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Patient safety and error reporting in obstetrics departments: Exploring nurses knowledge, attitude, and skills

Mohammad Suliman (PhD)[1]*, Mean Aljezawi (PhD)[1], Fadwa Abu Alshaar(MSN)[2]

[1]*Department of Community and Mental Health Nursing/ Al-alBayt University, Mafraq, Jordan.*
[2]*Clinical Instructor at Maternal and Pediatric Nursing/ Al-alBayt University, Mafraq, Jordan.*

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ABSTRACT

Introduction: This study aims to evaluate the patient safety attitudes, skills, knowledge and barriers related to reporting a medical error from a nursing perspective in obstetric departments.

Materials and Methods: A cross-sectional and descriptive study was conducted on a sample of **2**00 nurses and midwives. Patient safety attitudes, skills, and knowledge (PS-ASK) Scale was used to collect data from nurses.

Results: Nurses had good knowledge and a positive attitude toward patient safety. However, the participants had higher scores in attitude than knowledge and skills. No significant difference was found between nurses and midwives regarding patient safety knowledge, attitude, and skills (P>0.05). There are significant positive relationships between nurses' knowledge and a variety of safety attitude and skills (P< 0.05). The top three errors reported were: error during medication preparation and administration, failing to regularly monitoring of fetus's heart rate, and patient falls from beds or while walking without adequate supervision.

Conclusion: Patient safety is considered one of the important areas in the health care industry. In the current study, the overall safety knowledge and skills could be described as good but not sufficient. This could be attributed to a lack of sufficient training and education. Reporting errors is still a problem due to fear of consequences.

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Introduction

Patient safety is considered one of the most important steps in improving the quality of healthcare and in reducing the incidence of medical errors. Patient safety was defined by the WHO as "the absence of preventable harm to a patient during the practice of caring and follow up of patient health status". The Institute of Medicine in 1999, show that annually 44 to 98 thousand people have lost their lives as a result of medical errors (1). Besides, many patients suffer from harm while receiving health care during their hospitalization (2). For the aforementioned reasons, medical errors are the real challenges to healthcare in all countries (3). Obstetric safety is emerging as new important topic not only as a result of the pressures of patient and regulatory expectations, but also because of the genuine interest of hospitals to reduce harm, optimize care, and improve outcomes (4). According to Pettker and Grobman (4), three reasons make patient safety in obstetric a very important topic.

***Correspondence Author:** Department of Community and Mental Health Nursing/ Al-alBayt University, Mafraq, Jordan. Email: Mbarahemah@aabu.edu.jo

First, obstetric admissions are considered a huge part of all patients' hospitalization. Second, the obstetric setting is unique with high families' and patients' expectations and failure to meet these expectations would consider a disappointment for healthcare providers. Third, the high economic and emotional cost of the adverse outcomes that happen in obstetric settings(4). Adverse events that happen in the obstetric setting are estimated between 3-16% of deliveries in the United State(5). Geller, Rosenberg explored the adverse outcomes over seven years in tertiary care center and found that the rate of preventable maternal death was 40.5%, near-miss morbidities 45.5% and other sever morbidity 16.7%(6).

The World Health Organization (WHO) emphasizes the importance of improving the quality of care among reproductive health care that includes improving the process and the outcome of health services (7). Cases observed in obstetrics and gynecology departments include labor, emergencies, cesarean sections, normal deliveries, gynecological disease, and high-risk pregnancy. According to Mann, Pratt the obstetric adverse outcomes included: maternal death(8), intrapartum or neonatal death, Apgar score less than 7 at 5 minutes, blood transfusion reaction, fetal traumatic birth injury, uterine rupture, perineal tear, maternal admission to intensive care unit (ICU), maternal return to operation or Labor, neonatal admission to ICU. Adverse events in obstetric departments may lead to an increase in maternal mortality morbidity rates, increase costs of treatment (9).

Moreover, adverse events cause conflict and stress between nurses and patients' families and increase patients' dissatisfaction with nurses and hospitals (10).

Medical errors are largely underreported in obstetric settings (5).

Reporting errors in hospitals is critical to enhance safety and to improve the quality of care (11). This issue can be attributed to different barriers at organizational and at individual levels that ultimately prevent nurses from reporting medical errors. Despite the aim of reporting errors is to use this information to understand system errors and create changes to reduce the likelihood of the reoccurrence of the error, some hospitals used it as evidence to punish their staff (12). The Agency of Healthcare Research and Quality (AHRQ) considered reporting errors in clinical practice as a very important step in improving the quality of patients' care (13). Obstetrics and gynecology departments involves a double high risk of both maternal and fetal morbidity and mortality (14). Thus, early detection and reporting of medical error is an essential requirement to protect mothers and their children lives.

Nurses or midwives who provide care in obstetric departments play an important role in patient safety and well-being. In this area, a systematic review revealed that limited studies about nurses' knowledge, attitudes, and skills regarding patient safety were conducted (15). Besides that, little information is available regarding the frequency of medical errors in obstetric departments. For the aforementioned reasons and in light of the scarcity of research regarding patients safety in obstructs and gynecology departments, this study aims to cover this gap, by evaluating the patient safety attitudes, skills, knowledge, and barriers related to reporting medical error by nurses in obstetric in these specialized departments. In addition, the study will examine the main type of medical errors that happen in obstetric departments and the main reasons behind not reporting these medical errors.

Materials and Methods

Design: A descriptive cross-sectional design was used to achieve the aim of this study.

Instrument

For the purpose of this study, a two-part questionnaire was developed by the research team. Part one includes socio-demographic characteristics, which included: age, gender, level of education, experience, units of work, and hospital name. Part two: includes patient safety attitudes, skills, and knowledge (PS-ASK) Scale, developed by Schally et al. (2008). PS-ASK contains 26 items covering three dimensions: knowledge, attitudes, and skills. Patient safety knowledge sub-scale consists of 4 items to assess general knowledge

related to patient safety. Responses were measured on a 5-point Likert scale ranging from 1 = not knowledgeable, 2= a little knowledgeable, 3= somewhat knowledgeable, 4= Knowledgeable, and 5= Very knowledgeable. The scale scores are ranging between 4 and 20 points, the cut point is 60%, the score is interpreted as 4-12 insufficient knowledge, and 13-20 enough knowledge. Test-retest reliability of the patient safety knowledge sub-scale revealed a correlation coefficient of 0.86 using Pearson's (r) test, indicating good reliability. Patient safety attitudes sub-scale consists of 9 items. It was used to measure nurses' attitudes regarding patient safety. Responses were measured on a 5-point Likert scale ranging from 1 = disagree strongly, 2= disagree slightly, 3= neutral, 4 = agree slightly, 5= agree strongly. Items 1, 2, 3, 4, 7 are reversely coded. The scale scores are ranging between 9 and 45 points, the cut point is 60%, and this means that 9-27 negative attitude and 28-45 positive attitudes. Test-retest reliability of the patient safety attitudes' sub-scale showed a correlation coefficient of 0.89 using Pearson's (r) test, indicating good reliability. Patient safety skills sub-scale: It consists of 13 items. It was used to measure nurses' skills regarding patient safety. Responses were measured on a 5-point Likert scale ranging from 1=not competent, 2=somewhat competent, 3 = competent, 4= proficient, 5= expert. The scale scores are ranging between 13 and 65 points, the cut point is 60%, and this means that 13-39Not competent and 39-65 expert skills. Test-retest reliability of the patient safety attitudes' sub-scale showed a correlation coefficient of 0.89 using Pearson's (r) test, indicating good reliability. In addition, the researchers have added two questions one about nurses reporting the major three types of medical errors that occur in maternity departments and second about why nurses do not report medical errors in their departments. The whole instrument used was introduced in English and took about 15 minutes to be complete.

Sampling and settings

The study was conducted in maternity departments at four specialty maternal hospitals in 3 different provinces in Jordan. Nurses were recruited in the study if they met the following criteria: working at maternity wards as full-time nurses or midwives for at least one year and have a diploma degree or higher in nursing or midwifery. The total number participated in the study from both nurses and midwives was **2**00.

Data collection procedure.

The researchers will visit nurses and midwives at their hospitals and explain the purpose of the study. Completed questionnaires were kept with the department head and collected later.

Data Analysis

Data analysis was performed using the SPSS v.19 software. Descriptive statistics were used to describe the sample characteristics. Inferential statistics (t-test, and Pearson correlation) were performed to compare PS-ASK scores between nurses and midwives. Alpha level at 0.05 was deemed to be significant

Ethical consideration

Permission to collect data was also obtained from the hospitals participating in the and the author's home university ethical committee study. Nurse were instructed that participating in the study voluntary and their participation or not will not affect their professional evaluation in any way and their identities will not be revealed at all. Filling the questionnaire and returning it was considered a consent to participate in the study.

Results

Out of the **3**00 nurses and midwives agreed to participate, about **2**00 nurses completed and returned the questionnaire (**66.6**%). As presented in table 1, approximately half of the participants were nurses (n = **106** (53%), the rest were midwives. The mean age of the participants was 31 years (SD = 5.3) years. Half of the participants had a bachelor's degree (n = 100, 50%), 70 had a diploma (35%) and 30 had master's degrees (15%). The average length of participants' experience was 8.16 years (SD = 5.5). About 60 participants were working in the gynecology unit (30%), 94 in labor (47%), 34 in operation (17%), and 12 in the emergency

department (6%). Almost half of the participants (n = 102, 52%) reported having received training about safety as a part of continuous education programs at their hospitals. The results of the overall score of knowledge, attitude, and skills and their associated subscale show that the nurses had good knowledge and positive attitude toward patient safety in their hospitals (Table 2). However, the participants have higher scores in attitude subscales than knowledge and skills. The highest score of the attitude subscale was for "time investment" (mean = 3.85, SD = 1.12) and the lowest score of the skills subscale was for "error analysis" (mean= 2.51, SD= .76).The results of the independent t-test show that there are no significant differences were found between nurses (n=106) and midwives (n=94) regarding patient safety knowledge (t=1.79, P=.078), attitude (t=1.33, P=.19), and skills (t=1.99, P= .06). In addition, there are significant positive relationships between nurses' knowledge and a variety of safety attitudes and skills (P<.05) (Table 3).

Table 1: Sample's characteristics (n = 200)

Items	Frequency (%)
Age	
20-30	114
31-40	74
41-50	12
Gender	
Female	188
Male	12
Level of education	
Diploma	70
Bachelor	100
Master	30
Specialty	
Nurses	106
Midwives	94
Nursing experience	
1-5 years	152
6-10 years	42
More than 11	6
Working place	
Gynecology	60
Labor	94
Operation	34
Emergency	12
Previous training on safety	
No	96
Yes	104

Table 2: Overall Scores of Knowledge, attitude and skills and associated subscales

	Cronbach's alpha (No. of items)	Mean	SD
Knowledge (total)	.75 (4)	2.99	.87
Attitude (total)	.53 (8)	3.52	.65
Error detection	.50 (3)	3.36	.75
Time investment	.70 (2)	3.85	1.12
Creating a culture of safety	.56 (3)	3.36	.94
Skills (total)	.87 (13)	2.78	.68
Error analysis	.80 (6)	2.51	.76
Decision Support technology	.73 (3)	2.91	.87
Threats to patient safety	.78 (4)	2.92	.80

Table 3: The relationships between nurses' safety knowledge and attitude and skills subscales

	Error detection	Time investment	Creating a culture of safety	Error analysis	Decision support technology	Threat to patient's safety
Nurses' knowledge	.208*	.423**	.130	.373**	.385**	.350**
P value	.038	.000	.196	.000	.000	.000

Correlation is significant at the 0.05 level (2-tailed); Correlation is significant at the 0.01 level (2-tailed).

Finally, nurses' reported the highest three rates of medical error that happened in their units are error during medication preparation and administration (n=38, 19%), failing to regularly monitoring of fetus heart rate (n=18, 9%), and patient fall from beds or while walking without adequate supervision (n = 10, 5%) (See table 4). The top three reasons for not reporting medical errors were: The fear from the administration punishment (n=41, 20.5%), the lack of effective medical error reporting system (n= 14. 7%), and the lack of support from other peers (n= 10, 5%) (Table 5).

Table 4: The main type of medical errors as reported by nurses (n = 200)

Main type of medical error	n	Percentage
Error during medication preparation and administration	38	19%
Failing to regularly monitoring of fetus heart rate	18	9%
Patients falls from beds or while walking without adequate supervisions	10	5%
Failing to follow sterile precautions in the operation room	8	4%
Improper surgical hand washing	8	4%
Needle stick injury	6	3%
Failing to conduct sensitivity test before antibiotic administration	4	2%
Mismatching of Blood transfusion	2	1%
Improper disposal of medical waste	2	1%
Failing to put patient identification band	1	.5%

Table 5: The main barriers that prevent nurses from reporting medical errors (n = 200)

Main barriers	n	Percentage
The fear from the administration punishment	41	20.5%
The lack of effective medical error reporting system	14	7%
The lack of support from other peers	10	5%
The lack of knowledge about reporting medical error	6	3%
The fear from the bad reputation of staff and/or department	5	2.5%
The lack of personal attention to the importance of medical errors	2	1%
The lack of confidence to admit conducting medical errors	1	.5%

Discussion

Patient safety is considered one of the important areas in health care providing industry. The focus arises to maximize patient satisfaction and prevent any unnecessary suffering and cost on the health care system because of lawsuits. Research in this area is still insufficient to understand healthcare professionals' knowledge, attitude, and skills regarding patient safety (15). Competence in the form of knowledge, skills, and professionalism supported with a positive attitude are the basic elements in the formula of patient safety and error reduction (16).

In the current study, the overall safety knowledge and skills could be described as good but not sufficient with scores ranging from 2.51 to 2.92 out of 5 for safety skills and a score of 2.99 out of 5 for knowledge. These scores are similar to those studies reported in the literature and used the same tool i.e. PS-ASK (17). Attitude scores were better than those of safety skills and knowledge were. This is may indicate that nurses are willing to provide more safe practice and minimize errors; however, their skills and knowledge aren't sufficient.

To explain why nurses had lower safety skills and knowledge three factors could have a role. Nurses' education level, in-service education, and nurses' experience. In this study, most of the nurses and midwives had a bachelor's degree or higher (65%). This should logically result in higher safety

skills and knowledge, but the scores were not high enough to match this high level of education. This could be due to insufficiency in the nursing curriculums in this area.

In-service education was reported to be also insufficient (only 52% reported that they had previous training on safety. In the current study, most nurses (76%) had below five years of experience. As literature suggests, knowledge and skills could be enhanced as nurses' progress in years in their profession. This is fairly normal, as more time means more experience that can equip nurses with more knowledge and skills to minimize errors and enhance patient safety(18). Other factors that could affect safety skills and knowledge like being a nurse or a midwife were not significant as seen in Table 3.

Results also supported the role of nurses' knowledge (which could be enhanced through education and experience) in approximately all the sub-scales of safety attitudes and skills (Table 4). For instance, a nurse with sufficient safety knowledge will be able to detect errors, create a safety culture, and analyze errors. Time investment was not significantly correlated with safety knowledge as it could be also related to other factors, like staffing pattern and nature of workload (15,17).

The top three errors reported by nurses were: error during medication preparation and administration, failing to regularly monitoring of fetus's heart rate and patient falls from beds. These errors could be related to staffing patterns and shortage of nurses on different shifts, in addition to increased workload (19). Nurses shortage in Jordan was previously reported by different studies (20,21). Providing these units with more qualified nurses could be an important solution to reduce these types of medical errors and to enhance patient's safety.

As can be noticed in this study and literature medical errors are a prevalent problem among nurses (19). However, the story does not end here, the real problem lays in under-reporting because of several barriers that force nurses not to report(22). Table 5 shows that the most reported barrier to report medical errors was fear from punishment. This finding was congruent with literature as nurses reported the same barrier in several studies (22-24). This finding is not surprising as nurses or any other professional try to defend themselves in the first place and save themselves the consequences that can result. To increase the percentage of reporting, some studies suggested making the reporting anonymous, or to create a safe atmosphere that can encourage nurses to report (23).

Limitations

This study was designed as a self-report by nurses and midwives, still, this could carry some bias into the results, as nurses and midwives tend to give more idealistic answers of what the actual situation would be. However, it reflects at least nurses' and midwives' positive attitude and they're willing to be more safe and ideal when dealing with patients. This can inform policymakers and nursing leaders to focus more on in-service education and training, to make hospitals a safer place.

Conclusion

This study provides novel information about nurses' and midwives' attitudes, knowledge and safety skills. Nurses and midwives generally hold positive intentions towards the safety of their patients. This alone is not sufficient to enhance safety and minimize errors. Knowledge and practice needs to be addressed first to articulate these good intentions in the form of education and training to enhance safety aspects. The aforementioned part lies on the shoulders of employers.

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