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Implementing Immediate Intervention Protocol for Improving Maternity Nurse's Performance Concerning Obstetric Emergencies

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Abstract: **Obstetrical emergencies are life-threatening conditions where occurred during pregnancy, labor or postnatal period. The aim of the study was to evaluate the effect of implementing immediate intervention protocol for improving maternity nurse's performance concerning obstetric emergencies. Design: A quasi-experimental design was used. Setting: The study was conducted at the Obstetrics and Gynecology Department and Obstetric emergency unit in Helwan General Hospital. Sample: A convenient sample of 60 nurses working at the previously mentioned settings was recruited for the study. Two tools were used for data collection; I) A structure of interviewing questionnaire, involved socio demographic characteristics of the study nurses and assessment of nurses' knowledge concerning obstetric emergencies. II) Observational checklist for evaluating nursing intervention of obstetric emergencies. Results the obtained data showed that, the majority of nurses had inadequate knowledge before intervention of the protocol. However, slightly more than three quarters of them had adequate knowledge after intervention. As well, more than three quarters of them had unsatisfactory practices toward obstetric emergencies before intervention of the protocol. Meanwhile, after intervention the majority of them had satisfactory practices. Additionally, time-consuming from admission to the unit till immediate nursing intervention during obstetric emergencies There was a highly statistically significant difference before/after implementing immediate intervention protocol concerning obstetric emergencies ($P \leq 0.000$). Conclusion: Nurses' intervention protocol had a positive effect on nurses' knowledge and practices concerning obstetric emergencies. Recommendation: Pre-service and in-service training programs should be establish, standards of care, continuous refreshment courses and follow up for nurses knowledge and practices concerning obstetrical emergency nursing care.**

Keywords: **Obstetric emergencies, Nurse's performance, Nursing intervention, Maternity nurses.**

1. INTRODUCTION

Emergencies obstetric care were one of the evidence based strategies to reduce maternal and neonatal mortality by employing specific interventions provided by a well-qualified and trained nursing practitioner during pregnancy, delivery and postnatal period and necessary to save lives of pregnant women and neonates. Emergencies obstetric care could be divided into basic emergencies obstetric care and comprehensive emergencies obstetric care **(Baer et al, 2015).**

Obstetrical emergencies could be caused throughout many different factors, including stress, trauma, genetics, past medical history, including precious pregnancies and deliveries may help an obstetrician and staff nurse should anticipate the possibility of complications. Signs and symptoms of obstetrical emergency in child are clinical to reduced fetal activity in the late third trimester. **(Danas and Dharshini, 2017).**

Obstetrical emergencies could happen at several times in the birthing process; consequently all health professionals participatory in concerned for females should be particular together accurate diagnosing, suitable and timely management of an obstetrical emergency. An obstetrical emergency subsequently, demand an instantaneous and suitable reaction to constrain complications which may be affecting not only the childbearing woman **(Gibbs et al, 2012).**

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Every day around the world, about 830 women died from preventable reason connected to pregnancy and childbirth. The maternal the state of subject to death rates in the developing countries in 2015 was 239 per 100 000 live births against 12 per 100 000 live births in developed countries. Combined care previous, through and next to childbirth should protect the lives of females and newborn babies. As part of the sustainable development goal for plan 2016 and 2030 (Wherever) is to decrease the world maternal the state of being subject to death rate to a few 70 % **(WHO, 2016).**

Obstetric emergencies were major reasons for maternal the state of being subject to death worldwide especially in the improving countries where poor transport facilities, financial constraints may be due to poorness, illiteracy, unawareness, unsuitable health infrastructure and meager blood bank facilities **(UNICEF, 2015).**

The complications in many developing countries leading to maternal death can occur without warning at several times during prenatal period and childbearing. Most parental deaths can be prevented if deliveries were attended by trained health personnel, nurses or midwives, whose are regularly supervised and have the suitable equipment and supplies where could refer mothers in a timely way to emergency obstetric care when complications are established. Complications require rapid access to quality obstetric services prepared with life-saving drugs, containing antibiotics, and the ability to provide blood transfusions needed to perform caesarean sections or additional surgical interventions **(Perry, 2017).**

Obstetrics emergency protocols are plans geared to limit motherly dying. Major basics of obstetrics contingency practices involved the accessibility of clever professional's staffs to perform active involvements through prenatal, natal and puerperium duration, accessibility of necessary medicines, resources and mother recommendations. Experienced health specialists working in suitable environment should be presented and able to attend to each pregnancy, delivery and should be presented during 24 per day, seven days per week **(Bhandari and Dangal, 2014).**

Nursing was an important discipline of the health care system and an evolving profession whose product is quality care accessible to everyone at affordable cost during obstetric emergencies. Nurses should be competent in preventing and managing the main obstetric complications as (hemorrhage, preeclampsia or eclampsia, sepsis, complications of obstructed labor or abortion. Also, nurses should be qualified and well trained during provide of parenteral antibiotics, oxytocic drugs, and parenteral against convulsions for toxicity during pregnancy (magnesium sulphate), assisted vaginal delivery, and neonatal resuscitation **(Meredith et al., 2015).**

Significance of the study

Obstetrical emergencies are serious health situations that occur in prenatal (or) during or after natal and postpartum periods. In Worldwide, the situation is much worse, with around 600,000 maternal deaths occurs of obstetrical emergencies reported each year **(Otolorin et al, 2015).**

Globally more than 70% of maternal deaths were due to the direct obstetric complications which were occurred during pregnancies, child birth and postpartum periods. The direct causes of the maternal death were estimated to, 19.7% (postpartum hemorrhage), 14.9% (hypertensive diseases), 9.4% (sudden death), 3.7% (sepsis), 3.4% (ruptured uterus), 3.8% (ante-partum hemorrhage), 1.8% (abortion), 0.6% (ectopic), and 0.3% (obstructed labor respectively. About 23% of maternal deaths were occurred in pregnancy, while 36% of them were occurred during delivery and 41% were occurred postpartum **(UNICEF, 2015)**

In Egypt the maternal the state of being subject to death ratio was 33 deaths/100,000 live births **(The world fact book, 2015**). Meanwhile contribution nurses to experience in providing care for high danger females, applying nursing intervention protocol was used to improve nurses knowledge, practices and reference guide whenever needed, furthermore, must be developed and incorporate through educational modalities, therefore this study was conducted.

AIM OF THE STUDY:

To evaluate the effect of implementing immediate intervention protocol for improving maternity nurse's performance concerning obstetric emergencies. This aim would be carried out meanwhile as follows:

1. Assessing nurses' knowledge and practices concerning immediate intervention during obstetric emergencies

2. Designing and implementing immediate intervention protocol for improving maternity nurse's performance concerning obstetric emergencies.

3- Evaluating immediate intervention protocol after application for improving maternity nurse's performance concerning obstetric emergencies.

Research Hypothesis

Nurses' intervention protocol will have effective in improving maternity nurse's performance concerning obstetric emergencies.

Research design:

A quasi-experimental design was used for conducting the study.

Setting

The study was conducted at the Obstetrics and Gynecology Department and Obstetric emergency Unit in Helwan General Hospital.

Sample Type: A convenient sample was selected.

Sample Size:Included 60 nurses working in the obstetrics and gynecology department (39 nurses) and obstetric emergency unit (21 nurses). Size of the sample was completed during 6 months in previous mentioned research setting.

Technique: The researchers visited the setting three days per week and met with nurses according to working circumstances, nurses' physical and mental readiness to recruit the sample.

Tools of Data Collection

Two tools were utilized for data collection.

First Tool: A structured interviewing questionnaire:

This tool designed by the researchers, includes two parts

Part 1: Socio-demographic characteristics of the study nurses as age, educational level, years of experience, and previous training course about obstetric emergencies care.

Part 2 : Assessment nurses' knowledge regarding obstetric emergencies which includes (definition, causes, classifications, immediate nursing intervention ,basic equipment and preparations needed of emergency obstetrics care- definition, causes, signs, symptoms and immediate nursing intervention of hemorrhage, maternal infection , toxemia during pregnancy and immediate nursing intervention for external trauma.

Scoring system:

The questions were recorded as the following; the correct answer was given a score (2) and (1) for the incorrect answer before and after application of the protocol. The scores of total knowledge were considered as adequate if more than 60 %, and inadequate if equal or less than 60%. The total score ranged from 0 – 34.

Second Tool: An observational checklist

An observational checklist was convenient by **Royal College of Obstetricians and Gynecologists guidelines, (2016)** to evaluate nursing practices regarding the immediate nursing intervention during obstetric emergencies, where included basic nursing care in obstetrics emergency such as

1- Immediate nursing intervention regarding hemorrhage included as cannula insertion, calculate intake and output, and time consumed.

2- Immediate nursing intervention during infection included woman isolation, following infection prevention measures included wearing personal protective equipment and time consumed.

3- Immediate nursing intervention regarding toxemia of pregnancy (preeclampsia and eclampsia) included maintain air way clear, oxygen administration, breathing exercises, suctioning and circulation. Mgso4/valium administration, monitoring Mgso4 toxicity and administering antidote, checking reflexes, assess degree and site of edema, assessing onset and duration of convulsions, calculating intake and output, monitoring fetal heart rate and time consumed.

4- Immediate nursing intervention for woman's general hygiene included: perineal hygiene, catheter care and partial bath.

5- Immediate nursing intervention regarding trauma and shock

Observational Checklist Scoring System:

Each item in the observational check list was scored as (2) for done immediate intervention and (1) for not done immediate intervention. The total score of nurses' immediate intervention was classified into**:** satisfactory immediate intervention (≥ 60 %), and unsatisfactory immediate intervention (< 60%).

Tools Validity and Reliability

The tools were reviewed for comprehensiveness, appropriateness of items and measuring the concepts through a jury panel of five experts in the field of maternity nursing and obstetric medicine to assure content validity. The reliability was done by Cronbach's Alpha coefficient a numerical test which detected that two tools had contained comparatively of the same kind items as specified by the moderate to high reliability of each tool. The internal consistency of nurses' knowledge was α 0.88, and nursing practices was α 0.90.

Ethical considerations:

All ethical cases were confirmed, nurses were specified commentaries around the aim of the study, and then an oral consent was obtained from every participant. Withdrawal from the study at any step previous the fulfillment of the study was allowed. Confidentiality of participants' data was assured and the information was approached only by the researchers included in the study.

The pilot study

The pilot study was achieved on 10% of the total sample (6 nurses) to realize the relevance, clarity, applicability of the tools and to reveal any problems peculiar to the declarations. As well as, the pilot study needed to assess the time helped to complete the questionnaires. According to the findings of the pilot study, no changes were done. Nurses involved the pilot study was included in the main study sample.

Fieldwork:

An official approval was obtained through a letter issued from the Dean of Faculty of Nursing to the Director of Helwan General Hospital. The study was conducted from September 2018 and completed by the end of February 2019. Data were collected during three days weekly from the study settings from 9.00 am to 8.00 pm until the sample size reached the predetermined number (60 nurses). Each researcher introduced herself and explained the aim of the study to each studied nurse, then the researchers interviewed each nurse individually according to their attendance in hospital registrations book at the study settings to assess their knowledge during immediate intervention during obstetric emergencies. The study was carried out through four phases: assessment, planning, implementation, and evaluation.

1. Assessment phase:

Nurses were estimated for their help before the application of the nursing intervention protocol sessions included the researchers collected the following data: Demographic data, of the nurses, nurses' knowledge about immediate intervention during obstetric emergencies., nurses' practices regarding immediate intervention during obstetric emergencies. The data given from this phase established the baseline for more comparisons to evaluate the effect the nursing intervention protocol regarding immediate intervention during obstetric emergencies. . Average time for the end of the tools for every studied nurse was about 20-30 minutes.

2. Planning phase:

The content of the immediate intervention protocol during obstetric emergencies was prepared to meet the purposes. At the completion of protocol's sessions, every studied nurse should be having the power to acquired knowledge regarding obstetric emergencies which includes (definition, causes, classifications, immediate nursing intervention, basic equipment and preparations needed of emergency obstetrics care- definition, causes, signs, symptoms and immediate nursing intervention of hemorrhage, maternal infection, toxemia during pregnancy and immediate nursing intervention for external trauma, apply the nursing care for shock. Therefore the nurses should have the power to practice proficient all procedures concerning obstetric emergencies conditions.

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3. Implementation phase:

The nursing Intervention protocol was achieved at the obstetrical and gynecological department and obstetric emergency unit in Helwan General Hospital. Based on the findings given from assessment phase utilizing the interviewing questionnaire and observation checklist, education and teaching were built to fulfill the studied nurses' insufficiency knowledge and practices related to immediate intervention during obstetric emergencies. Application of education and teaching took twelve weeks' duration and were performed for a group from four to five studied nurses allowing the work conditions, participants' physical and psychological readiness. Researchers go to the settings three days per week. The whole meeting was eight sessions (three theoretical and five practical), studied participants were classed into ten groups and the content was performed for every group separately. The period of each theory session ranged from 20-30 minutes, however the practical session ranged from 30-60 minutes involving duration of conversation according to their performance improvement and feedback. At beginning of first session an orientation to the intervention protocol, purposes were explained. Arabic language was utilized to case all levels of education. The education ways and teaching plans were utilized for example modified lecture, group discussion, demonstration and re-demonstration for clinical procedures, Instructional media involved colored posters, power point presentation and handouts distributed to all nurses at the end of teaching first day. At the end of each session, nurses' questions were discussed to correct any failure to understand correctly.

3) Evaluation phase:

After accomplishment of the protocol sessions the questionnaire formats and observational checklist were filled in again to evaluate the effectiveness of the protocol with the same pretest questionnaire.

Statistical Design:-

Data entry and analysis were done using the Statistical Package for Social Sciences (SPSS), version 20.0 followed by tabulation. Descriptive statistics were applied (mean, standard deviation, frequency and percentages). Test of significance as Chi-square was used to test the study hypothesis. A statistically significant difference was considered at $p \leq 0.05$, and a highly statistically significant difference was considered at $p \leq 0.000$.

2. RESULTS

Table (1): Distribution of the Studied Nurses According to their Socio demographic Characteristics (N=60).

Characteristics	N=60	
	Number	Percent
Age in years:		
< 20	16	26.7
20- <30	35	58.3
30+	9	15.0
Mean ± SD	24.20± 5.12	
Educational level:		
Secondary school	31	51.7
Technical Institute	22	36.6
Bachelor degree	7	11.7
Years of Experience		
< 1	8	13.3
1- 6	34	56.7
>6	18	30.0
Mean ± SD	5.13± 2.75	
Training course about maternal sepsis care		
Yes	8	13.3
No	52	86.7

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Table (1) shows that, 58.3% of studied nurses their age ranged between 20- <30years, with a mean of age 24.20 ±5.12. Regarding educational level, 51.7% had secondary school and only 11.5% had bachelor degree. As considerations years of experience, more than half of them 56.7% had 1-6 years of experience, while 30% had more than 6 years of experience, with a mean year of experience 5.13 ± 2.75. The majority of the studied nurses 86.7% did not be given any training course concerning obstetric emergencies.

Table (2): Distribution of the Studied Nurses regarding their correct & incorrect knowledge about obstetric emergencies Before / After intervention Protocol (N=60).

Immediate Nursing Intervention	Before (N=60)				After (N=60)				X^2	P-value
	Correct		Incorrect		Correct		Incorrect			
	NO	%	NO	%	NO	%	NO	%		
Definition of Obstetric Emergencies.	14	23.3	64	76.7	53	88.3	7	11.7	54.29[a]	<0.000**
Causes of obstetric emergencies.	13	21.7	47	78.3	57	95.0	3	5.0	66.37[a]	<0.000**
Classifications of obstetric emergencies.	6	10.0	54	90.0	56	93.3	4	6.7	83.42[a]	<0.000**
Immediate nursing intervention for obstetric emergencies.	5	8.3	55	91.7	58	96.7	2	3.3	93.86[a]	<0.000**
Basic equipment and preparations needed	23	38.3	37	61.7	48	80.0	12	20.0	21.55 [a]	<0.000**
Definition of hemorrhage.	11	18.3	49	81.7	59	98.3	1	1.7	78.99[a]	<0.000**
Causes of hemorrhage.	8	13.3	52	86.7	47	78.3	13	21.7	51.05[a]	<0.000**
Signs and symptoms of hemorrhage.	9	15.0	51	85.0	50	83.3	10	16.7	56.04[a]	<0.000**
Immediate nursing intervention for hemorrhage	25	41.7	35	58.3	54	90.0	6	10.0	31.15[a]	<0.000**
Definition of infection	4	7.7	35	58.3	51	85.0	9	15.0	74.14[a]	<0.000**
Causes of infection.	15	25.0	45	75.0	52	86.7	8	13.3	46. 26[a]	<0.000**
Signs and symptoms of infection	19	31.7	41	68.3	46	76.7	14	23.3	24.47[a]	<0.000**
Immediate nursing intervention for infection	13	21.7	47	78.3	53	88.3	7	11.7	53.87[a]	<0.000**
Toxemia of pregnancy. Definition of preeclampsia and eclampsia.	14	3.32	46	76.7	57	95.0	3	5.0	63. 77[a]	<0.000**
Signs and symptoms of preeclampsia & eclampsia.	17	28.3	43	71.7	52	86.7	8	13.3	. 77[a] 41	<0.000**
Immediate nursing intervention for Toxemia during pregnancy.	16	26.7	44	73.3	58	96.7	2	3.8	62. 18[a]	<0.000**
Immediate nursing intervention for external trauma.	18	35.0	39	65.0	45	75.0	15	25.0	24.63[a]	<0.000**

** A highly statistically significant difference (P ≤ 0.000)

Table (2) reveals that, there were highly statistically significant differences before and after protocol regarding the studied nurses' knowledge.

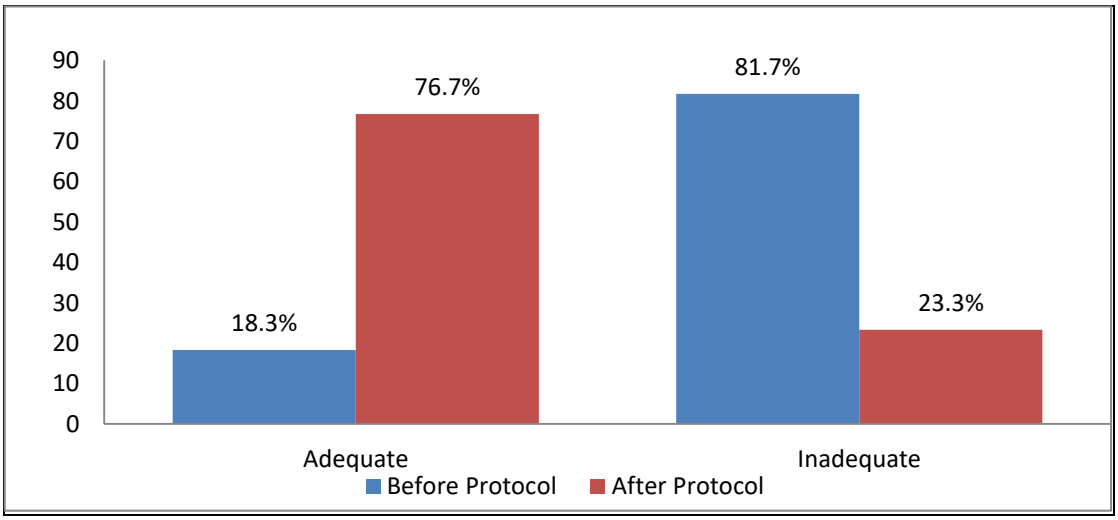

Figure (1) Percentage Distribution of the Studied Nurses in Relation to their total Knowledge Score Before/ After Protocol.

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Figure (1) clarifies that 81.7% of studied nurses have Inadequate knowledge before protocol compared to 76.7% after protocol have Adequate knowledge

Table 3: Distribution of the studied nurses' regarding practices immediate nursing intervention during Obstetric Emergencies before / after Protocol.

	Before (N=60)				After (N=60)					
	Don		Not Don		Don		Not Don		X^2	P-value
	NO	%	NO	%	NO	%	NO	%		
Hemorrhage	4	7.7	35	58.3	51	85.0	9	15.0	74.14[a]	<0.000**
Infection control measures	8	13.3	52	86.7	47	78.3	13	21.7	51.05[a]	<0.000**
Toxemia during pregnancy (preeclampsia and eclampsia)	19	31.7	41	68.3	46	76.7	14	23.3	24.47[a]	<0.000**
Perineal hygiene	17	28.3	43	71.7	52	86.7	8	13.3	. 77[a] 41	<0.000**
Catheter care	16	26.7	44	73.3	58	96.7	2	3.8	62. 18[a]	<0.000**
Partial bath.	6	10.0	54	90.0	56	93.3	4	6.7	83.42[a]	<0.000**
Trauma.	23	38.3	37	61.7	48	80.0	12	20.0	21.55 [a]	<0.000**
Shock	9	15.0	51	85.0	50	83.3	10	16.7	56.04[a]	<0.000**

** A highly statistically significant difference ($P \leq 0.000$)

Table (3) demonstrated that; there was a highly statistically significant difference between studied nurses level of practice at all items with P=<0.000.

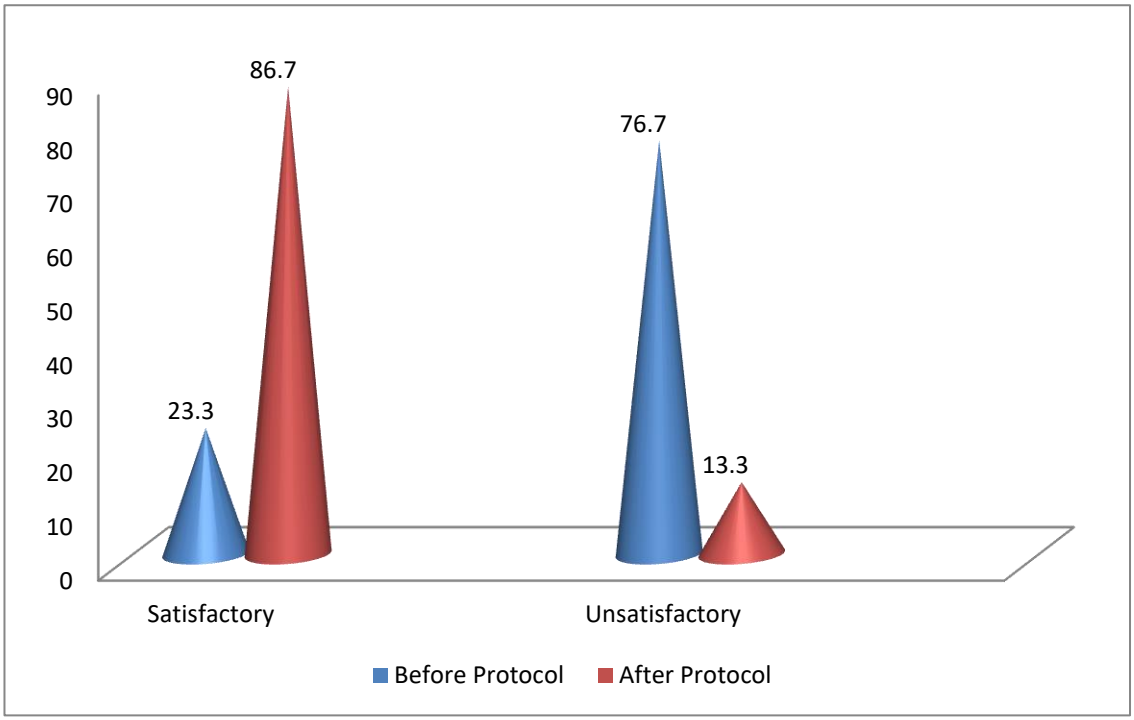

Figure (2) Percentage Distribution of the studied nurse's regarding total nursing practices before/ after protocol.

Figure (2) Illustrates that 76.7% of studied nurses have unsatisfactory practices before protocol compared to 86.7% after protocol have satisfactory practices respectively.

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Table (4) Percentage Distribution according to the duration from woman admission until received immediate nursing intervention during obstetric emergencies before/ after protocol. (N=60)

Immediate Nursing Intervention	Duration in minutes	Before (N=60)		After (N=60)		X^2	P-value
		NO	%	NO	%		
Hemorrhage.	**≤ 5**	9	15.0	47	78.3	55.35[a]	<0.000**
	> 5 – 10	14	23.3	10	16.7		
	> 10 – 15	37	61.7	3	5.0		
Infection.	**≤ 5**	13	21.7	46	76.7	36.37[a]	<0.000**
	> 5 – 10	28	46.7	8	13.3		
	> 10 – 15	19	31.7	6	10.0		
Convulsions.	**≤ 5**	16	26.7	43	71.7	27.62[a]	<0.000**
	> 5 – 10	27	45.0	15	25.0		
	> 10 – 15	17	28.3	2	3.3		
Trauma.	**≤ 5**	18	13.3	52	86.7	. 86[a] 40	<0.000**
	> 5 – 10	22	36.7	7	11.7		
	> 10 – 15	20	33.3	1	1.6		
Shock.	**≤ 5**	2	3.3	53	88.3	87. 41[a]	<0.000**
	> 5 – 10	39	65.0	4	6.7		
	> 10 – 15	19	31.7	3	5.0		

** A highly statistically significant difference (P ≤ 0.000)

Table (4) revealed that there was highly statistically significant difference among studied nurses had time consumed during immediate nursing intervention regarding hemorrhage, infection, convulsions, trauma and shock before/ after protocol P=<0.000

Table (5): The Correlation Coefficient among Total Nurses Knowledge Scores Concerning Immediate Nursing Intervention During Obstetric Emergencies Before /After Protocol, Age and Years of Experience.

Variables	Total Knowledge Before		Total Knowledge after	
	r	p	r	P
Age	0.152	< 0.00	0.342	< 0.00
Years of Experience	0.163	< 0.00	0.439	< 0.00

Table (5): indicates that, there were highly positive statistically significant correlations among knowledge and age before and after intervention protocol. Also, there were highly positive statistically significant correlations among knowledge and years of experience before and after protocol P=< 0.00.

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Table (6): The Correlation Coefficient among Total Nurses' Practices Scores Concerning Immediate Nursing Intervention During Obstetric Emergencies Before/After protocol, as Regards Age and Years of Experience.

Variable	Total practices Before		Total practices after	
	r	p	r	P
Age	0.255	< 0.00	0.580	< 0.00
Years of Experience	0.253	< 0.00	0.298	< 0.00

Table (6) displays that; there were highly positive statistically significant correlations among practices and age before and after intervention. Moreover, there were positive statistically significant correlations among practices and years of experience before and after protocol P=< 0.01.

Table (7): The Correlation Coefficient among The Total Scores of Nurses' Knowledge and Practices Concerning Immediate Nursing Intervention during Obstetric Emergencies Before/After Protocol.

Variable	Total Knowledge before		Total Knowledge after	
	r	p	r	P
- Practices before intervention - Practices After intervention	0.652	>0.05	0.811	< 0.000

Table (7) reveals that, there were highly positive statistically significant correlations between knowledge and practice before and after protocol P=< 0.000.

3. DISCUSSION

Implementing protocol concerning obstetric emergencies is important to available for use highly advanced quality and competent nursing care. To improvement, the quality of nursing care, greater the satisfaction of females and promote optimal outcomes for mothers and babies. **(Abdelhakm and Said 2017).**

The present study aimed to evaluate the effect of implementing immediate intervention protocol for improving maternity nurse's performance concerning obstetric emergencies. About Socio demographic characteristic of the studied nurses, the study showed that, more than half of studied sample were ranged from 20- <30 years with a mean age of 24.20± 5.12 the results agree with study carried out in Egypt, this stated that, the highest percentage of nurses was between the ages of 20: 30 years (***Abdalla& Abd El-Mohsen 2015)***.

Regarding educational level, half of studied nurses had a secondary school diploma. One third of the studied nurses had more than six years of experience. The greatest number of the studied nurses did not given any training program concerning immediate intervention of obstetric emergency conditions. This result is supported by **(Islam et al., 2015)** who reported that "The Implementation of Emergency Obstetrics Care Training in Bangladesh". This study found that the majority of nurses who were involved in the study had diploma nurse that was graduated since a long period of time and did not present any refreshing courses that affected negatively on the quality of obstetrics care.

Regarding nurses' knowledge about immediate intervention of obstetrical emergencies, findings of the present study revealed that there were highly statistically significant differences before and after protocol concerning the studied nurses' knowledge about obstetrical emergencies which were revealed upon the nursing care presented for the accepted situations with obstetrical emergencies. This finding was supported by **(Bayley, et al., 2013)** who found lack of nurses' knowledge during routine obstetric emergencies situations. These results may be due to loss of educational program concerning emergency situations in the ward. Moreover, this deficiency of knowledge may be related to the level of education and could be explained that were graduated since a long period of time that might lead them to lose too much of their basic graduation knowledge and skills, additionally absence of training programs concerning to obstetrical emergencies care.

Controversy with the finding of **(Kavitha, et al., 2014),** who noticed that, the greater number of nurses had correct knowledge related to immediate intervention during obstetric emergencies. On the other hand, implementation of the immediate intervention protocol for nurses under study led to significant improvements in nurses' knowledge, this improvement is certainly attributed to the content and process of the protocol, which was individualized according to nurse's needs. This result is contradicting with those of a study carried out by ***(Rammohan et al., 2013),*** who studied (Reducing Neonatal Mortality in India: Critical Role of Access to Emergency Obstetric Care) and mentioned that no Difference between the 80% of staff who had attended skilled birth attendant training and the 20% who had not.

Concerning the studies nurses' total knowledge before/ after protocol about immediate intervention of obstetric emergencies, the present study findings revealed that the majority of the studied nurses had inadequate knowledge before protocol compared to after protocol have adequate knowledge. These findings are in agreement with **(Kavitha et al., 2014),** where had studied assess level of knowledge of staff nurses on emergency obstetric management at an Outta National Referral Maternity Hospital, ". He pointed out that, majority of the staff nurses had inadequate knowledge and only one third had adequate knowledge regarding obstetric emergencies in the pretest.

This study results also agree with those of study of **(Brenner et al., 2015),** who stated that, the training health-care providers in obstetric emergency and newborn care focus on the requirement to build the ability of health-care providers to diagnose and manage complications throughout pregnancy, labor and the post-partum period through providing skills and competency-based training in practiced birth care, emergency obstetric care and early newborn care which is considered an approach that was effective in become better skills and improved availability and quality of care.

Additionally, these results is incongruent with that of the study of **(Bayley., 2013)**, entitled (Knowledge and Perceptions of Quality of Obstetric and Newborn Care of Local Health Providers: A Cross-sectional Study in Three Districts in Malawi).Where concluded that training study, which found few effects on levels of knowledge and the gap of knowledge couldn't be succeed in dealing with by simply as long as additional training, so most of staff reported perception of poor quality of care. Decrease of the percentage of the nurses' knowledge before educational intervention may be due to that most of the studied nurses were secondary nursing education, working since more than six years ago, as well as the inadequate participation in training programs related to the research topic, where most of the nurses did not attend any training program about obstetric emergencies.

Considering practices toward immediate intervention of obstetric emergencies, the finding of the current study clarifies that present was highly statistically significant differences before/ after intervention protocol regarding hemorrhage as inserted cannula, obtained blood sample and that nurses under study are aware of the importance and methods of infection control as well due to effectiveness of the intervention protocol. This finding was consistent with **(Ueno, et al., 2015),** who stated that the essential and basic intervention provided by a well-trained nurse during obstetric hemorrhage was cannula insertion and blood transfusion.

The infection prevention measures as an immediate intervention measures included hand hygiene before any procedures, wearing personal protective equipment, skin disinfection before injection, avoid sharp injuries and splashes of blood, utilizing double bagging for solid garbage. This finding is the same with **(Krishnamurthy, et al., 2014)**, who's emphasized on the importance of effective hand hygiene and wearing personal protective equipment while dealing with blood and solid articles. While, regarding toxemia especially during convulsions as maintained clear airway through suctioning of mucus secretions as well as administered magnesium sulfate according to the obstetrician order then transferred the mother to quiet room. This finding was congruent with **(Pattinson, et al., 2015),** who mentioned that magnesium sulfate for patient with toxemia immediately was considered one of the most important interventions for reducing deaths. The studied nurses have unsatisfactory practices before protocol compared to after protocol have satisfactory practices.

The findings of the current study revealed that there were highly statistically significant difference between studied nurses had time consumed during immediate nursing intervention regarding hemorrhage, infection, convulsions, trauma and shock before/ after protocol. Moreover time consumed from mother admission until immediate nursing intervention. This finding was in agreement with **(Pattinson, et al., 2015*),*** who stressed on the importance of time consumed during immediate intervention of hemorrhage especially post-partum hemorrhage. He reported that the average time to death as a result of delayed intervention regarding post-partum hemorrhage was 2 hours and that for an antepartum hemorrhage was 12 hours.

The current study results reveals highly positive statistically significant correlations between total nurses' knowledge score concerning immediate intervention of emergency obstetric and between age and years of experience, which may be due to their age ranged between 20 to 30 years the suitable age to receive and understand information as well as the suitable age for changeability and practical improvement. As well as nurses who have 1-6 years of experience, after intervention protocol implementation, improved their knowledge. This study finding disagree with those of the study of **(Kavitha et al., 2014),** in Eritrea, where stated all demographic variable such age, sex, marital status, professional qualification, and experience in maternity, had no association with knowledge regarding emergency obstetric management.

The implementation of the intervention protocol in the present study revealed statistically significant correlation between knowledge and practices. These results are agreement by **(Chodzaza and Bultemeier., 2010),** who reported that, there was a highly statistically significant among nurses' practice and their knowledge. **(Ominyia and Nwodom., 2014).** Who observed that there was a highly statistically significant between nurses' perception and practice of evidence-based practice in federal teaching in Abakaliki Hospital.

Moreover, there was a positive statistically significant correlation among practices and years of experience before and after training .This result disagrees with that of (**Attia., 2012*), in Egypt***, whose Master thesis entitled (Assessment of Emergency Nursing Care Offered at the Labor Ward of Ain Shams Maternity University Hospital), who found that there was no statistically significances.

Generally, the present study finding that, after nursing immediate intervention protocol, there was improvement in the most aspects of knowledge and practices, this supported the study hypothesis. In addition, it is expected to establish in services training programs, standards of care and follow up for continuing improving knowledge and practice in the labor unit and intensive care unit to support the provision of high quality of obstetrical emergency nursing care.

4. CONCLUSIONS

In the light of the present study findings it can be finally concluded that, nurses' intervention protocol concerning immediate intervention during obstetric emergencies has a positive effect on nurses' knowledge and practices regarding immediate intervention during obstetric emergencies. There were significant improvements in nurses' knowledge and practices regarding immediate intervention during obstetric emergencies after protocol implementation compared with that before it, the results of this study support the study hypothesis. There were positive correlations among nurses' knowledge and practices before and after protocol in relation to their age and years of experience and practices after protocol.

5. RECOMMENDATIONS

Based on the study findings, the following recommendations can be suggested

- Pre-service and in-service training programs concerning immediate nursing intervention during obstetric emergencies must be establish, standards of care, continuous refreshment courses and follow up for nurses knowledge and practices concerning obstetrical emergency nursing care.

- Providing maternity nurses in obstetrics and gynecology departments with an instructional booklet regarding intervention of obstetrical emergency to enhance their knowledge and practices.

- The nursing curriculum of basic nursing should include the knowledge about causes and intervention of obstetrical emergency and should be revised and updated.

Further studies:

Evaluate knowledge, practices and immediate intervention of nurses in relation to obstetrical emergencies nursing care during obstetric emergencies situations.

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