

Clinical Audit for Immediate Nursing Intervention During Obstetrical Emergency

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Abstract

Background: Obstetrical emergency result in significant morbidity and mortality in mothers and fetus worldwide.

Aim of the study was to Apply clinical audit for immediate nursing intervention during obstetrical emergency.

Subjects and methods: Descriptive cross sectional research design was applied. A convenient sample of 53 nurses who offering emergency obstetric care. The study conducted at emergency unit, ICU and high risk unit at Women's Health Hospital, Assiut University, for data collection, two tools were used: structured self-reported questionnaire for nurses and Clinical Audit chart (observational checklist) **Results:** More than three quarters of studied nurses had satisfactory practices regarding obstetrical hemorrhage, preeclampsia and infection control measures as collect blood sample and urinary catheterization. While around 60 % of nurses had satisfactory practices regarding emergency cesarean section and eclampsia. In addition the time consuming for immediate nursing intervention related to obstetrical hemorrhage, preeclampsia, eclampsia and emergency cesarean section was 5-10 min.

Conclusion: Nearly one-third of studied nurses had unsatisfactory immediate nursing intervention during obstetrical emergency. **Recommendations:** Developing nursing protocols and guidelines regarding emergency obstetric care. Developing periodical awareness programs, courses, seminars and workshops for nurses regarding emergency obstetric care. Further research studies are needed to identify the gap in practices and fulfilling it.

Keywords: *Clinical Audit, Nursing Intervention & Obstetric Emergency.*

Introduction

Obstetric emergencies are existence of sudden obstetrical event which requires immediate action. They are life threatening medical conditions that occur in pregnancy, during or after labor and delivery. (Franco et al., 2021). So Emergency obstetric care (EmOC) Is a high-impact priority intervention strongly recommended for improving maternal health outcomes. (Limam et al., 2021).

According to WHO obstetrical emergencies classified as, hemorrhagic cases as intrapartum hemorrhage and postpartum hemorrhage , toxemic cases as pre-eclampsia and eclampsia and infected cases as premature rupture of membrans and puerperal sepsis (WHO, 2016).

Preeclampsia affects 3–5% of pregnant women worldwide. (Zhang et al., 2020). Eclampsia is an obstetric emergency affecting approximately 5/10,000 pregnancies, with a maternal mortality rate of 1.8% and a fetal mortality rate of up to 30%. (Townsend & Khalil, 2020)

Maternal mortality remains an important public health concern. The low quality of obstetric care is partly to blame for the high maternal death rate. (Geleto et al., 2020). Quality EmOC involves a state of readiness that will enable facility staff to respond appropriately to obstetric emergencies in a way that

fulfills the needs and rights of clients. (Frise & Collins, 2020)

Clinical audit is a review of clinical performance against evidence-based standards which attempts to identify discrepancies between actual practice and standard in order to identify the changes needed to improve the quality of care. (Mosaei et al., 2020).

Clinical audits play a fundamental role in improving the quality of clinical practice and patient safety. It ensures that what should be done is being done. If it is not being done it provides a framework to enable changes to be made to improve the process. (Alyacoubi et al., 2021).

Although, pregnancy and childbirth is a normal process, complications may occur any time during antenatal or post natal period. (Amin et al., 2021). The ability of the nurse to deal with competence the obstetric emergencies depends on the prompt action taken by her and the speed of this action while calling for medical assistance will often help to determine the outcome for the mother and the baby (Wyatt et al., 2020).

Nearly 74 percent of maternal deaths could be prevented if all women had access to the interventions for preventing or treating the complication in pregnancy and childbirth, especially emergency obstetric care in many countries where

maternal mortality is high, there is a need to increase provision of appropriate quality services (Zahran et al., 2020).

Significance of the study:

Maternal mortality is unacceptably high. Estimates for 2017 show that some 810 women die every day from pregnancy- or childbirth-related complications around the world. In 2017, 295,000 women died during and following pregnancy and childbirth. (WHO, 2019). Between 2016 and 2030, as part of the Sustainable Development Goals, the target is to reduce the global maternal mortality ratio to less than 70 per 100,000 live births. (WHO, 2019 & Rambu & Eka, 2021).

Each year, an estimated 303,000 women die during pregnancy, labor and the postpartum period. The vast majority 99% of maternal deaths occur in low and middle income countries. (Mgawadere et al., 2018). In the African region, 5.6% of pregnancies are estimated to be complicated by preeclampsia and 2.9% by eclampsia, with almost one in ten maternal deaths being associated with hypertensive disorders. (Stitterich et al., 2021). The incidence of PPH increased from 4.3 in 10,000 births in 1993 to 21.2 in 10,000 births in 2018, with more pronounced increases in later years (CDC, 2018 & Littlehale, 2020).

In Egypt the maternal mortality ratio was 33 deaths/100,000 live births. Most maternal deaths in developing countries are caused by preventable conditions. Maternal deaths accounted for 230/100,000 live births in 2016 compared to 16/100,000 in developed countries (UNICEF, 2017).

Aim of the study:

Apply clinical audit for immediate nursing intervention during obstetrical emergency.

Research question:

Did nurses done immediate nursing intervention during obstetrical emergency situations?

Subjects and methods of this study:

Subjects and methods of this study divided into four designs; technical, operational, administrative and statistical design.

Technical design:

Which involved research design, setting, sample and tool of the study.

Study design: Descriptive cross sectional design was applied in this study.

Setting of the study: conducted at emergency unit, ICU and high risk unit at Women's Health Hospital, Assiut University.

Sample:

A convenient sample was used in this study included all nurses (53) who offering EmOC services during the study.

Inclusion criteria:

All nurses who offering emergency obstetric care during the study and accepted to participate.

Tool of the study:

Two tools were utilized to collect data of the present study:

Tool I :An structured Self-Reported Questionnaire for nurses including the following: (personal data).

Socio demographic data as name, age, unit, educational levels, job title , marital state, years of experience and attending clinical training program about emergency obstetric care and infection control .

Tool II : Clinical Audit Chart (Observational Check List) including (5) procedures (128 items) covered the following areas :

- 1. Immediate Nursing Intervention Regarding Obstetrical Hemorrhage included (11 items) as** notify obstetrician, ensure IV access, insert indwelling urinary catheter, frequent fundal massage, prepare for transfusion therapy if needed, time consumed, etc....
- 2. Immediate Nursing Intervention Regarding Hypertensive Emergency included (12 items) as** assess mother for edema, visual disturbance , headache , epigastric pain or vomiting, notify obstetrician, protect with side rails up, ensure IV access, draw preeclampsia labs, administer antihypertensive therapy as ordered, time consumed, etc....
- 3. Eclampsia Checklist included (25 items): During convulsion (9 items) as** notify obstetrician , protect with side rails up, protect patent airway, protect the head with a pad to prevent injury, observe and record convulsion activity, etc.... **After Convulsion Or Seizure (16 items) as** keep side rails up, use suction as needed, draw labs and ABG post-seizure, start IV fluids, continuous fetal monitoring, administer magnesium sulfate as order, monitor intake and output, time consumed, etc....
- 4. Immediate Nursing Intervention During Emergency Cesarean Section included (13 items) as** emergent event requiring cesarean section is confirmed, notify obstetrician, ensure IV access, comfortable position, decrease uterine activity per protocol, call for NICU team, move patient to OR, time consumed, etc....
- 5. Immediate Nursing Intervention Regarding Infection Control Measures included (67 items) as** hand washing (12 items), an alcohol-based hand rub (3 items), wearing personal protective equipment (PPE) (10 items), IV cannula (13

items), collecting blood samples (15 items) & urinary catheterization (14 items).

Observational Check List Scoring system:

Each item in the Observational Check List scored as (1) for done Immediate intervention & (0) for not done Immediate intervention. **The score of nurses' Immediate intervention** will be classified into: satisfactory Immediate intervention ($\geq 60\%$), unsatisfactory Immediate intervention ($< 60\%$).

Total score of nurses' Immediate intervention computed by summing all of the procedures' total scores (**128 items**): satisfactory $\geq 60\%$ equal (**77 items**).

Time consuming for immediate nursing intervention for each obstetrical emergency situations calculated by divided into three sections ≤ 5 , $> 5-10$ and $> 10-15$ minutes.

validity and reliability of the tool :

Face validity was done by panel of three experts from Gynecology and Obstetrical specialist who reviewed the study tools for clarity, relevance, comprehensiveness, applicability and easiness. And no changes were recommended.

Reliability was carried out using the Cronbach alpha test to observational checklist. It was found to be ($r=0.72$).

Administrative design:

This study was carried out under the approval of faculty of Nursing's Ethical committee, Assiut University in November, 2020. Also an official permission was granted from the director of Woman Health Hospital, verbal consent was taken from each nurse involved in the study, confidentiality was assured. The nurse was free to withdraw from the study at any time.

Operational design:

It was displayed in two phases pilot study and field work.

Pilot study

The pilot study was carried out in March 2021 to test the feasibility and applicability of the study tools. It was conducted on 10% of the sample (5 nurses) in the first phase. The data obtained from the pilot study were analyzed while no necessary changes were done. As a result, the pilot study's sample was not omitted from the study.

Filed work:

The data gathering started from the first of April, 2021 to the end of September, 2021 (6 months). This was achieved in two phases, preparatory phase and implementation phase.

Ethical Consideration:

Research proposal was approved from the ethical committee in the faculty of nursing on (November,

2020). verbal consent was obtained from nurses who were participated in the study, after explaining the nature and purpose of the study. There was no risk for study subject during application of the research. The study was followed common ethical principles in clinical research. Confidentiality and anonymity were assured. Participant nurses had the right to refuse to participate or withdraw from the study without any rational any time. Participant nurses' privacy was considered during collection of data.

First phase : (The preparatory phase)

The study was conducted in (April, 2021) and data were collected during three days weekly from the study setting started from 9.00 am to 11.00 pm (morning, afternoon and night shifts) until the sample size reached the predetermined number. The researcher interviewed nurses through face-to-face communication according to their attendance in hospital registration book. The researcher introduced herself and got verbal consent from nurses who participated in the study after explaining purpose and nature of the study and asked them to fill the questionnaire according to the 1ST tool (Structured self-reported questionnaire for nurses). The interview was taken about 5-10 minutes.

Second phase: (Implementation phase)

Audit phase: As regards clinical audit chart (observational checklist), the researcher observed the nursing staff during provided immediate nursing intervention to women who had emergency cesarean section, obstetrical hemorrhage, hypertensive emergency, eclampsia and time consumed for each emergency condition. also the researcher observed the nurses while applying infection control measures which include hand washing, an alcohol-based hand rub, wearing and removal of personal protective equipment (PPE) , IV cannula, collecting blood samples and during the insertion of urinary catheterization. Then the researcher recorded which care was done and which care was not done. In addition the researcher did not observe more than two nurses concurrently in the same unit. At the end of audit phase, the researcher tabulated the data. Data collected through six months that ended by September, 2021.

Statistical design

Data analyzed by using SPSS program version 25. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables and using Chi-square test to determine significance between numerical variable. N.S $P>0.05$ (No significance), $P<0.05$ (Significance).

Results:

Table (1): Distribution of the studied nurses according to their Socio-demographic Characteristics. (n= 53).

Socio-demographic Characteristics	No.	%
Age (years):		
• 30	32	60.4
• >30	21	39.6
M ±SD	29.40 ± 4.276	
Unit:		
• High risk unit	18	34.0
• Intensive care unit	26	49.0
• Emergency unit	9	17.0
Experience (years):		
• < 5	20	37.7
• 5 < 10	14	26.4
• 10-15	19	35.9
Educational level:		
• Secondary school diploma	20	37.7
• Technical institution	33	62.3
Marital status:		
• Single	17	32.1
• Married	36	67.9
Attending clinical training program: #		
• Emergency obstetric care	2	3.8
• Infection control	53	100.0

More than answer

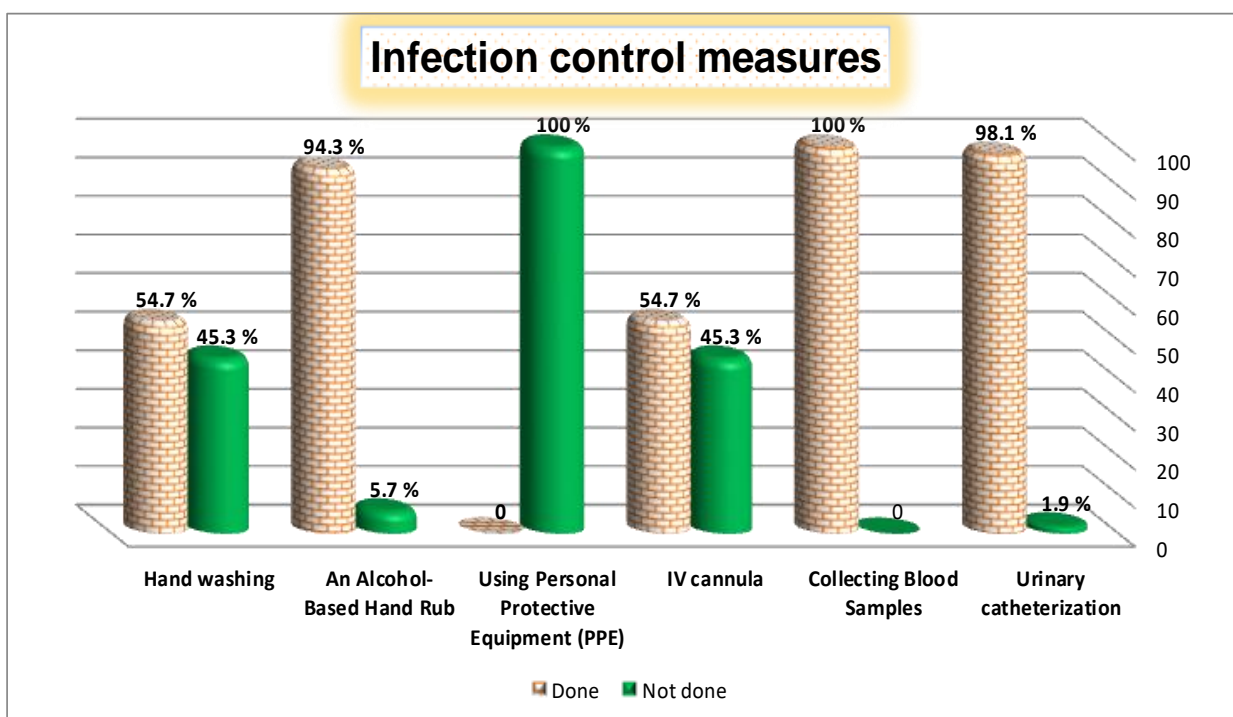


Figure (1): Frequency distribution of the studied nurses according to applying infection control measures during obstetrical emergency. (n= 53).

Table (2): Frequency distribution of the studied nurses according to time consuming for immediate nursing intervention during obstetrical emergency. (n= 53).

Immediate Nursing Intervention	Time consuming					
	≤ 5 min		> 5-10 min		> 10-15 min	
	No.	%	No.	%	No	%
Obstetric hemorrhage	6	11.3	39	73.6	8	15.1
Pre-eclampsia	11	20.8	36	67.9	6	11.3
Eclampsia	8	15.1	37	69.8	8	15.1
Emergency cesarean section	19	35.9	29	54.7	5	9.4

Table (3): Relation between Time consuming of obstetrical hemorrhage and socio demographic Characteristics

Socio demographic data	Time consuming of obstetrical hemorrhage						Total	P –value
	≤ 5 min		> 5-10 min		> 10-15 min			
	No.	%	No.	%	No.	%		
Age (years):								
• ≤ 30	4	12.5%	26	81.3%	2	6.3%	32	.055*
• > 30	2	9.5%	13	61.9%	6	28.6%	21	
Unit:								
• High risk unit	0	0.0%	16	88.9%	2	11.1%	18	.001**
• Intensive care unit	5	19.2%	20	76.9%	1	3.8%	26	
• Emergency unit	1	11.1%	3	33.3%	5	55.6%	9	
Experience (years):								
• ≤ 5	2	10.0%	17	85.0%	1	5.0%	20	.443
• 5 < 10	2	14.3%	10	71.4%	2	14.3%	14	
• 10-15	2	10.5%	12	63.2%	5	26.3%	19	
Educational level:								
• Secondary school diploma	2	10.0%	12	60.0%	6	30.0%	20	.051*
• Technical institution	4	12.1%	27	81.8%	2	6.1%	33	

(**) highly statistically significant
 (*) statistically significant

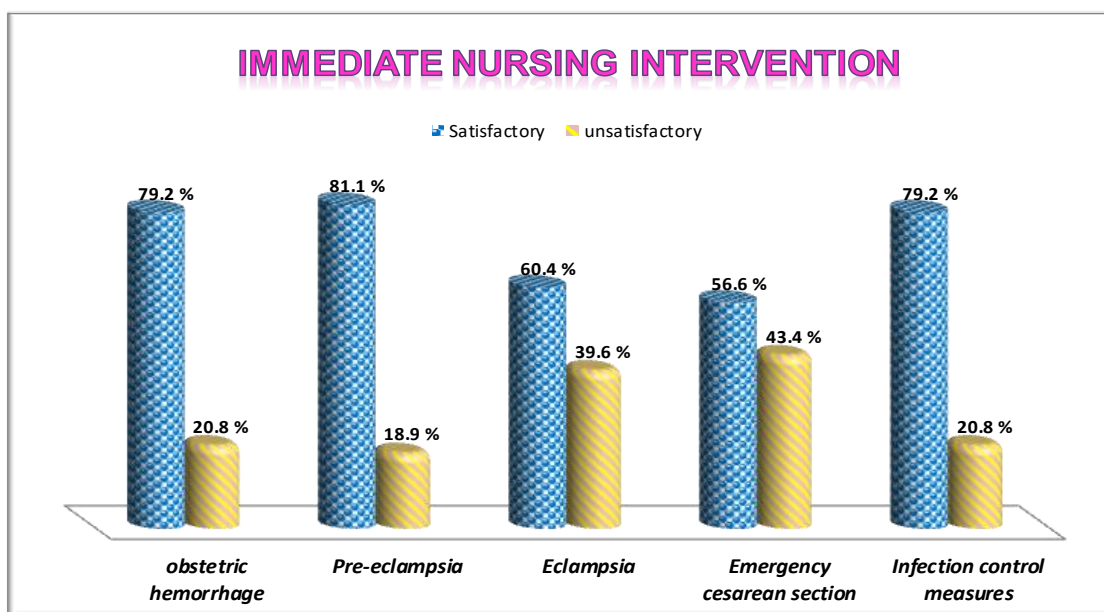


Figure (2): Distribution of studied nurses according to practices of immediate nursing intervention during obstetrical emergency (n= 53)

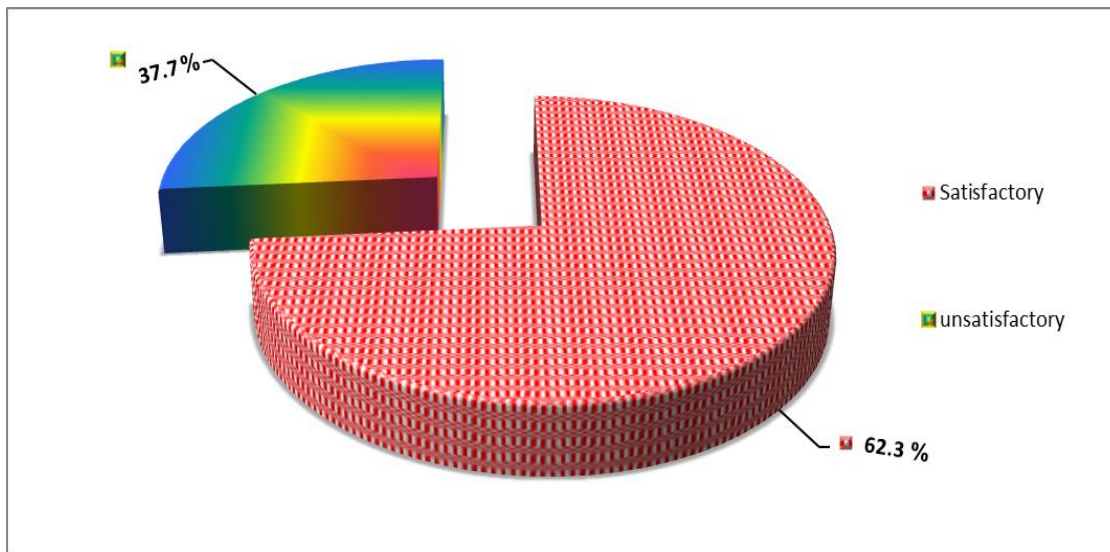


Figure (3): Percentage distribution of studied nurses according to total score regarding immediate nursing intervention during obstetrical emergency (n= 53)

Table (4): Relation between immediate nursing intervention during obstetrical emergency and socio demographic Characteristics .

Socio demographic data	Immediate Nursing Intervention				Total	P –value
	Satisfactory		Unsatisfactory			
	No.	%	No.	%		
Age (years):						
• ≤30	26	81.3%	6	18.8%	32	.118
• >30	13	61.9%	8	38.1%	21	
Unit:						
• High risk unit	14	77.8%	4	22.2%	18	.000**
• Intensive care unit	25	96.2%	1	3.8%	26	
• Emergency unit	0	0.0%	9	100.0%	9	
Experience (years):						
• < 5	18	90.0%	2	10.0%	20	.009**
• 5 < 10	11	78.6%	3	21.4%	14	
• 10-15	10	52.6%	9	47.4%	19	
Educational level:						
• School diploma	12	60.0%	8	40.0%	20	.051*
• Technical institution	27	81.8%	6	18.2%	33	

(**) highly statistically significant

(*) statistically significant

Table (1): Demonstrates personal characteristics of studied nurses and show that the mean age was $M \pm SD 29.40 \pm 4.276$. More than half of nurses (67.9% & 62.3%) were married and had technical institution also about (37.7%) of nurses their years of experience ≤ 5 and the majority of them (49.1%) worked in ICU. About (3.8%) of nurses had attended training program about emergency obstetric care while all nurses attended infection control training program.

Figure (1): Illustrates that (100%) of studied nurses had done immediate intervention related to collecting blood samples also about (98.1% & 94.3%) of them respectively done intervene regarding urinary

catheterization and Alcohol-Based Hand Rub as well as (54.7%) of them done intervene regarding hand washing and IV cannula while no one wear PPE because it wear only in isolation area as hospital infection control policy.

Table (2): Clarifies that more than one third about (35.8 %) of studied nurses had time consumed < 5 min during immediate nursing intervention regarding emergency cesarean section but the majority of them (73.6%) had time consumed 5-10 min regarding obstetrical hemorrhage while less than one fourth of them about (15.1%) had time consumed 5-10 min regarding eclampsia

Table (3): Illustrates that there was highly significant difference between time consuming of obstetric hemorrhage and unit (p -value = 0.001), there was significant difference between time consuming and age and educational level (p -value = 0.055 & 0.051) respectively. Also, there was no significant correlation between Time consuming and experience and marital status (p -value = 0.443 & 0.897) respectively.

Figure (2): Illustrates that more than three quarters about (80%) of studied nurses had satisfactory practice regarding obstetric hemorrhage, preeclampsia and infection control measures. While around (60 %) of nurses had satisfactory practices regarding emergency cesarean section and eclampsia.

Figure (3): Report that 62.3% of studied nurses had satisfactory immediate nursing intervention during obstetrical emergency

Table (4): Demonstrates relation between immediate nursing intervention and personal characteristics and finds that there was highly significant difference between immediate nursing intervention during obstetrical emergency and unit of care and experience (p -value = 0.000 & 0.009) respectively, there was significant difference between immediate nursing intervention and educational level (p -value = 0.051). Also, there was no significant correlation between immediate nursing intervention and age (p -value = 0.118).

Discussion

The clinical audit is a review of clinical performance against evidence-based standards which attempts to identify discrepancies between actual practice and standard in order to identify the changes needed to improve the quality of care. (Mosaei et al., 2020). In addition, obstetric emergency is stressful events that must be identified and managed immediately by the medical team in order to provide the best possible clinical outcomes (Amatullah, 2019).

This study aimed to Apply clinical audit for immediate nursing intervention during obstetric emergency.

Regarding to total score of immediate nursing intervention during obstetrical emergency, the current study illustrated that nearly two thirds of studied nurses had satisfactory immediate nursing intervention during obstetrical emergency and more than one third had unsatisfactory intervention.

This result was supported by Fathy & Abd Alhamid, (2016), who implemented their study to "Explore immediate intervention during obstetric emergencies" in Egypt on 54 nurses which reported that two thirds of studied nurses had satisfactory immediate nursing intervention during obstetric emergency and nearly one third had unsatisfactory intervention. In my

opinion the similarity back to the same culture and traditions.

On the other hand, the findings of current study disagree with Abdelhakm & Said, (2017), who carried out their study in Egypt to " Develop nursing management protocol for maternity nurses regarding obstetric emergencies " on 40 nurses and illustrated that most of studied nurses had unsatisfactory practice and less than one quarter had satisfactory practice. The difference could be back to change of setting of the study.

Concerning audit the time consuming for immediate nursing intervention during obstetrical emergency situations, the existing study showed that more than one third of studied nurses had time consumed < 5 min during immediate nursing intervention regarding emergency cesarean section but the majority of them had time consumed 5-10 min regarding obstetrical hemorrhage while less than one fourth had time consumed between 5-10 min regarding eclampsia. It was consistent with Fathy & Abd Alhamid, (2016), who reported that the time consumed regarding obstetric hemorrhage was 10 min. but also report that time consumed regarding eclampsia was 5 min which contracted with the existing study.

On the same line, Pattinson et al, (2015), who applied their study in south Africa, to assess the basic and comprehensive emergency obstetric and neonatal care in 12 south Africa health districts who stress on the importance of time consuming during immediate intervention regarding hemorrhage and reported that duration of time to death as delayed intervention for post-partum hemorrhage 2 hours while for antepartum hemorrhage was 12 hours and mentioned that magnesium sulfate for eclampsia as immediately intervention for reducing deaths. In my opinion the similarity support the importance of immediately nursing intervention during obstetrical emergency.

The results of the present study also revealed that more than three quarters of studied nurses had satisfactory practices regarding preeclampsia

The result of the present study were in the same harmony with EL Sebaey et al., (2021), who implemented their study about "Assessment of Nurses Knowledge and Practices Regarding The Use of Evidence-based for Pregnant Women with Preeclampsia" on 60 nurses and showed that nearly two thirds of studied nurses had satisfactory level of total practices regarding preeclampsia.

Nearly to present study findings, Tadele et al., (2020), who study " Assessment of knowledge and practice of nurses working in gynecology emergency room towards pregnancy induced hypertension in selected government public hospitals found in Addis Ababa, Ethiopia" and found that Among the total 78 charts reviewed, more than half of the charts had

showed good practice towards pregnancy induced hypertension.

In contrast with findings of the present study, **Abd El Monem et al., (2021)**, who studied " Safety bundle application on nurses' knowledge and performance regarding management of hypertension during pregnancy and postpartum period" in Egypt on 50 nurses and showed that the most of nurses had inadequate performance regarding management of hypertension preintervention. The difference could be back to change of setting of the study.

The results of the present study represents that less than two thirds of studied nurses had satisfactory practice regarding eclampsia. And more than half of nurses had satisfactory practices regarding emergency cesarean section. These findings were matched with **Emam & Saber, (2018)**, who carried their study about " the Effect of Nursing Program on Improving Nurses' Knowledge and Skills Regarding Care of Eclamptic Women" in Egypt on 60 nurses and demonstrated that less than one quarter of nurses of pre-program had poor practice regarding immediate management of eclampsia .

On opposite of the present study, **Al-Rabeei, (2020)**, who studied the "Competences of Midwives Toward Management of Eclampsia at Public Hospitals in Sana'a City-Yemen" on 50 midwives, demonstrated that half of the midwives had poor competence on immediate care during convulsion. In my opinion this difference result from differ of culture and traditions.

The results of the present study also demonstrated that more than three quarters of studied nurses had satisfactory practice regarding obstetrical hemorrhage and infection control measures.

Congruent with previous results, **Fathy & Abd Alhamid, (2016)**, who approved that three quarters of nurses had correct immediate intervention regarding obstetric hemorrhage and infection control measures.

In contrast with findings of the present study, **Abdelhakm & Said, (2017)**, who reported that three quarters of nurses had incorrect practices regarding hemorrhage and infection control measures before protocol implementation. Moreover, the current study findings were not in the same line with the study by **Al-Rabeei et al., (2020)**, which entailed " Competences of Midwives in Prevention and Management of Postpartum Hemorrhage at Public Hospitals, Sana'a City" on 60 midwives and reported that the level of competences on prevention and management of PPH were about less than two third of midwives had moderate competences and one third of them had poor competences. In my opinion this difference result from differ of culture and traditions.

Regarding characteristics of studied nurses, the present study shows that the mean age of the nurses 29.40 ± 4 . This findings supported by **Hassan et al,**

(2014), who studied "Gap Between Current and Ideal Immediate Normal Postpartum Nursing Care at Woman's Health University Hospital, Assiut" in Egypt on 40 nurses and revealed that more than two thirds of the studied nurses` age ranged between 25 & 30 years and the mean age of the nurses was 26.41 ± 6.61

Nearly to present study, **Okonofua et al., (2019)**, who applied their study to "Assessing the knowledge and skills on emergency obstetric care among health providers: Implications for health systems strengthening" in Nigeria on 193 nurses/midwives and demonstrated that the median age of the nurses was 31yrs.

One the other hand, this results not in the same line with **Devi, (2016)**, who applied their study on 48 nurses to "Assess knowledge of staff nurses regarding obstetric emergencies in a selected hospital, Salem, Tamilnadu". And showed that the median age of the nurses 37.2 ± 7.87 . This may be comes from different of the culture and country.

As regard educational level and training program, the present study show that nearly two thirds of nurses had technical institution and only nearly one tenth attending training program about emergency obstetric care.

These results are congruent with **Islam et al., (2017)**, who studied" The implementation of emergency obstetric care training in Bangladesh". Their study found that the majority of nurses did not attend any course about Emergency obstetric care that affected on the quality of obstetric care. But on the other hand it contracted in the point of educational level which report that the majority of nurses had diploma school. This may be comes from different of the culture and country.

Also the current findings sported by the results of the study done by **Emam & Saber, (2018)**, who find that the majority of nurses had technical institute.

Concerning years of experience of the studied nurses, the present study revealed that about more than one third had ≤ 5 years of experience. This result in the same harmony with **EL Sebaey et al., (2021)**, who demonstrated that more than one third of studied nurses had more than ten years of experience and most of nurses were married.

One the other hand, the current study findings disagree with **Uzoma & Obeagu, (2019)**, who carried out their study about "practice of emergency obstetrics care among midwives in maternity unit of two government hospitals in Enugu north local government area "on 57 midwives and found that less than two third of midwives had 10 years of experience.

Study limitations

obstetric emergencies situations at labor unit in the morning shift can sometimes cause interviewing nurses to be postponed because they were too busy to fill the questionnaire.

Conclusion

Based on the current study results, it was concluded that nearly one-third of studied nurses had unsatisfactory immediate intervention during obstetrical emergency.

Recommendations

The current study recommended that:

- Developing nursing protocols and guidelines regarding emergency obstetric care.
- Developing periodical awareness programs, courses, seminars and workshops for nurses regarding emergency obstetric care.
- Provide adequate and sufficient supplies and facilities to encourage nurses to follow the standardized techniques.
- Further research studies are needed to identify the gap in practices and fulfilling it.

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