyzed with simple descriptive statistics (Table 2).

Table 2

Understanding and use of the Model of Practical Skill Performance.

	Very much, %	Much, %	Some, %	A little, %	Not at all, %
Understanding the model					
Before, <i>n</i> =79	1.3	11.4	36.7	39.2	11.4
After, <i>n</i> =40	7.5	62.5	27.5	2.5	0
-					
Extent of use of the model					
Before, <i>n</i> =79	1.3	5.1	29.3	35.2	29.1
After, <i>n</i> =40	5	27.5	55	0	12.5

### 2.5. Ethical Considerations

According to the Danish law, permission to conduct the project was not needed from the Central Denmark Region Committee on Health Research Ethics. This study was approved by head nurses in participating departments. Participants were verbally informed about the project, and the data collection activity took place in parallel with the action learning process. Anonymity and confidentiality were ensured in the handling of data.

### 3. Findings

The object for implementation was the Model of Practical Skill Performance as a supervision tool for clinical supervisors. The aim of this study was to investigate the impact of action learning as an implementation method on the clinical supervisors' perception of value, impact, and sustainability of using this tool. Findings are therefore organized into two parts: First, we describe their perceptions according to value and impact of participating in action learning groups and how they viewed benefits and disadvantages in relation to the core elements in action learning: reality close action, alternation between action and reflection, learning community, and personal ownership. Second, the impact and sustainability of the participants' learning outcomes regarding understanding and use of the Model of Practical Skill Performance in clinical supervision are described.

#### 3.1. Reality Close Action

It was expected that all clinical supervisors used the model between the meetings in the action learning groups as a supervision tool in their work in hospitals or primary health care. Opportunities to apply the model were many: introducing students to new skills as well as observing, assessing, and supervising students while they practiced the skills. In their daily practice of nursing, they realized that supervision of specific practical skills could be focused and qualified by using the model. One supervisor (clinical supervisor, primary health care) said, "I became aware that I had a new useful tool in my pedagogical toolbox." Development of the supervisors' pedagogical skills was triggered by reflection on authentic actions.

In a few action learning groups, reflections on the actions stayed in the background in favor of a more theoretical discussion to enhance understanding of the Model of Practical Skill Performance or the action learning concepts (Figure 1). To gain familiarity with the Model of Practical Skill Performance, participants worked with various text materials and videos. Other groups spent a lot of time discussing questioning techniques and reflection methods.

However, the approaches in these groups tended to inhibit the implementation of the model, as they were late in testing actions and only a few actions became the focus of collective reflections. One interviewee (clinical supervisor, medical hospital ward) said, "The clinical supervisors did not know the Model of Practical Skill Performance quite well, so we often discussed how to understand the model and asked the project leaders many questions. Clinical supervisors learned a lot from the process, but they did not use the model so much." These groups kept a distance from specific clinical supervision situations, and it was up to each participant to transform the Model of Practical Skill Performance from a tool for theoretical reflection to a tool for clinical practice. These groups did not succeed in following the core concept of reflecting on reality close actions. It seemed that even though the nurses were competent clinical supervisors, some of them needed to become confident with the model before they could use it.

### **3.2. Alternating between Action and Reflection**

In most action learning groups, all participants presented actions at the meetings. Participants experienced benefits from both reflecting on their own actions as well as listening to and reflecting on others' actions and reflections. Reflections in the group contributed to greater familiarity with the categories in the model and supported the supervisors' sense of security and courage to test it in new situations with their students. They picked up ideas on how to overcome barriers when using the model, and they described that they had gained familiarity with the model by applying it in their own actions. For example, one supervisor (clinical supervisor, medical hospital ward) said, "Interaction between the reflection in the group and testing own actions, made me more confident, even when I had to discuss with students who were critical of the model."

The clinical supervisors' personal goals for their own actions were important, and group discussions contributed towards setting realistic individual goals for new actions. One supervisor (clinical supervisor, primary health care) said, "I was jointly evaluated at the last meeting, and I realized how confident I was using the model in my supervision. After the meeting I wrote a letter to myself about my own new goal, about using it together with the students in the coming clinical placement period."

### **3.3. Learning Community**

The majority of the groups reported that they had an open process in the groups. They described the need for transparency and trust as central elements in the process of discussing something that was new and challenging. Prior knowledge of one another could be conducive to the process, but there were also examples of the opposite. Group members described that sharing experiences from different contexts promoted a genuine interest in one another's experiences (clinical supervisors, medical hospital ward), "We did not know one another, but it was inspiring to come from different places. We asked sincere questions to the actions of others and we quickly developed a dynamic dialogue, and everyone showed interest in the other's actions."

The obligation to participate in the learning community was shown through active engagement in the different roles that were expected of them according to the structured setup in the action learning groups. Participants collaborated in planning actions that could be the subject for discussion and reflection in upcoming meetings. However, some groups were challenged in their collaboration to follow the action learning process, for example, when former power relations from previous cooperation were transferred to the action learning groups. Discussion about everyday problems in the workplace could also steal time from reflection and discussion. A strategy was to allow time for small talk in the beginning before moving on to the study agenda. This seemed to reduce the challenge of focusing on their own specific cases of supervising with the Model of Practical Skill Performance.

Many participants experienced that the tight structure of the action learning concept increased their participation in the reflection processes. It was important that all participants presented their actions because reluctance to speak about their own experiences seemed to reduce the member's commitment. When the action learning concept was not followed, the meetings were typically organized as roundtable discussions, which weakened the group's focus on the Model of Practical Skill Performance and reduced the members' personal ownership and sense of commitment towards the implementation of the model.

Some participants experienced that the project period was too short to become familiar with the model and to test it



in practice. Other participants felt that there was too much time between meetings, which made it hard to stay focused on the model as many other work-related issues demanded their attention. A few groups contacted the project leaders because they needed to discuss the action learning concept, interview techniques during meetings, or management of the reflection process.

### **3.4. Personal Ownership**

To benefit from participation in learning groups, personal ownership of the Model of Practical Skill Performance seemed important. Several nurses who had voluntarily chosen to spend time and energy on the project expressed that participation gave them a coveted opportunity to spend time to focus on quality and gain a deeper understanding of clinical education in nursing. One nurse (clinical supervisor, surgical hospital ward) expressed, "It's fantastic to get the opportunity to be deeply involved in a specific pedagogical supervision method... usually we have not got the time for reflection or systematic testing of learning tools." The motivation and commitment among participants were stimulated by the kick-off seminar, especially the presentation of the model by the researcher who had developed it. One nurse in a focus group (clinical supervisor, medical hospital ward) said, "At first I was skeptical but... all my resistance vanished, that was a good start."

Some supervisors did not participate voluntarily but were strongly encouraged to participate by their head nurse. Their reservations were expressed in their behavior in the clinical setting and in the groups. They did not use the model and had no cases to present, and they hardly participated in reflections in the learning group. A few groups were dominated by nurses with weak ownership and commitment, and this resulted in unprepared participants and few substantial discussions. The benefits of action learning in these groups thus seemed sparse.

### **3.5. Learning Outcomes: Understanding the Model of Practical Skill Performance**

Prior to participating in this project, the understanding of the model differed between participants (Table 2). Despite participation in earlier introduction to and reading about the model, the clinical supervisors described uncertainty in relation to understanding the categories in the model. The reflection on supervision in practice in the action learning groups had helped them to distinguish between the categories in the model and to acknowledge the complexity of practical skill performance in general. Learning outcomes of the project seemed to last over time; six to 12 months after project completion, 70% of the clinical supervisors who answered the questionnaire indicated that they understood the model "much" or "very much" (Table 2).

### **3.6. Learning Outcomes: Using the Model in Clinical Supervision**

Before participation in the project, more than 60% of the supervisors who answered the questionnaire reported that they had never or only a few times used the model during clinical supervision (Table 2). Some had tried to use the model but believed they were unsuccessful and that it was time-consuming and cumbersome. The main barrier for applying the model seemed to be their own uncertainty (clinical supervisor, medical hospital ward) about the model and its categories, "I have used it in supervision, and however, I feel uncertain about some categories; for example the category integration. As a matter of fact, I do feel a little sketchy in my use of the model."

Participation in the project created familiarity with the Model of Practical Skill Performance. The format of the meetings in the action learning group helped many to become more familiar with the model by "pushing" them to "jump into it" as well as to plan and present an action while using the model for discussion and reflection. The discussions gave them a common language about practical skill learning they could use with students and colleagues. Many clinical supervisors expressed that the quality of their supervision improved during the project. One supervisor (clinical supervisor, surgical hospital ward) declared, "I use the model in my pre- and post-supervision. I use it to promote the students' reflection. I think my instructions have become more qualified and targeted."

The supervisors' enhanced qualifications benefitted the students' learning through more structured supervisions and detailed reflections. They used the Model of Practical Skill Performance during the introduction of new students to their clinical placement and offered the students the opportunity to use the model to observe the nurses' own practice. Students were positive and readily accepted the model as a learning tool when initial critique had been addressed. Table 2 shows that, after the completion of the project, only 12.5% of the participants who had

completed the questionnaire still did not use the model during supervision.

A few clinical supervisors reported that they had little benefit from participating in the action learning groups and felt that too much time was spent on the project compared to the outcome. Some described the ordinary bustle of work as a barrier to implementing the model in their ward. Others stated it was hard to give the model special attention because use of the model was in competition with other time-consuming activities during clinical supervision.

#### **4. Discussion**

Focus of the discussion will be on the potential of this action learning setup as an implementation method in clinical practice, aiming at changing the practice of clinical supervisors. Our findings about the process and outcome will be discussed retrospectively, in light of the Promoting Action on Research Implementation in Health Services (PARIHS) framework [33, 34]. The PARIHS framework is chosen in this phase of the project to discuss the findings although it is frequently used to guide development and evaluation of the aspects of implementation processes. The PARISH framework focuses on evidence, context, and facilitation as essential core elements in an implementation process [33]. The framework can be used both retrospectively and prospectively to understand how these core elements impact on implementation of new interventions [34].

##### **4.1. Evidence**

The PARISH framework highlights that quality of the evidence for implementation is considered important for the success of an implementation process [33–35]. Evidence needs to be robust, and users have to believe in the evidence [36]. The evidence implemented in this study was the Model of Practical Skill Performance, a theoretically and empirically based model [14]. Although baseline data showed that many participants did not understand the model very well, focus group interviews revealed that most participants considered the model to be intuitively relevant to their supervision practice. No one was openly critical to the model during the introduction or during the project as a whole. The introduction to the model by its creator and knowledge about its relevance obtained from former research [18–21] might have increased participants' acceptance of the model for use in clinical supervision and thus supported the implementation [34]. The clinical supervisors were encouraged during their implementation of the model when students were receptive and eager to use the tool. This supported their experience of the model as "good" evidence. According to Rycroft-Malone et al. [36], robust evidence is not enough; a crucial promoter is positive response from individuals involved in the implementation process.

The structure and agreement about the rules for action learning required a certain behavior from the participants in terms of action and reflection [27]. The movement between action and reflection (Figure 2) could potentially bridge the gap between the theoretical model and its practical use, thereby strengthening the relevance of the evidence or the model. Low activity with the model during supervision practice and prolonged discussions about the model's complexity in a few groups might indicate distrust towards the Model of Practical Skill Performance and its usability. Research knowledge is seldom possible to apply without some sort of vetting or tailoring to the local context. Although the model has been accepted and used successfully in other contexts, it is important to assess local barriers to knowledge such as not understanding the knowledge to be implemented [35].

##### **4.2. Context**

The PARISH framework focuses on how contextual readiness can promote or inhibit the change [33]. In the present project, both action learning groups and local clinical practices represent the context, although the major part of our findings on the context was related to the action learning groups. Stetler et al. [33] defined aspects of context as culture, evaluation capabilities, leadership support, and receptivity to the innovation. The culture in the action learning groups was created by the participants' values and beliefs expressed during the meetings. Most of the clinical supervisors demonstrated a positive attitude to the implementation process and had the courage and communicative skills to engage in different roles such as presenting the action of testing the model, being the interviewer, or being the member of the reflective team. Implementation is promoted when practitioners are given specific tools and education that can underpin new behavior [34, 37]. In this project, the structured reflection process (Figure 1) was viewed as a specific tool. It was thus a promoting factor that all participants had a short pedagogical education and were familiar with reflection as an important part of learning. Overall, the participants expressed it as

valuable and inspiring when the group focused on reflection on concrete actions. Similar findings are described by Machin and Pearson [22], who studied action learning to promote practice and leadership development among new nurses and midwives.

In the few groups where meetings were focused on discussions of the Model of Practical Skill Performance, it seemed these discussions challenged the action learning process by shifting the attention away from the actual experience of using the model. Theoretical input during action learning can be viewed as valuable [5], but in this project, the focus on theory reduced participants' opportunity to create knowledge from real-life actions where they applied the model during clinical supervision. A few clinical supervisors were not receptive to the ideas of the project and seemed to sustain their skepticism towards the model or the implementation method throughout the whole project period. It may be a barrier that a few participants did not have the courage or were unwilling to be introspective and to expose themselves and their mode of clinical supervision to the action learning group. Another barrier could be related to the context of their workplace with a high workload, which might decrease creativity and ingenuity in supervision. A barrier in the implementation could be a lack of clarity related to the authority to change practice. This could be the case when some clinical supervisors talked about being the only one focusing on the model in their department. Another barrier in the action learning concept could be related to some supervisors' wish for concrete instructions instead of being active in deciding and creating learning situations [37].

By allocating resources to the clinical supervisors' participation in action learning groups, the project was generally supported by leaders in the clinical setting. However, the findings also showed that participants found it difficult to allocate time in their daily work to meet the obligations related to their involvement in action learning groups. These may be typical barriers for changing ongoing practice but underline the importance that leaders must be aware of their power to promote implementation of projects in clinical practice [37].

#### **4.3. Facilitation**

As highlighted in the PARISH framework, the project confirmed the importance of the role and competences of the facilitators in the implementation process [33]. The facilitators can be characterized as "innovators" or "early adopters" [38]. The facilitators had a positive approach to innovation in nursing education in general, including use of the Model of Practical Skill Performance, and they participated in the seminar to prepare their role in the action learning groups. In spite of the facilitators' competence and preparation, the structure for group reflection was not maintained in all settings. It could have helped the process in those groups which spent a considerable amount of time on theoretical discussions if the facilitators were more strict in adhering to the structured reflection process on chosen actions [27, 28].

Some facilitators allowed for small talk about everyday problems from the participants' workplace in the beginning of each meeting, followed by the described structure for group reflection. This approach seemed to support the social processes in the groups and helped the group to settle and to concentrate on the action learning processes and the discussion of how they had used the Model of Practical Skill Performance in action. This action learning setup was based on the individuals' behavior while learning in the reflection group; nevertheless, power relations or passivity from individuals impacted negatively on the team climate. Rycroft-Malone et al. [36] highlighted the impact of individual motivation and self-efficacy about changing practice; in this study, these aspects might have been underestimated. It could be difficult for the facilitators to confront passivity and find solutions on how to overcome possible vulnerability causing passivity among some clinical supervisors. Relationship building can be very important to promote a safe atmosphere where it is acceptable to expose one's actions and thoughts [22]. Participating and exposing oneself in action learning groups can be challenging and overwhelming for the individual, but in the end, the result is deeper personal growth [39].

#### **4.4. Limitations**

Fewer questionnaires were mailed to the participants after the action learning period due to the change of job among supervisors; thus, fewer participants had the opportunity to complete the second questionnaire. The supervisors' high degree of understanding and use of the Model of Practical Skill Performance in supervision practice must therefore be interpreted with some caution. Action learning projects are ideally driven by participants who are

engaged in the content of a project, and most participants in this study were positively engaged and interested in the use of the model. This might mean that although we located and interviewed three participants with critical voices, a different recruiting process might have included participants with more varied views on the use of the model.

## 5. Conclusion

This project explored action learning as a method to implement the Model of Practical Skill Performance as a learning and supervision tool in clinical education of nursing students. The findings suggest that the implementation method was mostly experienced as positive. An important reason why the action learning method was successful can be the dedication of facilitators who were competent in independently leading the action learning through a structured reflection process based on the group members' experiences with actions; this seems to have promoted the use of the Model of Practical Skill Performance in the clinical setting. Action learning was mainly experienced as an engaging and effective method to implement the supervision tool. The main strength seemed to be the autonomous local group that supported collective reflections on actions.

The findings of this study support the use of a large-scale action learning project to promote the dissemination and use of a tool for nursing student supervision in clinical practice. The results imply that collaboration over time between stakeholders in education, practice, and management is necessary to implement changes that have long-time consequences. Action learning is based on the members' willingness to both act and reflect on the topic of learning; this implies a need for clinical managers to secure voluntariness and motivation when choosing participants to join in such projects. The positive change in participants' scores on understanding and use of the model implies that involving clinical nurses in long-time participation may be a very important factor when planning projects that aim at the permanent change in practice. The project was driven by faculty and clinical educators with both research experience and intimate knowledge on the topic of implementation. The positive results indicate that such knowledge is imperative when launching projects that involve both education and practice.

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## DETAILS

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Nazarianpirdosti, M., Janatolmakan, M., Andayeshgar, B., & khatony, A. (2021). Assessment of knowledge, attitude, and practice of iranian nurses towards toothbrush maintenance and use. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/3694141>

**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  $59.2 \pm 16.4$ ,  $64.2 \pm 20.6$ , and  $51.4 \pm 17.0$  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.

Liyanarachchi, N. D., & Pradeepa, B. H. H. (2021). Knowledge on newborn life support among the healthcare providers in a tertiary care maternity hospital in the southern province, sri lanka. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/6991584>

**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.

Aychiluhm, S. B., Mare, K. U., Melaku, M. S., & Tadesse, A. W. (2021). Spatial distribution and determinants of nonautonomy on decision regarding contraceptive utilization among married reproductive-age women in ethiopia: Spatial and bayesian multilevel analysis. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/2160922>

**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.

Girmaye, E., Mamo, K., Ejara, B., Wondimu, F., & Mossisa, M. (2021). 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. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/8888087>

**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.

Plathe, H., Solheim, E., & Eide, H. (2021). Nursing students' and preceptors' experiences with using an assessment tool for feedback and reflection in supervision of clinical skills: A qualitative pilot study. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/5551662>

**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.

Asefa, K. k., Dagne, D., & Wassie, N. M. (2021). Medication administration error reporting and associated factors among nurses working in public hospitals, ethiopia: A cross-sectional study. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/1384168>

**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 15years 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.

Alhassan, B. A., Andrew, A. D., Kumi-Kyereme, A., Osman, W., & Alhassan, A. (2021). Nursing and midwifery students' satisfaction with their clinical rotation experience: The role of the clinical learning environment. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/7258485>

**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 ( $\chi^2 (9, N=224)=80.665, p<0.001$ ), 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.

Gregersen, A. G., Hansen, M. T., Brynhildsen, S. E. A., Grøndahl, V.A., & Leonardsen, A. C. (2021). Students' perspectives on learning practical nursing skills: A focus group study in Norway. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/8870394>

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.

Amarneh, S., Raza, A., Matloob, S., Raed, K. A., & Abbasi, M. A. (2021). The influence of person-environment fit on the turnover intention of nurses in Jordan: The moderating effect of psychological empowerment. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/6688603>

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.

Nancy Innocentia, E. E., Sarah, A. A., Boso, C. M., Doe, P. F., & Slager, D. (2021). A multisite study on knowledge, perceived motivators, and perceived inhibitors to precepting nursing students within the clinical environment in Ghana. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/6686898>

**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.

Sharma, K., Dhungana, G., Adhikari, S., Archana, B. P., & Sharma, M. (2021). Depression and anxiety among patients with type II diabetes mellitus in Chitwan Medical College Teaching Hospital, Nepal. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/8846915>

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.

Nancy Innocentia, E. E., Boso, C. M., & Sarah, A. A. (2021). Preceptorship of student nurses in Ghana: A descriptive phenomenology study. *Nursing Research and Practice*, 2021 doi:<https://doi.org/10.1155/2021/8844431>

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