

## Effect of advanced nursing management guidelines on nurses' practices regarding emergency obstetrical care

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### Abstract

**Background:** Effective recognition and management of stressful obstetrical emergencies by healthcare providers are vital for achieving the best possible clinical outcomes. Thus, improving nurses' practice in these critical situations is imperative. **Aim:** to evaluate the effect of advanced nursing management guidelines on nurses' practices regarding emergency obstetrical care. **Design:** Quasi experimental (pre and posttest). **Setting:** Obstetrical and Gynecological Department in one of the hospitals in Ismailia city. **Subjects:** included 50 nurses. **Tools:** Two tools were used: 1<sup>st</sup> tool: Personal data of the studied nurses, 2<sup>nd</sup> tool: Nurses' Practices Observational Checklist. **Results:** Implementation of the guidelines led to a highly statistically significant and immediate improvement in nurses' practice concerning obstetrical emergencies, with this positive effect persisting after one month ( $p=0.000$ ). **Conclusion:** Implementing of emergency obstetric guidelines had a positive effect on the practice of nurses who worked in Emergency Obstetric and Gynecologic Department. **Recommendations:** The study recommended regular updates to nursing staff training to improve their practical skills in managing obstetrical emergencies.

**Keywords:** *Advanced nursing management guidelines, Emergency obstetrical care, Nurses' practices.*

### 1. Introduction

Obstetric emergencies represent critical medical conditions that can occur throughout pregnancy, labor, and the postpartum phase.

Tragically, around 800 women worldwide die each day from causes related to pregnancy and childbirth that could often be prevented. Beyond these fatalities, a range of obstetric

emergencies can endanger maternal and fetal well-being. Examples of these include vaginal bleeding, eclampsia, severe preeclampsia, and premature membrane rupture during gestation; amniotic fluid embolism, uterine inversion or rupture, prolapsed umbilical cord, placenta accreta, and shoulder dystocia during the birthing process; and postpartum hemorrhage or infection in the period following delivery **(WHO, 2024; Leta et al., 2022)**.

Using of various interventions can reduce the rate of maternal and neonatal deaths as a result of obstetrical emergencies during pregnancy, labour, and postpartum period, such as improvement of health care services through the conduction of reproductive and child health programs. These programs should be offered to women and medical professionals especially nurses, in order to increase their self-confidence, and promote early recognition of any complications associated with pregnancy, labour, and the postpartum period **(Mahada et al., 2023; Leta et al., 2022)**.

Despite advances in maternal healthcare, the management of obstetrical emergencies remains a pressing issue, particularly in low- and middle-income countries, where the healthcare infrastructure may be insufficient

to handle complex cases. Even in high-resource settings, obstetrical emergencies remain a leading cause of maternal morbidity, highlighting the need for continuous improvement in care practices **(Flaubert et al., 2021; WHO, 2020)**.

In many healthcare facilities, nurses are at the forefront of obstetrical emergencies management. They play a critical role in providing essential care, including administering medications, performing resuscitative measures, monitoring vital signs, and assisting with interventions such as cesarean sections or emergency deliveries. Nurses are often the first to identify complications, and their swift decision-making and clinical competence are crucial in determining the outcome of obstetric emergencies. Given the high-stakes nature of these situations, improving nursing practices in obstetrical emergencies is essential for reducing maternal and neonatal mortality **(Sirisomboon et al., 2024)**.

Despite their importance, nurses face numerous barriers in providing high-quality care during obstetrical emergencies. These barriers include insufficient resources, such as a lack of essential medical equipment and medications, inadequate staffing levels, and

high workloads. In many settings, there may also be gaps in the training and education of nursing staff, leading to variability in practice and inconsistent adherence to clinical protocols. Furthermore, nurses may experience stress and burnout due to the intense nature of obstetrical emergencies, which can affect their ability to perform effectively under pressure (**Beck & Watson, 2020**).

Advanced nursing management guidelines are a response to these challenges, offering a structured and evidence-based approach to managing obstetrical emergencies. These guidelines are designed to standardize nursing practices, ensuring that all nurses are equipped with the knowledge and tools necessary to handle emergency situations effectively. By incorporating the latest research and clinical best practices, these guidelines aim to reduce errors, promote consistency, and enhance patient outcomes in emergency obstetrical care (**National Training Standards for Obstetric Emergencies, Fetal Monitoring & Neonatal Resuscitation, 2024 & Medicines sans Frontiers (MSF) Guidelines, 2025**).

The development of comprehensive obstetrical emergency management guidelines

involves collaboration among expert panels, including obstetricians, midwives, and nurse educators. These guidelines provide structured protocols for various scenarios, such as managing severe bleeding, administering medications for hypertension during pregnancy, and resuscitating mothers and neonates in distress. They also emphasize ongoing evaluation and follow-up care to ensure comprehensive support throughout the emergency process (**Musie et al., 2025**).

One of the primary goals of these guidelines is to improve nursing competence by ensuring that nurses are well-versed in the latest evidence-based practices. Studies have shown that nurses who are trained in standardized protocols for obstetrical emergencies demonstrate improved knowledge, greater confidence in their clinical decision-making, and better overall performance in emergency situations. By providing clear instructions and structured guidance, these guidelines also help reduce the likelihood of errors, ensuring that all nurses, regardless of experience level, approach obstetrical emergencies with a consistent and evidence-based approach (**Lippke et al., 2021; Sirisomboon et al., 2024**).

Furthermore, advanced nursing management

guidelines promote teamwork and collaboration among healthcare providers. Obstetrical emergencies often involve multiple team members, including obstetricians, anesthesiologists, midwives, and neonatal specialists. By establishing clear protocols and roles for each team member, these guidelines help improve communication and coordination during emergencies, leading to more efficient and effective care delivery **(Leach & Newman, 2019; Meeker, 2024)**.

Emergency Obstetrics Care (EmoC) is a strategy designed to reduce maternal and neonatal mortality through targeted interventions in pregnancy, childbirth, and the postpartum period. The core elements of EmoC include the availability of EmoC 24 hours/ day, seven days/weekly, skilled health professionals to perform effective interventions, training of all staff in clinical and skills that are needed for EmoC, management protocols for each complication, suitable infrastructures for emergency to provide dedicated labor. Delivery rooms should be kept clean, in addition to; the availability of measures of infection prevention, availability of laboratory services and a well-functioning system to collect and transfuse blood. EmoC is divided into basic and comprehensive EmoC. **(Mogilevkina et**

**al., 2022; Germossa et al., 2022)**.

While the potential benefits of advanced nursing management guidelines are clear, the implementation of these guidelines is not without challenges. One of the main barriers to successful implementation is the lack of resources. In many healthcare settings, particularly in low-resource environments, nurses may not have access to the necessary medical equipment, medications, or diagnostic tools to follow the guidelines effectively. Without these resources, even the well-designed guidelines may not be fully effective in improving care practices **(McArthur et al., 2021)**.

Another challenge is resistance to change. Nurses may be accustomed to their established practices and may be hesitant to adopt new guidelines, particularly if they feel that the guidelines are too complex or impractical in their specific work environment. Additionally, some nurses may feel that the guidelines are too rigid and do not account for the nuances of individual cases. Engaging nurses in the development and implementation process, providing adequate support, and fostering a culture of continuous improvement are essential for overcoming resistance and ensuring successful adoption of the guidelines

**(Zimbardo & Vance, 2020).**

**Significance of the study:**

Globally, complications arising from pregnancy and childbirth tragically claim the lives of roughly 800 women daily, equating to a maternal death occurring approximately every two minutes. According to WHO data from 2020, 287,000 women worldwide died during or following pregnancy, with a disproportionate 95% of these fatalities concentrated in low and lower-middle-income nations. In that same year, the maternal mortality ratio in low-income countries stood at 430 deaths per 100,000 live births, starkly contrasting with the 13 deaths per 100,000 live births observed in high-income countries **(World Health Organization, 2024)**. In Egypt the maternal mortality ratio was 17 deaths per 100,000 live births **(The World Bank, 2023)**.

To enhance nurses' proficiency in providing emergency obstetric care for high-risk women, nursing management guidelines for prevalent obstetric emergencies will be implemented. These guidelines aim to update and improve nurses' skills and serve as a readily available reference. Furthermore, their application is intended to foster essential

values and attitudes, boost confidence, and refine clinical skills, decision-making, clinical judgment, and critical thinking.

**Aim of the study**

**This study was aimed to** evaluate the effect of advanced nursing management guidelines on nurses' practices regarding emergency obstetrical care.

The aim of the study was achieved through the following objectives:

1. Assess nurses' practices regarding obstetrical emergencies.
2. Evaluate the outcome of nursing management guidelines on nurses' practice.

**Research Hypothesis:**

The implementation of advanced nursing management guidelines will significantly promote nurses' practice in responding to emergency obstetrical situations.

**2. Subjects and methods:**

**Research design:**

Quasi experimental (pre and posttest) (the use of methods and procedures to make observations in a study that is structured similar to an experiment, but the conditions and experiences of participants lack some

control because the study lacks random assignment, includes a preexisting factor, or does not include a comparison/control group) research design was followed to fulfil the aim of the study.

**Study setting:**

The study was conducted at Obstetrical and Gynecological Department in Suez Canal University Hospitals which provides health care services during antenatal, labor and postnatal periods for high risk mothers. The Obstetric and Gynecologic Unit services consists of reception room; room for care of woman during first stage of labor, vaginal delivery room, room for high risk pregnancy, room for postpartum care, cesarean section room. These places provide services to women who are resident in Ismailia Governorate, care is provided by obstetrician as well as nursing specialists, and diploma nurses who are responsible for giving nursing care.

**Subjects:**

A convenience sample of all available nurses (50) who are working at Obstetrics emergency department in one of the Ismailia hospitals during the study.

**Tools:**

The current research utilized two tools for

the purpose of data collection related to the study variables:

**Tool (I): Self-administered questionnaire:**

It assessed nurses' personal data of the studied nurses as (age, educational level, career, previous attendance of training program, years of experience, factors that negatively affecting the nurse's performance)

**Tool (II): Observational checklist for nurses' practices:**

It was adapted from the (Royal College of Obstetricians and Gynecologists guidelines, 2016) guidelines present recognized methods and techniques for clinical practice, based on published evidence for management of obstetric emergency situations to assess nurses' practice during providing nursing care for women with obstetrical emergency used for (pretest, immediate posttest, follow up after 1 month). Which included 8 procedures:

- ◆ Performance of competent care during obstetrical emergencies → (14 items)
- ◆ Woman resuscitation → (24 items)
- ◆ Nursing management for bleeding → (18 items).
- ◆ Nursing management of preeclampsia and eclampsia → (23 items).
- ◆ Oxygen administration → (15 items).
- ◆ Blood transfusion → (17 items).

- ◆ Urinary catheterization → (21 items).
- ◆ Preparation of the emergency tray → (15 items).

**Scoring system:**

For each step in the procedure, a binary score was assigned: 1 for completion and 0 for omission. The overall score was determined by summing the scores of all individual steps, resulting in a range from 0 to 147, and then categorized following the method developed by Abdelhakm & Said, (2017) into:

- Competent practice  $\geq 80\%$  (118 - 147)
- Incompetent practice  $< 80\%$  (0 -117).

**Content validity and reliability:**

Tools of data collection were reviewed by a panel of 3 experts for clarity, relevance, applicability, and ease for implementation and according to their judgement modification was applied. Reliability was evaluated using Cronbach's alpha, which showed an internal consistency of 0.84.

**Administration design**

Prior to commencing the research, formal authorization was secured. Permission was initially obtained from the Dean of the Faculty of Nursing at Suez Canal University. This permission was then presented to the director of the chosen hospital and

subsequently forwarded to the head of the obstetrics emergency department. The purpose of this step was to gain their approval to proceed with the study, which was granted after a clear explanation of its title and objectives.

**Operational design:**

The operational design included both the pilot study and the data collection phase.

**Pilot study**

A pilot study involving 10% of the nurse sample (n=5) was undertaken to evaluate the clarity, feasibility, and applicability of the data collection instrument and to estimate data collection time.

**Field of work:**

The research period extended from the beginning of October 2023 to the end of July 2024 (a duration of ten months). The hospital work days divided into: **Hot days** (The hospital received emergency cases) Saturday, Monday, and Wednesday, **Cold days** (The hospital not received emergency cases) Sunday, Tuesday, and Thursday. During this time, the researcher was present at the aforementioned location two days per week (Sunday& Monday or Tuesday & Wednesday), with shifts scheduled between 9 AM and 2 PM, afternoon between 2 PM and 8

PM, or night shift between 9 PM and 11 PM, contingent on emergency cases and the researcher's scheduling constraints.

◆ **Preparatory Phase:**

The researcher took the official permission to proceed with the proposed study, prepare tools, booklets then initiate data collection process.

**Booklet preparation: (Emergency obstetric guidelines):**

The researcher reviewed related literature using the following references (**Ministry of health, 2022; Wikipedia, 2022; Web of medicine, 2022; Myers & Hale, 2019; Lynn, 2023**). The researcher adapted nursing guidelines in a clear, simple Arabic language supported by figures and explained the skills through PowerPoint to the nurses. The **Booklet** consisted of **Practical part that include**; Preparation of the emergency tray, competent care during obstetrical emergencies, blood transfusion procedure, women resuscitation, oxygen administration, management of preeclampsia, eclampsia, urinary catheterization, and management of bleeding.

◆ **Implementation phase (pretest):**

Personal information from the nurses in the study was obtained via a self-report questionnaire (**Tool no. I**). Participants

needed approximately 5 to 10 minutes to complete it.

**Practical Assessment**

The researcher observed nurses while they performed procedures. The observational checklists were used (**Tool no. II**) to assess nurses' practice regarding obstetrical emergencies. The researcher mark on checklist related actual procedure if step done competent, or not competent. It took 45 to 60 minutes.

**Implementation of the educational session:**

The nurses were divided into five distinct groups based on their work environment and their physical and mental preparedness. The researcher gave educational session in the nursing room 2 days / week (Sunday& Monday or Tuesday & Wednesday).

**The sessions:**

**The first session:** This was a practical part in which a demonstration, one to one instruction and videos were be used as practical sessions were conducted in the hospital. It includes procedures as preparation of emergency tray, performance of the competent care during obstetrical emergencies, blood transfusion procedure, and women resuscitation. The duration of the session was 60 - 120 minutes with break after one hour.

**The second session:** The researcher took feedback about the previous session and introduced the objectives of the new session which included the procedures of management of bleeding, management of preeclampsia and eclampsia, oxygen administration and urinary catheterization. The duration of the session took about 60 - 120 minutes with break after one hour.

◆ **Evaluation phase (posttest):**

Following the implementation of the nursing management guidelines, their impact was assessed (posttest) using the same instrument (Tool II) that was administered prior to the sessions (pretest).

Immediate evaluation was conducted at the same room after implementation of guidelines to evaluate nurses' practice gained.

Follow up was scheduled one month after implementation of guidelines to evaluate nurses' practice regarding obstetrical emergencies.

**Ethical consideration**

This research adhered to established ethical guidelines for clinical studies. Prior to commencement, ethical approval was secured from the Research Ethics Committee at the Faculty of Nursing, Suez Canal University coded (133/12-2021). Furthermore, participation was completely voluntary,

ensuring each individual had the autonomy to decide whether or not to be involved.

The ethical issues considerations include; explaining the purpose and nature of the study. Both anonymity and confidentiality were assured through coding the data, and this data was not reused in another research without taking permission of the participants. Each participant had the right to withdraw from the study at any time.

At the beginning of the interview the researcher greeted the nurses, introduced herself, explained the purpose and the aim of the study and took written consent to participate in the study.

**Statistical analysis:**

The data were checked for accuracy before computerized entry. SPSS (version 20.0) was employed for data tabulation and subsequent analysis. Descriptive statistics (frequencies, percentages) were calculated, and paired t-tests, chi-square tests, and Pearson correlations were used for inferential analysis. A significance threshold of  $p \leq 0.05$  and a high significance threshold of  $p < 0.001$  were applied.

**3. Results**

**Table (1)** illustrate that less than third quarter of nurses (68%) are aged 20 - <30

years, indicating a young workforce. Only 8% are aged 40 - <50 years, which suggests fewer experienced nurses in the team. Regarding educational level; almost half (48%) hold a technical institution degree, while 24% had a bachelor's degree. More than third quarter of them (82%) work as bedside nurses, while only 18% were supervisors. Moreover; more than half (58.0%) of them had less than 5 years of experience.

**Table (2)** demonstrates that more than two third (64%) of studied nurses not attend any course related to obstetrical emergencies and more than one tenth (16%) had attend basic live support and obstetrical emergencies courses.

According to **Figure (1)** the highest frequent reported factors that affecting the nurse's performance were unavailability of equipment and excessive workload (82%, 80%) respectively.

**Table (3)** demonstrates that the nurse's practices were improved with a highly statistically significant difference before, immediately after guidelines implementation ( $P \leq 0.000$ ).

**Cont; Table (3)** states that the nurse's practices were improved with a highly

statistically significant difference before, immediately after guidelines implementation ( $P \leq 0.000$ ).

**Figure 2** demonstrates that the baseline assessment showed that more than one-tenth of the nurses in the study had adequate proficiency in managing obstetrical emergencies before the guidelines were introduced. While all of them (100%) became having a competent practice immediately after and continue to be 100% at follow up phase ( $p= 0.000$ ).

#### **4. Discussion:**

This research was designed to examine the effect of implementing advanced nursing management guidelines on the delivery of emergency obstetrical care by nurses. The study involved an initial assessment of their practice in these situations, followed by an evaluation of their practical skills after the guidelines were introduced.

Regarding factors that negatively affecting the nurse's performance, the present study results states that the major factors were unavailability of equipment and excessive workload.

This result align with that of **Sari et al., (2020)** who implemented their study in

Indonesia to assess factors that affecting nurse performance in medical ward, and reported that the first and second factors were excessive workload and lack of facilities.

On other hand the finding of this study disagrees with **Lee & Kim (2020)** who studied the impact of nursing stress factors affecting turnover intention among hospital nurses. They reported that stress from patients and their families ( $\beta = .27, p < .001$ ) had the greatest impact. From the researcher's point of view this result might be due to decrease the number of nurses and increase the number of patients.

The present study finding indicate that there was a highly statistically significant improvement between the total practices regarding obstetrical emergencies before, immediately after guidelines implementation. From the researcher's point of view, this might be explained by deficiency of knowledge reflected in practice, this can be elucidated by that the educational program provided the nurses an opportunity for retraining and improving their competencies in performance at emergent clinical situation through demonstration sessions.

The present study's result in congruence with the results of **El Sharkawy et al.,**

**(2020)**. They showed that the majority of the participants had a satisfactory level of practices concerning obstetrical emergencies post-intervention versus pre-intervention.

In contrast to the positive impacts often reported, **Babelgaith et al. (2021)** found that nurses in their Yemeni study evaluating diabetes continuing education actually showed a decrease in diabetes care practice scores, although this change was not statistically significant. The current researcher posits that this unexpected finding might stem from a lack of sustained interaction between the researchers and the nurses involved.

This study's findings indicated that prior to the introduction of guidelines, over 75% of the nurses assessed demonstrated inadequate practical skills in managing obstetric emergencies within their unit. This deficiency could be attributed to insufficient experience in handling such critical situations and a lack of relevant training opportunities.

From the researcher's point of view practices were limited in pre-training assessment because in pre-program assessment the most of nurses had deficit basic knowledge about nursing care for women with obstetric emergencies. This may lead to the inability of

the nurses to provide competent nursing care.

The observed inadequacy in practice highlights the necessity of ongoing professional development, adherence to established protocols, and routine clinical education for nurses to enhance their knowledge and skills. Consequently, it is crucial for nurses, particularly those in the emergency department, to receive thorough training and education in obstetrical emergencies due to their critical role in informing physicians and initiating the preliminary evaluation and care of these patients.

Also, this study reported that the total practical level regarding obstetric emergencies increased immediately after giving training program due to immediate effect of training on real patient supported by colored booklet and real materials as mask of oxygen, flow meter, humidifier, oral air way, .... Etc.

Study results agree with **Osman et al., (2024)** who studied the effect of educational program for nurses' performance and clinical outcome regarding occurrence of Venous Thromboembolism. They reported that the mean score of nurses' total practice preprogram was low and increased

immediately post program and one month after program with a statistical significance progress in the total practice of the studied nurse just after program, and after one month of implementing the program than preprogram.

Our findings align with the research of **El Sharkawy et al. (2020)**, who explored the impact of a simulation-based educational program on maternity nurses' performance in managing obstetrical emergencies during pregnancy. Their study demonstrated a significant improvement in nurses' emergency tray preparation skills immediately after the intervention and at a follow-up assessment, when compared to their initial performance.

While on contrary **EL sebaey et al., (2021)** reported that less than two third of staff nurses had competent level of total practices regarding preeclampsia. Also, current study disagreement with **Farzaei et al., (2023)** who perform study to evaluate nurses' knowledge, attitudes, and practice (KAP) toward nutritional management of diabetes reported that a moderate level of practice on the management of diabetes.

## **5. Conclusion:**

Based on the findings of the present study, it was concluded that the implementing

emergency obstetric guidelines had a positive effect on the practice of nurses who worked in Emergency Obstetric and Gynecologic Department.

## **6. Recommendation:**

**The study recommended that** based upon findings of the current study, it is recommended that:

- ◆ Apply a training program for new nurses in the Obstetrics and Gynecology Department to deal with critical cases

- ◆ Update periodic training courses for nursing staff to enhance their practical skills regarding obstetrical emergencies.

## **Acknowledgement:**

The authors gratefully acknowledge the contribution of the nurses in the study.

**Table 1:** Frequency Distribution of Personal Data of Respondents (no. = 50)

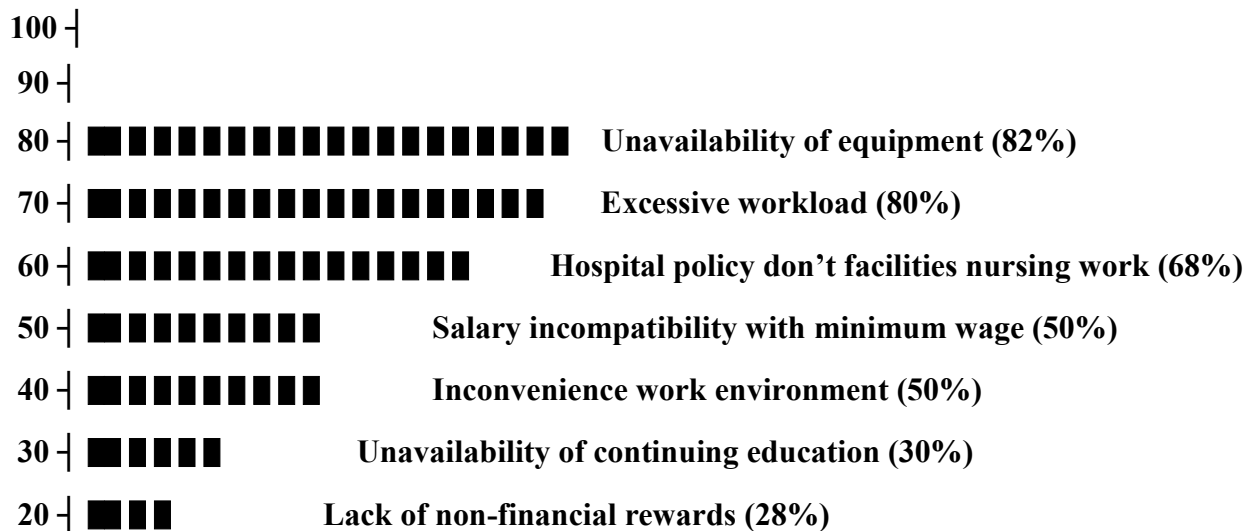
Variable	No.	%
Age		
20 - < 30 Yrs.	34	68.0
30 - < 40 Yrs.	12	24.0
40 - < 50 Yrs.	4	8.0
Mean±SD	29±6.32	
Educational level		
Secondary school	14	28.0
Technical institution	24	48.0
Bachelor degree	12	24.0
Career		
Bedside nurse	41	82.0
Supervisor nurse	9	18.0
Years of experience		
< 5 years	29	58.0
5 -10 years	11	22.0
>10 years	10	20.0
Mean±SD	6.1±4.88	

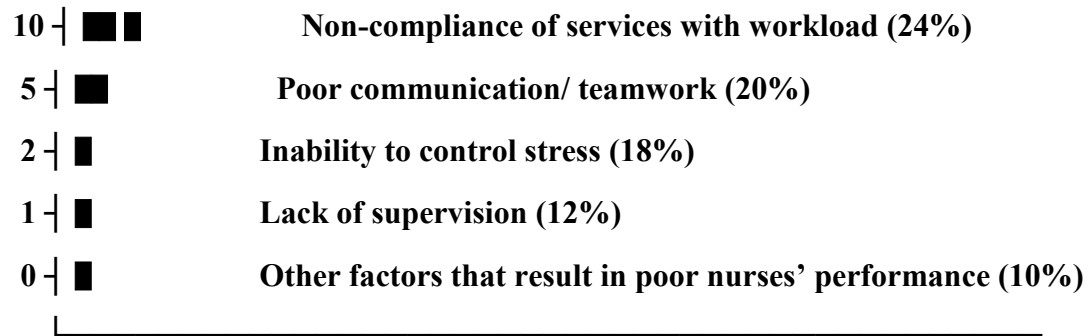
**Table 2:** Frequency distribution of training courses data of respondents (no. = 50)

Variable	No.	%
<b>How many courses</b>		
None	32	64.0
One course	10	20.0
Two courses	4	8.0
> 3 courses	4	8.0
<b>Name of course</b>		
Obstetrical emergencies& BLS	8	16.0
Neonatal CPR & First Aids	1	2.0
CPR	1	2.0
Critical cases	4	8.0
Neonates care	1	2.0
<b>Since when attend</b>		
None	32	64.0
One year	7	14.0
Two years	3	6.0
Three years	1	2.0
> 3 years	7	14.0

**Figure 1:** Frequency distribution of factors that negatively affecting the nurse's performance as reported by Nurses (no. = 50)

Percentage (%)





**Table 3:** Percentage distribution of the studied nurses based on their obstetrical emergency practice levels before, immediately after, and at the follow-up of guideline implementation (no. = 50)

Variable	Pretest %	Immediately after %	Follow up %	X <sup>2</sup> / P – Value
Performance of competent care during obstetrical emergencies				
Incompetent practice	48.0	-	-	A:31.579/.000** B: 31.579/.000** C: ---/---
Competent practice	52.0	100.0	100.0	
None pregnant woman resuscitation				
Incompetent practice	90.0	6.0	2.0	A:70.673/.000** B: 77.939/.000** C: 1.042/.307
Competent practice	10.0	94.0	98.0	
Pregnant woman resuscitation				
Incompetent practice	78.0	-	-	A:63.934/.000** B: 63.934/.000** C: ---/---
Competent practice	22.0	100.0	100.0	
Total Woman resuscitation				
Incompetent practice	68.0	-	-	A:51.515/.000** B: 51.515/.000** C: ---/---
Competent practice	32.0	100.0	100.0	
Nursing management for bleeding				
Incompetent practice	64.0	-	-	A:47.059/.000** B: 47.059/.000** C: ---/---
Competent practice	36.0	100.0	100.0	

\*Statistical significant at P < 0.05 \*\*High statistical significant at P < 0.001

A: X<sup>2</sup>/ P - Value Pre / Immediately after, B: X<sup>2</sup> P - Value Pre / Follow up,

C: X<sup>2</sup> P - Value Immediately after / Follow up

**Cont. Table 3:** Percentage distribution of the studied nurses' according to their practice levels about obstetrical emergencies before, immediately after, and at follow up phase of guidelines implementation (no. = 50)

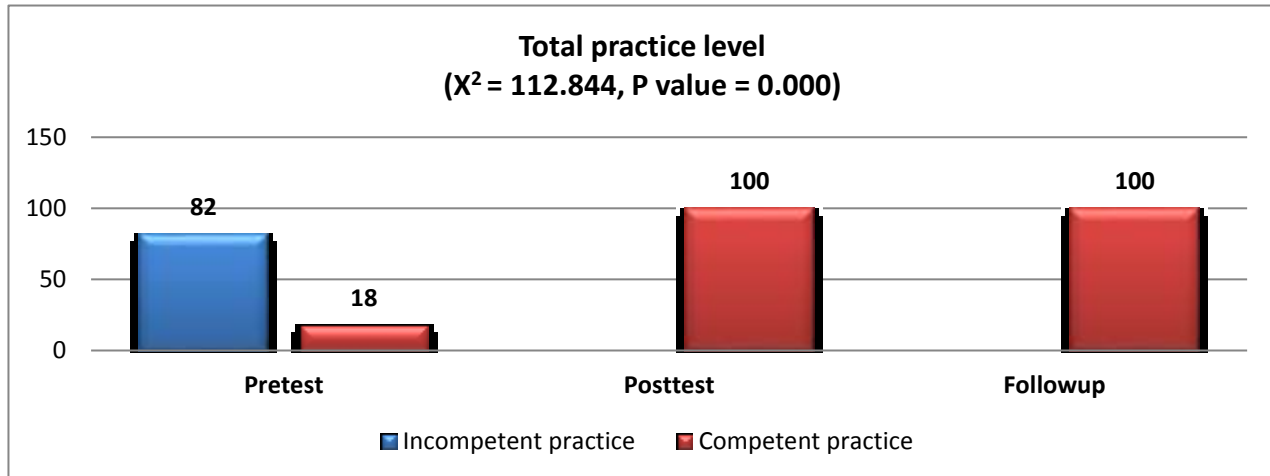
Variable	Pretest %	Immediately after %	Follow up %	X <sup>2</sup> / P – Value
Nursing management of preeclampsia and eclampsia				
Incompetent practice	46.0	-	-	A:29.870/.000** B: 29.870/.000** C: ---/---
Competent practice	54.0	100.0	100.0	
Oxygen administration				
Incompetent practice	2.0	-	-	A:1.010/.000** B: 1.010/.315 C: ---/---
Competent practice	98.0	100.0	100.0	
Blood transfusion				
Incompetent practice	22.0	-	-	A:12.360/.000** B: 12.360/.000** C: ---/---
Competent practice	78.0	100.0	100.0	
Urinary catheterization				
Incompetent practice	52.0	-	-	A:35.135/.000** B: 35.135/.000** C: ---/---
Competent practice	48.0	100.0	100.0	
Preparation of the emergency tray				
Incompetent practice	24.0	-	-	A:13.636/.000** B: 13.636.000** C: ---/---
Competent practice	76.0	100.0	100.0	

\*Statistical significant at P < 0.05 \*\*High statistical significant at P <0.001

A: X2/ P - Value Pre / Immediately after,B: X2/ P - Value Pre / Follow up,

C: X2/ P - Value Immediately after / Follow up

**Figure 2:** Percentage distribution of the studied nurses based on their overall level of practice regarding obstetrical emergencies at three different time points: before guideline implementation, immediately following implementation, and during the follow-up phase.



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