Emergency Obstetric Care Protocol: Its Effects on Maternity Nurses' Knowledge, and Clinical Practices

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Abstract:

Background: Maternity nurses must provide emergency obstetric care because obstetric emergencies remain the leading cause of maternal morbidity and mortality. **Aim:** To evaluate the effect of applying emergency obstetric care protocol on maternity nurses' knowledge, and clinical practices. **Method:** A quasi-experimental one-group, pretest/post-test design was utilized. A convenient sample of 60 maternity nurses was recruited. The study was carried out at delivery, and labor unit, emergency obstetric operating room and post-partum departments at Mansoura University Hospital, Egypt. Two tools were used for data collection: Tool I was a Structured Interview Questionnaire, which included two parts: socio-demographic information, and maternity nurses' knowledge of emergency obstetric care. Tool 2 was the maternity nurses' practices observational checklist for emergency obstetric care. **Results:** Post-intervention, the total mean knowledge score of maternity nurses regarding emergency obstetric care was significantly higher compared to pre-intervention (27.93 ± 1.76 vs. 15.00 ± 5.05, respectively; $p < 0.001$). Moreover, a significant positive shift was observed in the total mean clinical practices score of maternity nurses following the emergency obstetric care protocol compared to pre-intervention (109.02 vs. 61.75, respectively; $p < 0.001$). **Conclusion:** The maternity nurses had significantly improved their knowledge and clinical practices about obstetrics emergencies after applying emergency obstetric care protocol

Recommendations: Integrate the emergency obstetric care (EmOC) protocols into routine maternity nursing practice and establish ongoing, organized training programs for maternity nurses to improve, maintain, and expand their clinical expertise throughout time.

Keywords: *Care, Clinical Practices, Emergency, Maternity Nurses, Obstetric, Protocol.*

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Introduction

Worldwide, obstetrical emergencies are a leading cause of maternal mortality, particularly in developing countries. Factors such as poverty, illiteracy, inadequate prenatal care, limited access to transportation, and insufficient medical equipment contribute significantly to this problem. In addition, inadequate training and experience in managing obstetrical emergencies, along with poor teamwork and communication among healthcare professionals, may further increase the risk of adverse maternal outcomes (Eshetu et al., 2024).

Severe complications that may threaten a woman's life during pregnancy, childbirth, or Sudden, unexpected, and potentially life-threatening medical conditions that arise during pregnancy, childbirth, or the early postpartum period are known as obstetrical emergencies. These situations, which are typically undetectable through routine prenatal examinations, pose significant risks to the health and lives of both the mother and the fetus. These emergencies constitute acute, critical situations that require prompt recognition and immediate intervention by healthcare professionals to achieve the best possible maternal and fetal outcomes (Kibiwott, Sum, & Kang'ethe, 2024).

professional responsibilities, strengthens their sense of self-worth, and enables them to achieve both personal and organizational goals (Shikuku et al., 2024).

Emergency obstetric care protocols are developed to improve the consistency of medical care provided to women and the outcomes for both the mother and the newborn. It is important to note that these emergency obstetric care protocols are intended to assist nurses in initiating prompt management, thereby improving maternal and newborn care. However, they are not intended to replace the process of critically evaluating each woman and making individualized clinical decisions (Bignell & Petrovskaya, 2024).

Significance of the study:

According to the World Health Organization (WHO, 2023) report, complications during pregnancy, childbirth, and the postpartum period are estimated to cause approximately 260,000 maternal deaths annually. By 2023, the global maternal mortality ratio (MMR) had decreased from 339 to 223 deaths per 100,000 live births. Low- and middle-income countries account for about 95% of maternal deaths. Since four out of five countries are currently not on track to meet the 2030 targets for maternal survival, preventing these deaths remains a critical global health priority.

Professional maternity nurses play a crucial role in the healthcare team by providing vital, life-saving interventions to prevent and manage obstetrical emergencies. They are also considered one of the key indicators of progress in improving pregnancy and childbirth outcomes (Stael et al., 2024). Based on the results of previous studies, it was found that more than half of the nurses under study had inadequate knowledge of obstetrical emergencies and poor practice. Therefore, the purpose of this study was to evaluate the effect of applying the emergency obstetric care protocol on maternity nurses' knowledge of and their clinical practices.

Aim of the study: The present study aimed to evaluate the effect of emergency obstetric care protocol on maternity nurses' knowledge and clinical practices.

Research hypothesis: Maternity nurses who receive the emergency obstetric care protocol will demonstrate significantly higher mean knowledge and clinical practices scores

the postpartum period occur in approximately 15% of pregnancies worldwide. In developing countries, maternal mortality is primarily attributed to direct obstetric causes, including postpartum hemorrhage, hypertensive disorders of pregnancy, and sepsis. More than 40% of these deaths occur during the intrapartum period, while approximately 48.9% occur within the first 24 hours after childbirth. (Shields, Vidosh, Kavanagh, Nielsen, & Thomson, 2024).

The goal of emergency obstetric care is to manage or stabilize women experiencing life-threatening complications by providing prompt and appropriate medical interventions. Obstetric emergencies are the primary focus of safe motherhood programs, as they account for the majority of maternal deaths during pregnancy, childbirth, and the postpartum period (Zewde, 2024).

Maternity nurses must be competent to provide basic prenatal care, advocate for labor-related health issues, and inform women and their families about potential complications that may occur throughout pregnancy, childbirth, and the postpartum period,. Additionally, in order to improve the outcomes for mothers and newborns, nurses are essential in raising awareness of the significance of prompt and adequate emergency obstetric care (Freeman, Warland, Cheney, & Bradfield, 2024).

The immediate recognition of any obstetric emergency by nurses and midwives is essential for the prompt nursing management of women experiencing obstetric emergencies. To provide emergency obstetric care, including life-saving interventions when necessary, they must be able to recognize the onset of complications, perform appropriate interventions, remain up to date with the latest evidence-based practices, identify women who may be at risk, and refer them for appropriate professional care (Amosse et al., 2021).

Several professional development initiatives can improve the practices of maternity nurses. One important strategy is to provide appropriate learning opportunities, such as in-service training, attendance at conferences and seminars, and encouragement to pursue higher education, including diploma or postgraduate degree programs. Providing nurses with access to information, resources, support, and professional development opportunities enhances their engagement with institutional goals, improves their effectiveness in fulfilling

A total of 60 maternity nurses working in the selected study settings were recruited. Nurses who were participated in administrative tasks or had less than 6 months of work experience were excluded from the study**.**

Data collection tools:

Two tools were used to collect the data:

Tool I: A Structured Interview Questionnaire

The researcher developed this tool following a thorough analysis of relevant national and international literature. It is divided into two parts:

Part 1*: Sociodemographic Information of Maternity nurses:*

It was include (age, level of education, professional experience, previous training courses and clinical working area).

Part 2: *Maternity nurses' knowledge regarding emergency obstetric care questionnaire:*

It was adapted from (Kibiwott et al., 2024). Multiple-choice questions were used in this section to measure maternity nurses' knowledge about obstetrical emergencies. It consisted of (6) sections, comprising a total of 30 questions:

Section (1): General knowledge of maternity nurses regarding obstetrical emergencies, it constituted of 8 items.
Section (2): Nurses' knowledge about emergency tray preparation, it consisted of 3 items.
Section (3): Nurses' knowledge about nursing care for obstetrical emergencies during pregnancy, it consisted of 4 items.
Section (4): Nurses' knowledge about nursing care for obstetrical emergencies during labor, it consisted of 7 items.
Section (5): Knowledge of nurses regarding postpartum obstetrical emergency care, it consisted of 5 items.
Section (6): Nurses' knowledge about cardiopulmonary resuscitation of the woman, it consisted of 3 items.

The original tool was modified by the researcher to suit the study objectives and the studied maternity nurses. The modification included converting open-ended questions into close-ended questions to facilitate quantitative regarding emergency obstetric care after the intervention compared with their pre-intervention scores.

Methods

Research Design: A quasi-experimental one-group pretest/posttest design was used. It is an empirical study that does not use random assignment to determine how an intervention will affect its target population (KUŚ, 2024).

Study Setting: The study took place in the labor and delivery unit, emergency obstetric operating room, and postpartum departments (9, 10, 15, and 18) at Mansoura University Hospital (MUH), which is affiliated to Mansoura University and the Ministry of Higher Education in Mansoura city, Dakahlia governorates, Egypt.

The delivery unit located at the ground floor in the main building of MUH and provides care for normal delivery and emergency cases. Every month, the unit receives over 80 cases for delivery on Sunday, Tuesday, and Thursday. Emergency obstetric operating room located at the third floor of the same building and provides operative surgical services for abortion, cesarean section and hysterectomy cases....etc. Flow rate range of emergency cases to emergency obstetric operating room 15 cases per day. Obstetric post-partum departments in the main building of MUH are located at the third and fourth floor. These wards provide care to high risk pregnancy, pre and post-operative care to abortion cases and cesarean section.

Sample type:

A convenient sample was employed. Convenient sampling is a non probability sampling technique where the study sample is chosen based on accessibility and availability during data collection (Doebel & Frank, 2024).

Sample size:

According to Okonofua et al. (2019), the sample size can be computed using the formula $n = (2(Z\alpha/2 + Z\beta)^2 \times p(1-p))/((d)^2)$. $Z\alpha/2 = 1.96$ (for a significance threshold of 5%), $Z\beta = 0.84$ (for an 80% power of study). Consequently, $n = 60.0 = (2(1.96 + 0.84)^2 \times 0.757 (1-0.757))/((0.179)^2)$. Consequently, 60 is the necessary sample size.

Study subjects

Study tools reliability

It was tested to see how well the research items fit together conceptually and whether all of the items on the study tools measure the same variable over time. The Cronbach's alpha test was used to assess the reliability of the data gathering instruments. Good dependability was suggested by the knowledge's internal-consistency (Cronbach alpha) of 0.79, and the practice's internal consistency of 0.82.

Pilot study

To make sure these tools were clear, feasible, and applicable, a pilot study was conducted on 10% of maternity nurses (6 nurses) before data collection. No changes were made in the pilot study's results. Maternity nurses involved in the pilot study were included in the main study sample.

Ethical Considerations:

Mansoura University Hospital manager provided official permission to conduct the study, and the Research Ethics Committee of the Faculty of Nursing at Mansoura University granted ethical approval (Reference No. 477). All maternity nurses who were studied gave their informed consent. Every maternity nurse who participated in the study was assured that it was entirely voluntary, that they could leave at any time and for any reason, that confidentiality would be maintained throughout, and that the results would only be used for publication and educational purposes.

Study procedure

Three stages of data collection were conducted between the start of September 2024 and the end of February 2025**.**

The First phase (Preparatory phase):

I: Preparation of the study tools

Following an extensive review of national and international literature on maternity nurses' knowledge and practices regarding emergency obstetric care, the researcher developed the study tools. To ensure clarity and ease of understanding for the maternity nurses under study, the original English version of the tools was translated into Arabic

***II: Preparation of educational booklet*:**

It was developed from (Zeinab, Nadia, Amel, & Hend, 2017). Each maternity nurse will analysis and ensure uniformity of answers. The content of the questions was not changed; only the answer format was modified.These modifications were made to enhance clarity, reduce subjectivity, and allow accurate scoring of maternity nurses' knowledge.

Knowledge scoring system:

For each item, the right response received a score of "1," whereas the wrong or unknown response received a score of "zero." After that, the total knowledge score was divided into three categories: poor knowledge when it was < 50%, average knowledge when it was 50 to < 65%, and good knowledge when it was ≥ 65% (El-hady et al., 2024).

Tool II: Maternity Nurses' Practices Observational Checklist for Emergency Obstetric Care:

It was adopted from the (Royal College of Obstetricians and Gynecologists guidelines, 2016). It comprises eight procedures; 1) Emergency tray preparation (15 items), 2) Resuscitation of women (24 items), 3) Preeclampsia and eclampsia nursing care (23 items), 4) Nursing care for pregnancy-related bleeding (18 items), 5) Blood transfusion procedure (17 items), 6) Nursing care for cord prolapse (11 items), 7) Obstructed labor management (shoulder dystocia) (8 items), and 8) Nursing management of post-partum hemorrhage (10 items).

Scoring system for practices:

Practice statements received a score of (2) if each step was completed correctly, (1) if it was not completed, and (0) if it was not done. A total practice score of ≥ 75% was deemed satisfactory, while a score of < 75% was deemed unsatisfactory (Shikuku et al., 2022; El Sharkawy, Ali, & Araby, 2020).

Study tools validity:

A team of three experts in women's health and midwifery nursing examined the study tool's content validity. In order to assess how well the scores reflect the factors they were designed to evaluate, it was amended for clarity, content, item sequence, and content relevance or irrelevance. The jury members' suggested changes were implemented, such as altering some questions' order and clarifying their meaning.

every day, which were repeated for each group independently.

The sessions were conducted in the following order:

The theoretical sessions:

First session: The maternity nurses were given the educational booklet by the researcher at the beginning of the first session, along with an overview of the session's general and specific objectives. The researcher then provided the maternity nurses with general information regarding obstetrical emergencies, how to prepare an emergency tray, and obstetrical emergencies during pregnancy.

Second session: The maternity nurses received information from the researcher regarding obstetrical emergencies that may arise during labor. They also had the opportunity to ask questions and engage in a discussion at the end of the session.

Third session: the researcher taught the maternity nurses about cardiopulmonary resuscitation and obstetrical emergencies during the postpartum period.

The practical sessions:

First session: Implied the implementation of the practical part of the educational booklet for obstetrical emergencies cases and included certain procedures as preparation of emergency tray, and management of preeclampsia and eclampsia.

***Second session*:** Began with a re-demonstration and feedback of the previous sessions, Then the researcher demonstrated the procedures of management of bleeding during pregnancy, blood transfusion procedure and management of cord prolapse.

Third session: The researcher demonstrated how to manage cord prolapse, bleeding, and blood transfusion procedure.

The Third phase (Evaluation phase)

In this stage, the impact of the protocol sessions was assessed (posttest) using the same set of tools that were used before applying of the protocol sessions (pretest). Following the intervention, an immediate evaluation was conducted to evaluate the effect of the emergency obstetric care protocol on maternity nurses' knowledge and their clinical practices.

Data Analysis

receive an educational booklet designed by the researcher in Arabic and backed by figures. It consists of two sections: theoretical and practical.

The second phase (implementation phase):

It was executed in three phases, ***(Assessment, planning and intervention phase).***

I: Assessment phase

- The interview began with the researcher greeting the maternity nurses, introducing herself, explaining the goals, duration, and activities of the study, and getting their signed consent to participate. In order to gather general characteristics of maternity nurses and evaluate their knowledge of emergency obstetric care on cold days (Saturday, Monday, and Wednesday), the researcher distributed tool I.
- Then the researcher used tool II, to evaluate maternity nurse's practices regarding emergency obstetric care in hot days (Sunday, Tuesday and Thursday).

II: Planning phase

- The researcher created an educational booklet in Arabic with figures based on the findings of a pretest evaluation of nurses' knowledge and practices about emergency obstetric care and a review of literature.
- With the aid of instructional media like video, the researcher employed a variety of teaching methods, including group discussions, demonstrations, and re-demonstrations.

III: Intervention phase

- The researcher was attended labor and delivery unit, emergency obstetric operating room and the post-partum departments (9, 10, 15 and 18) at Mansoura University Hospital from 9:00 a.m. to 2:00 p.m., six days a week, until the study sample was completed.
- It took twelve weeks to implement the training and instruction. Twelve groups of maternity nurses were created. Five nurses were included in each group based on the nurses' physical and mental preparedness as well as their working conditions.
- Each group had six sessions in total, which were split into three theoretical sessions that lasted between thirty and 30-45minutes each and three practical sessions that lasted between 30-60 minutes each. Each session began with revision of previous session and goal explanation of the subsequent session. Each group received its own implementation of the material, which included discussion periods based on the progress, accomplishments, and feedback of the nurses.
- Each group received three days of training over the course of one week. There was one theoretical session and one practical session

Data analysis and tabulation were done after using the Statistical Package for Social Sciences (SPSS) application version 26. Descriptive statistics was used, such as mean, standard deviation, frequency, and percentages. Also tests of significance were used, such as the Fisher Exact Test, Paired Sample t-test, and Chi-square test. The link between knowledge and practice scores was examined using one-way Anova and Pearson correlation coefficients. When $p \leq 0.05$, it was indicated a significant level value. Additionally, when $p < 0.01$, it was indicated a highly significant level.

Results

Table 1: Socio-demographic Information of Maternity Nurses

Maternity Nurses' Socio-demographic Information	**Frequency (n = 60)**	**%**
Age (year)		
20: 24	16	26.7
25**:** 29	9	15
30: 34	13	21.7
≥35	22	36.6
Level of Education		
Nursing Diploma	23	38.3
Technical Nursing Institute	37	61.7
Professional Experience (Years)		
Less than 5 years	16	26.7
5-10 years	15	25
More than 10 years	29	48.3
Clinical Working Area		
Delivery and labor unit	10	16.7
Obstetric post-partum wards	40	66.7
Emergency obstetric operating room	10	10.6
Previous attendance of training courses related to obstetric emergencies		
No	60	100

Table (1) shows that 36.6% of maternity nurses were 35 years or older and 61.7% graduated from a Technical Nursing Institute. 48.3% of them had experiences more than 10 years of work, and 66.7% were worked in obstetric post-partum wards. Notably, 100% of maternity nurses in the study reported they had not taken any courses on obstetric emergency.

Table (2): Comparison of the Total Mean Knowledge Score of Maternity Nurses Regarding Obstetric Emergencies Pre and Post Intervention (n=60)

***A highly statistically significant difference **(P ≤ 0.001)** **T:** paired sample t- test

Table (2) shows high significant improvements across all areas of emergency obstetric care. The mean score of nurses' general knowledge about obstetrical emergencies increased from 3.55 ± 1.11 pre-intervention to 7.60 ± 0.64 post-intervention, also for labor-related emergencies, the mean score significantly increased from 3.10 ± 1.59 to 6.62 ± 0.58. Importantly, the total knowledge score, significantly increased from 15 ± 5.05 pre-intervention to 27.93 ± 1.76 post-intervention, p = 0.001.

Table (3): Comparison of Maternity Nurses' Mean Practices Scores Regarding Obstetric Emergencies in Emergency Obstetric Operating Room Pre and Post Intervention (n=10)

Clinical Practices of Maternity Nurses in Emergency Obstetric Operating Room	**Pre Intervention**		**Post Intervention**		**T**	**P value**
	Mean	± SD	Mean	± SD		
Emergency tray preparation	18.50	4.50	26.70	2.58	9.61	0.001***
Woman cardiopulmonary resuscitation	33.80	1.48	44.30	6.11	6.29	0.001***
Blood transfusion practices	20.80	4.37	29.30	2.41	12.37	0.001***

***A high statistical significant differences **(P ≤ 0.001)** **T:** paired sample t test

Table (3) shows that maternity nurses' practices scores improved significantly post-intervention in the emergency obstetric operating room with highly significant differences, p = 0.001. For preparation of emergency tray, the mean score increased from

Knowledge of Maternity Nurses About Obstetric Emergencies	**Pre-Intervention**		**Post Intervention**		**T**	**P value**
	Mean	± SD	Mean	± SD		
General knowledge regarding obstetrical emergencies	3.55	1.11	7.60	0.64	28.23	0.001***
Knowledge regarding emergency tray preparation	1.52	1.02	2.78	0.56	9.75	0.001***
Knowledge regarding obstetrical emergencies care during pregnancy	2.12	1.25	3.55	0.87	9.61	0.001***
Knowledge regarding obstetrical emergencies care during labor	3.10	1.59	6.62	0.58	18.87	0.001***
Knowledge regarding obstetrical emergencies care during postpartu	3	1.21	4.52	0.60	10.29	0.001***

significantly from 16.28 ± 9.33 Pre-intervention to 40.73 ± 6.47 Post-intervention. Regarding bleeding management during pregnancy, the mean score increased from 18.26 ± 9.66 to 30.58 ± 3.92. Similarly, the mean score for blood transfusion practices increased significantly from 19.72 ± 4.24 Pre-intervention to 30.26 ± 2.78 Post-intervention.

Table (5): Comparison of Maternity Nurses' Mean Practices Score Regarding Obstetric Emergencies in Labor and Delivery Unit Pre- and Post-Intervention (n=10).

18.50 ± 4.50 pre interventions to 26.70 ± 2.58 post interventions. Similarly, practices of studied maternity nurses in woman resuscitation increased from 33.80 ± 1.48 pre-intervention to 44.30 ± 6.11 post-intervention. The improvement was also observed in blood transfusion, where mean scores increased from 20.80 ± 4.37 pre interventions to 29.30 ± 2.41 post intervention.

Table (4): Comparison of Maternity Nurses' Mean Practices Scores Regarding Obstetric Emergencies in Post-partum Departments Pre and Post Intervention (n=40)

Clinical Practices of Maternity Nurses in Post-partum Departments	**Pre Intervention**		**Post Intervention**			
	Mean	± SD	Mean	± SD	**T**	**P value**
Preeclampsia and Eclampsia Management	16.28	9.33	40.73	6.47	14.95	0.001***
Management of bleeding during pregnancy	18.26	9.66	30.58	3.92	8.64	0.001***
Blood transfusion practices	19.72	4.24	30.26	2.78	17.83	0.001***

*** high statistical significant difference **(P ≤ 0.001)** **T:** paired sample t- test

Table (4) reveals high significant improvement in maternity nurses' practices post intervention, p = 0.001. For preeclampsia and eclampsia management, the mean score increased

regarding emergency obstetric care after the intervention**.**

In light of the present study`s results, as regard total mean scores of maternity nurses' knowledge regarding obstetric emergencies, The present study findings revealed that, there were an improvement in the total mean knowledge scores of maternity nurses regarding obstetric emergencies after the intervention. The present study findings were supported by the results of Nishimwe, Ibisomi, Nyssen and Conco, (2021), who reported a statistical significant improvement in nurses' and midwives' mean knowledge scores following a basic emergency obstetric and neonatal care educational intervention compared with baseline measurement. ***From the researcher's point of view*** this agreement attributed to the effectiveness of the educational intervention in improving maternity nurses' knowledge of obstetric emergencies. This consistency highlights the value of structured educational programs in enhancing professional knowledge.

While, the results of the current study contrasted to those of a Kenyan study by Kibiwott et al. (2024), who examined the assessment of knowledge and skills retention on basic emergency obstetric and newborn care

Clinical Practices of Maternity Nurses in Labor and Delivery Unit	**Pre Intervention**		**Post Intervention**		**T**	**P value**
	Mean	± SD	Mean	± SD		
Preeclampsia and Eclampsia management	14.20	5.09	41.10	5.74	8.63	0.001***
Bleeding management during pregnancy	13.60	2.12	28.80	2.94	31.03	0.001***
Blood transfusion practices	20.50	3.78	28.50	3.24	24	0.001***
Cord prolapse management	8.20	5.47	20.90	1.66	6.18	0.001***
Management of obstructed labor	9.40	1.26	13	1.33	6.91	0.001***
Management of post-partum hemorrhage	14.60	2.01	18	1.15	8.50	0.001***

*** high statistically significant difference **(P ≤ 0.001)**

T: paired sample t- test

Table (5) reveals high statistical significant improvements in practices of maternity nurses. For the preeclampsia and eclampsia nursing management, the mean score increased significantly from 14.20 ± 5.09 pre-intervention to 41.10 ± 5.74 post-intervention. Likewise, the mean score for management of bleeding during pregnancy increased from 13.60 ± 2.12 pre-intervention to 28.80 ± 2.94 post-intervention. For blood transfusion practices, the mean score increased significantly from 20.50 ± 3.78 to 28.50 ± 3.24 post-intervention, p = 0.001.

Figure (1): Correlation between the total knowledge and practices score of the maternity nurses regarding obstetrical emergencies after intervention**.**

Figure (1) illustrate that after the intervention, there was a statistically significant moderately positive correlation between the total knowledge and practices scores, p = 0.002.

Discussion

This study aimed to evaluate the effect of applying emergency obstetric care protocol on maternity nurses' knowledge, and clinical practices. The study's major finding revealed a statistical significant increase in the total mean score of maternity nurses' knowledge, and clinical practices

and lecture group, after the intervention, there was no statistically significant difference between the groups. ***From the researcher's point of view***, this discrepancy may be attributed to differences in the educational intervention design, implementation, and evaluation methods across the two studies. Variations in participants' characteristics and clinical settings may also have influenced the observed outcomes.

Regarding correlation between the studied maternity nurses' total knowledge and their practices scores regarding obstetrical emergencies after intervention, the current study's findings showed a statistically significant moderately positive association between total knowledge and practices scores post intervention. The present study results were in consistent with Mohammed, Mohamed, Abdullah and Khatap, (2025), and reported a moderate positive correlation between knowledge and practices scores regarding emergency obstetric care following guideline adoption. In contrast to the results of the present study, A Tanzanian study by Mselle, O'Hearn, Aston, Murphy, and Rigby's (2023) who found no significant correlation between knowledge and practices in emergency obstetric care post-training, despite knowledge gains, because of high workload and resource constraints. ***From the researcher's point of view,*** this discrepancy may be attributed to differences in workplace conditions and organizational support, which can affect the translation of knowledge into clinical practice. Variations in participants' workload, healthcare resources, and the clinical environment may also have influenced the relationship between knowledge and practice across the two studies.

Conclusion

After applying emergency obstetric care protocol, the maternity nurses had significantly improved their knowledge and clinical practices about obstetrics emergencies.

Recommendations

- Incorporate emergency obstetric care (EmOC) protocols into regular maternity nursing practice and provide ongoing, structured training programs to help maternity nurses maintain, improve, and increase their clinical skills and knowledge over time.
- Further researches need to assess the effect of simulation-based training tools on nurses' performance in obstetric emergencies.

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AI statements

among skilled birth attendants, and found a low total mean scores of knowledge regarding EmONC, indicating that regular training, supportive supervision, and improved institutional support are necessary to improve the quality of care given by skilled birth attendants.

In relation to the total mean scores of the studied maternity nurses' practices regarding obstetrical emergencies at emergency obstetric operating room, concerning women resuscitation practices, the present study finding demonstrated a significant improvements in the total mean scores of maternity nurses' woman resuscitation practices after the intervention. This improvement suggests that the implemented educational intervention effectively enhanced the practices mean scores. The current finding was consistent with Ameh et al. (2018), who reported a significant improvement in emergency obstetric care skills (woman resuscitation procedure) following training, where the mean score increased substantially after intervention.

As regards the total mean score of maternity nurses' practices regarding obstetrical emergencies at postpartum departments, the results of the current study showed a significant improvement in practice mean scores across all areas, including blood transfusion procedures, bleeding during pregnancy, and care of preeclampsia and eclampsia. The results of the current study were identical to those of a study by Tabatabaeian, Kordi, Dadgar, Esmaeily, and Khadivzadeh (2018) that assesses the effects of lecture-based, blended, and simulation-based education on performance of midwives in managing eclampsia and preeclampsia. They found that all groups' mean performance scores increased statistically significantly following the educational intervention, with the simulation group showing the greatest improvement, demonstrating the efficacy of simulation-based training in improving obstetric emergency management skills. ***From the researcher's perspective***, this agreement may be explained by the ability of educational interventions to translate theoretical knowledge into clinical practice. This finding underscores the essential role of continuous hands-on training in improving maternity nurses' performance during obstetric emergencies.

In contrast, the present study findings disagree with the results reported in a study by Tarrahi, Kianpour, Ghasemi and Mohamadirizi, (2022), who found that although mean scores for eclampsia management improved after educational interventions in both the simulation

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Author's declaration

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Data and materials availability

All data is provided by the authors upon request.

Competing interests

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Ethical clearance

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