

Effect of an Instructional Package on Nurses' Performance Regarding Obstetrical Emergencies

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Abstract

Aim: to study effect of an instructional package on nurses' performance regarding obstetrical emergencies. **Setting:** The study was conducted at obstetrics and gynecological emergency department at Benha University Hospital. **Design:** Quasi-experimental study was utilized. **Sampling:** A convenient sample included 40 nurses. **Tools of data collection:** were Self-administered questionnaire and Observational check list. **Results:** The minority of nurses had good knowledge regarding obstetrical emergencies before implementation of the instructional package. While, most of them had good knowledge immediately after implementation of the instructional package that slightly decline at follow up phase of the instructional package implementation ($p=0.000$). More than one tenth of the studied nurses had competent practice regarding obstetrical emergencies before implementation of the instructional package. While, more than three quarters of them had competent practice immediately after implementation of the instructional package that slightly decline at follow up phase of instructional package implementation ($p=0.000$). Also, there was a highly statistically significant differences in relation to total nurses' knowledge and practices regarding obstetrical emergencies before, immediately after and at follows up phases of instructional package implementation ($p<0.001$). **Conclusion:** The instructional package has positive effect on nurses' knowledge and practices immediately after and at follow up phase than before implementation of the instructional package. **Recommendation:** Developing awareness programs for nurses to enhance their knowledge regarding obstetrical emergencies.

Key words: Instructional package, Nurses' performance, Obstetrical emergencies.

Introduction

Obstetrical emergencies are defined as pregnancy-related conditions that threaten the lives of both mother and infant. The majority of obstetrical emergencies occurs during pregnancy, delivery and early in the postnatal period and cannot be predicted by antenatal screening. Also, obstetrical emergencies are considered stressful situations that require immediate identification and management by the medical team to ensure the best possible clinical outcomes (*Amatullah, 2018*).

Worldwide, obstetrical emergencies are the leading causes of maternal mortality particularly in developing countries where literacy, poverty, lack of antenatal care, poor transport facilities and inadequate equipment combine to magnify the problem. Moreover, other possible contributing factors may include lack of skills and training in the management of obstetrical emergencies, lack of team collaboration and ineffective communication between the health team (*Crofts et al., 2015*).

Approximately 15% of births worldwide will result in life-threatening complications during pregnancy, labor or the postpartum period. The majority of maternal deaths that occur in developing countries are due to direct causes, such as postpartum hemorrhage, pregnancy-induced hypertension or septic infections. Also, more than 40% of maternal deaths due to direct causes occur during the intrapartum period and approximately 45% of maternal deaths occur within the first 24 hours after delivery (*Brenner et al., 2015*).

The World Health Organization classified the following conditions as obstetrical emergencies, ectopic pregnancy, abortion, abruption placenta, placenta previa, severe pre-eclampsia and eclampsia, premature rupture of membranes, amniotic fluid embolism, inversion or rupture of uterus, placenta accreta, prolapsed

umbilical cord, shoulder dystocia, postpartum hemorrhage and postpartum infection (**World Health Organization, 2013**).

Emergency obstetrics care refers to clinical processes that need to be provided rapidly in order to medically manage or stabilize women with life-threatening complications and is one of the important components of Safe Motherhood programs which aims to treat direct obstetrical emergencies that cause the vast majority of maternal deaths during pregnancy, delivery and the postpartum period (**Bhandari and Dangal, 2014**).

Emergency obstetrics care is divided into basic and comprehensive emergency obstetrics care and involves the immediate evaluation of pregnant women on admission and providing initial treatment in case of the development of life-threatening complications. After stabilizing the situation, emergency obstetrics care involves transferring the mother and newborn to higher-level health facilities and providing safe blood transfusion (**Koşum and Yurdakul, 2013**).

A professional nurse is one of the most important members of the health team and one of the main indicators of progress towards improving outcomes related to pregnancy and childbirth. Nurses must be able to combine competence and critical thinking with caring of the woman to provide essential lifesaving interventions to prevent and manage obstetrical emergencies (**Lohela et al., 2016**).

Moreover, nurses should be able to provide basic prenatal care, advocacy about labor, postpartum and create awareness among women and families about emergencies that occur during pregnancy, labor and postpartum and the importance of timely and essential appropriate emergency obstetrics care (**Chhabra, 2017**).

Nurse's performance can be improved through several ways. One important way is facilitating appropriate learning opportunities through in-service education, attendance of professional workshops, conferences and encouraging achievement of advanced education such as diploma or other higher degree. Therefore, staff nurses will be empowered by provision of information; support, resources and opportunities that result in participation in the commitment of the institution, become more effective in accomplishing role, have increased self-esteem and are more able to achieve the goals (*Kozier et al., 2015*).

Ongoing education and training of nurses is the cornerstone for caring of women with obstetrical emergencies and provide nurses with new standards of performance to correct practices on caring for women with obstetrical emergencies in order to maintain competence and ensure safe and effective care provided to women (*Walker et al., 2014*).

Hence, an instructional package regarding obstetrical emergencies is developed to improve the consistency of management of women, improve the efficiency of the unit and the outcomes for womn and newborn. Also, the instructional package is not intended to replace the process of critical evaluation of every woman and individualized decision making but will help nurses to initiate immediate management of such cases (*Thomas et al., 2016*).

Significance of the study

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. Globally, ending preventable maternal deaths continues to be one of the most important goals (*Mgawadere et al., 2017*).

Emergency obstetrics nurse is responsible for providing safe and effective care in both routine and emergency situations. Although in some instances, some situations occurring in health care may actually hinder the nurse's ability to provide care when faced with an obstetrical emergency but don't alter the nurse's affirmative duty to take some positive action when complications arise hence, improving maternity care is a global priority and education regarding obstetrical emergencies may be part of the solution (*Who, 2015*).

Aim of the study

This study aimed to evaluate the effect of an instructional package on nurses' performance regarding obstetrical emergencies. The aim was achieved through:-

- Assessing nurses' knowledge regarding obstetrical emergencies.
- Assessing nurses' practices regarding obstetrical emergencies.
- Designing, implementing and evaluating the outcome of an instructional package on nurses' performance regarding obstetrical emergencies.

Research Hypothesis

Nurses' knowledge and practice regarding obstetrical emergencies would have improved after the implementation of the instructional package.

Subject and methods

Research design

Quasi-experimental (pre and posttest) study was followed to fulfill the aim of the study.

Setting of the study

The study was conducted at obstetrics and gynecological emergency department affiliated to Benha University Hospital.

Sampling

- **Sample type:** A convenient sample
- **Sample size:** All nurses (40) who are working at obstetrics and gynecological emergency department at Benha University Hospital during the study. After the results of the pilot study, the final sample size was 36 nurses.

Tools of data collection

Two tools were used for data collection:-

Tool (I): Self-administered questionnaire

It was designed by the researcher after reviewing related literature (*Gabbe et al., 2016, Ayre-de-campos, 2017 and American Society of Registered Nurses, 2017*) and written in an Arabic language in the form of close and open-ended questions. It is consisted of two parts:

First part: - demographic characteristics of the studied nurses as (age, educational qualification, current job, years of experience).

Second part: - nurses' knowledge regarding obstetrical emergencies and consisted of 30 items that divided into (6) sections:-

Section (1): General knowledge regarding (obstetrical emergencies), **Section (2)** (preparation of the emergency tray); **Section (3)** (nursing care for obstetrical emergencies during pregnancy, **Section (4)** (nursing care for obstetrical emergencies during labor), **Section (5)** (nursing care for obstetrical emergencies

during postpartum period) and **Section (6)** (Knowledge about cardiopulmonary resuscitation of the woman).

- **Knowledge's scoring system:-**

Each item was assigned a score:-

- 2 completely correct
- 1 incompletely correct
- 0 for unknown.

The total score for the knowledge was calculated by the addition of the total score of all sections and ranged from (0-62).

The total knowledge score was classified as the following:

- Good knowledge: $\geq 75\%$ (46.5 ≤ 62)
- Average knowledge: 50 - < 75% (31 < 46.5)
- Poor knowledge: < 50 % (0 < 31)

Tool (II) - Observational check list

This tool was designed after reviewing related literature (*Gabbe et al., 2016, Lynn, 2015 and Magowan et al., 2014*) to assess nurses' practice during providing nursing care for women with obstetrical emergencies and included 8 procedures:

Observational checklist's scoring system:-

Each item of the procedure was assigned a score (1) if done and a score (0) if not done. The total score was calculated by addition of the total score of all procedures. The total score was ranged from (0-148) and classified according to *Abdelhakm and Said, (2017)* into:-

- Competent practice $\geq 80\%$ (119-148)
- Incompetent practice $< 80\%$ (0-118)

Supported materials

The researcher designed the instructional package in an Arabic language supported by figures after reviewing related literature and included two parts, theoretical & practical.

Tools validity and reliability

Tools of data collection were reviewed by panel expertise of three obstetrics nursing to test content validity and according to their judgment; the questionnaire was modified related to clarity of sentences and appropriateness of contents. Reliability was done by Cronbach's alpha, the internal consistency of knowledge was 0.79 and practice was 0.84.

Ethical considerations

Ethical aspects were considered before implementation of the study as the following:-

- The aim of the study was explained to each nurse before applying the study.
- An oral consent was obtained from each nurse to participate in the study.
- The study would not cause any physical, social or psychological risk on the participant.
- Maintain confidentiality, self-esteem and dignity of nurses.
- Freedom to withdraw from participation in the study at any time.

Pilot study

The pilot study was carried out on 10 % of the total sample (4nurses) to test the clarity, feasibility and applicability of the study tools as well as to estimate the time needed for data collection. The necessary modifications were conducted in the form of clarification and omission of some questions as (types of emergency obstetrics care and source of nurses' knowledge about obstetrical emergencies). Nurses involved in the pilot study were excluded from the main study sample.

Field work

The study was carried out from the beginning of December, 2016 and completed at the end of November, 2017 covering 12 months. The researcher attended the previously mentioned setting three days/week (Saturday, Tuesday and Thursday) from 9.00 Am to 2.00 Pm or afternoon shifts from 2 pm to 8 pm according to admitted emergency cases and researcher suitable time.

Interviewing and assessment phase:

At the beginning of the interview the researcher greeted the nurses, introduced herself, explained the purpose of the study and provided the nurses with all information about the study (purpose, duration, and activities) and took oral consent to participate in the study. Data was collected by the researcher through the distribution of self-administered questionnaire to collect nurses' demographic characteristics and assess knowledge regarding obstetrical emergencies. The average time required for completion of the questionnaire was around (20-30 minutes). Then the researcher used the observational checklists to assess nurses' practice regarding obstetrical emergencies.

Planning phase:

Based on the results obtained from pretest assessment of nurses' knowledge and practice regarding obstetrical emergencies and review of relevant literature, the

researcher designed the instructional package in an Arabic language supported by figures and included two parts theoretical & practical. The sessions' number and its content were determined. The researcher used different teaching methods such as group discussion, demonstration, redemonstration with the assistance of the instructional media as video and supported real materials as mask of oxygen, flow meter, humidifier, Y- type blood administration set, urinary catheter, vaginal part of simulator and the emergency tray.

Implementation phase:

Implementation of the instructional package was carried out at the pre mentioned setting. Nurses were divided into 7 groups according to working circumstances and nurses' physical and mental readiness. Each group included 5 nurses. The overall sessions were 8 sessions for each group; divided into 3 theoretical sessions and the duration of each session was ranged from 30-45 minutes followed by and 5 practical sessions and the duration of each session was ranged from 45-60 minutes included periods of discussion according to nurses' achievement, progress and feedback.

Evaluation phase:

During this phase, the effect of the instructional package was evaluated (posttest) by using the same format of tools which were used before the implementation of the instructional package (pretest). Immediate evaluation was conducted after the implementation of the instructional package to evaluate nurses' knowledge gain and performance of practical skills.

Follow up was scheduled three months after implementation of the instructional package to evaluate nurses' knowledge and practical skills regarding obstetrical emergencies.

Limitation of the study:

Sometimes interviewing nurses and the implementation of sessions were postponed as many nurses were most of time busy with women during data collection.

RESULTS

Table (1) Distribution of the studied nurses according to their demographic characteristics (n=36)

Demographic characteristics	No.	%
Age (years)		
20-29	13	36.1
30-39	17	47.2
40-49	4	11.1
50-59	2	5.6
Range	22-53	
Mean \pm SD	32.81 \pm 7.38	
Educational qualification		
Diploma	24	66.7
Technical	9	25.0
Bachelor	3	8.3
Current job		
Nurse	33	91.7
Supervisor	3	8.3
Years of experience		
<5 years	6	16.7
5-10 years	5	13.9
>10 years	25	69.4
Range	1-32	
Mean \pm SD	13.89 \pm 8.31	

Table (1) clarifies that less than half (47.2%) of the studied nurses were in the age group of 30-39 years with a mean age of 32.81 \pm 7.38 years and about two thirds (66.7%) of the studied nurses were diploma nursing graduates. Regarding current job, the majority of the studied nurses (91.7%) were assigned as nurse.

Moreover, more than two thirds (69.4%) of them had >10 years of experience with mean 13.89 ± 8.31 years.

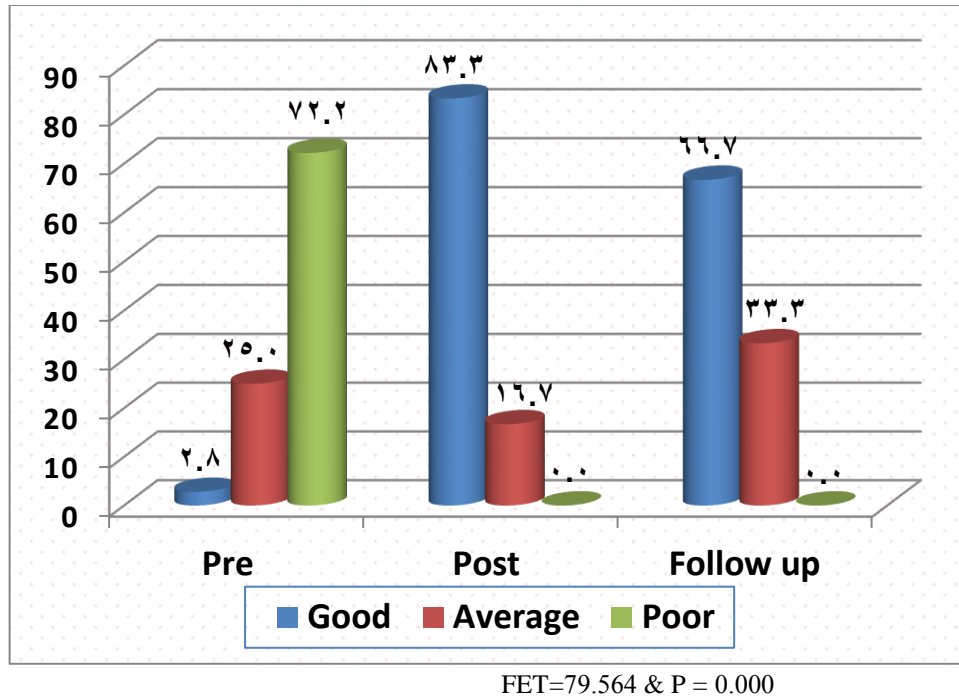


Figure (1) Percentage distribution of the studied nurses according to their total knowledge level about obstetrical emergencies before, immediately after and at follow up phase of instructional package implementation.

Figure (1) shows that a very few percent of nurses (2.8%) had good knowledge regarding obstetrical emergencies before implementation of the instructional package. While, most of them (83.3%) had good knowledge immediately after implementation of the instructional package that decline to (66.7%) of nurses' level of knowledge at follow up phase of the instructional package implementation ($p=0.000$).

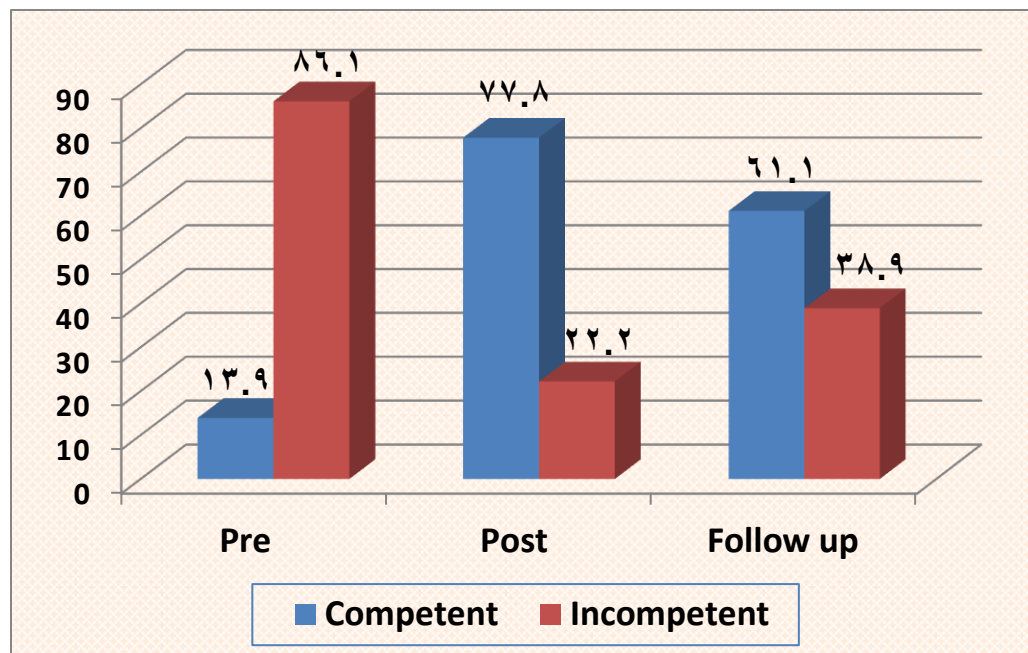
Table (2) Distribution of the studied nurses according to their practices about obstetrical emergencies before, immediately after and at follow up phase of instructional package implementation (n=36)

Times of assessment Items	Before		Immediately after		Follow up		FET	P value
	No.	%	No.	%	No.	%		
Emergency tray preparation								
Competent	2	5.6	23	63.9	19	52.8	£28.611	0.000**
Incompetent	34	94.4	13	36.1	17	47.2		
Competent care during obstetrical emergencies								
Competent	0	0.0	20	55.6	15	41.7	£27.476	0.000**
Incompetent	36	100.0	16	44.4	21	58.3		
Woman resuscitation								
Competent	5	13.9	23	63.9	17	47.2	19.200	0.000**
Incompetent	31	86.1	13	36.1	19	52.8		
Bleeding management								
Competent	3	8.3	26	72.2	20	55.6	£31.903	0.000**
Incompetent	33	91.7	10	27.8	16	44.4		
Eclampsia management								
Competent	6	16.7	27	75.0	17	47.2	24.654	0.000**
Incompetent	30	83.3	9	25.0	19	52.8		
Oxygen administration								
Competent	5	13.9	29	80.6	20	55.6	32.667	0.000**
Incompetent	31	86.1	7	19.4	16	44.4		
Blood transfusion								
Competent	4	11.1	28	77.8	22	61.1	£34.667	0.000**
Incompetent	32	88.9	8	22.2	14	38.9		
Urinary catheterization								
Competent	7	19.4	31	86.1	25	69.4	35.657	0.000**
Incompetent	29	80.6	5	13.9	11	30.6		

**A highly statistical significant difference ($P \leq 0.001$)

£= Fisher Exact Test

Table (2) illustrates that 5.6%, 0.0%, 13.9%, 8.3%, 16.7%, 13.9%, 11.1% and 19.4% of nurses have competent practice before implementation of the instructional package. Meanwhile, 63.9%, 55.6%, 63.9%, 72.2%, 75%, 80.6%, 77.8% and 86.1% of them have competent practice immediately after implementation of the instructional package and 52.8%, 41.7%, 47.2%, 55.6%, 47.2%, 55.6%, 61.1% and 69.4% of them have competent practice at follow up phase regarding emergency tray preparation, competent care during obstetrical emergencies, woman resuscitation, bleeding management, eclampsia management, oxygen administration, blood transfusion and urinary catheterization respectively. Also, there was a highly statistically significant difference in relation to nurses' practice regarding obstetrical emergencies before, immediately after and at follow up phases of instructional package implementation ($P \leq 0.001$).



FET=28.780 & P = 0.000

Figure (2) Percentage distribution of the studied nurses according to their total practices level about obstetrical emergencies at before, immediately after and at follow up phase of instructional package implementation.

Figure (2) shows that more than one tenth of the studied nurses (13.9%) had competent practice regarding obstetrical emergencies before implementation of the instructional package. While, more than three quarters of them (77.8%) had competent practice immediately after implementation of the instructional package that decline to (61.1%) of nurses' level of practice at follow up phase of instructional package implementation (p=0.000).

Table (3) Correlation between studied nurses' total knowledge and practices scores about obstetrical emergencies before, immediately after and at follow up phase of instructional package implementation (n=36)

****A highly statistical significant difference ($P \leq 0.001$)**

Variable		Total knowledge score					
		Before		Immediately after		Follow up	
		R	P value	r	P value	R	P value
Total practice score	Before	0.598	0.000**				
	Immediately after			0.635	0.000**		
	Follow up					0.619	0.000**

Table (3) shows that there was a positive statistically correlation between total knowledge and total practice scores before, immediately after and at follow up phases of instructional package implementation ($P \leq 0.001$).

Discussion

The present study was aimed to study the effect of an instructional package on nurses' performance regarding obstetrical emergencies. The aim was significantly supported through assessing nurses' knowledge and practice regarding obstetrical emergencies, implementation of the instructional package and evaluation of nurses' knowledge and practical skills after the implementation of the instructional package.

As regards characteristics of the studied nurses, the results of the present study showed that nearly half of the studied nurses were in the age group of 30-39 years with a mean age of 32.81 ± 7.38 years. This result is nearly similar with *Devi, (2015)* who studied "Assess the knowledge of staff nurses regarding obstetric emergencies in a selected hospital, Salem, Tamilnadu" on 48 staff nurses and found that the mean age of the studied nurses was 37.2 ± 7.87 years.

Concerning years of experience of the studied nurses, the result of the current study revealed that more than two thirds of the studied nurses had >10

years of experience (average year of 1-32 years), mean experience years 13.89 ± 8.31 years. This result is nearly in the same line with *Bongban et al., (2016)* who studied “*Emergency obstetrics knowledge and practical skills retention among hospital and clinic staff following advanced life support obstetrical training in Cameroon*” and found that 60% of nurses had 1-10 years of experience with an average work experience of 10.5 years (range 1 to 41 years).

Regarding educational qualification of the studied nurses, the result of the current study showed that about two thirds of the studied nurses were diploma nursing graduates. This result is nearly similar to a study conducted by *Attia, (2012)* who studied “*Assessment of emergency nursing care offered at the labor ward of Ain Shams Maternity University Hospital, Egypt*” the sample size was 25 nurses and found that more than three quarters of the studied nurses were diploma nursing graduates.

The result of the present study revealed that there was highly statistically significant difference in relation to total nurses’ knowledge scores regarding obstetrical emergencies before, immediately after and at follow up phases of instructional package implementation. This result may be due to the positive effect of the instructional package and the learning sessions. Also, the topic of the study is considered vital and sensitive to their work in such critical unit so, nurses were very interested and satisfied during the learning sessions. Moreover, they had handout which was followed in care with women to minimize the complications that may affect the woman and newborn.

There was a slightly decrease in the total nurses’ knowledge scores three months after implementation of the instructional package but still higher than before instructional package implementation this may be due to absence of

continuous follow up instructions of the package. So, nurses didn't retain almost the basic knowledge that has been learned.

This result is supported by *Montgomery, (2015)* who studied "*An obstetrical emergency management quality improvement project, Capella University*" and found that there was a significant difference in the pre knowledge test scores (mean=78.13, SD=9.782) and post knowledge test scores (mean =89.60, SD=8.253); $t = -5.048, p = 0.000$).

Also, *Tang et al., (2016)* who studied "*Improvement and retention of emergency obstetrics and neonatal care knowledge and skills in a hospital mentorship program in Lilongwe, Malawi*". 134 nurses were included in the study and found that the hospital-based mentoring program result in both short and long term improvement in emergency obstetrics care knowledge. Scores increased significantly between the Pre-Test and Post-Test 1 (difference 22.9%, $P < 0.001$).

On the other hand, this result is contradicted with *Bayley et al., (2013)* who concluded that training had little impact on levels of knowledge and the gap of knowledge couldn't be overcome by simply providing more training, so most of staff reported perception of poor quality of care.

As regards total nurses' practices score regarding obstetrical emergencies, the result of the present study revealed that more than one tenth of the studied nurses had competent practice regarding obstetrical emergencies before implementation of the instructional package. Meanwhile, more than three quarters of them had competent practice immediately after implementation of the instructional package that slightly decline at follow up phase of instructional package implementation. This result could be explained by lack of nurses'

knowledge which reflected on their practice also, less than one quarter of nurses reported attendance of training courses regarding obstetrical emergencies. This result also reflected the importance of the instructional package and continuous education for nurses on improving their practice regarding obstetrical emergencies.

This result is supported by *Abdelhakm and Said, (2017)* who studied “*Developing nursing management protocol for maternity nurses regarding emergency obstetric care*” this study was conducted in the Obstetrics and Gynecology Emergencies Department at Benha University Hospital including 40 nurses and found that about 77.5% of the studied nurses had unsatisfactory practices toward emergency obstetrics care before intervention of the protocol. Meanwhile, after intervention 82.3% of them had satisfactory practices.

The result of the present study illustrated that all nurses had incompetent practice regarding performance of competent care during obstetrical emergencies that was highly correlated with their lack of knowledge and nearly three quarters of them were completely unaware about obstetrical emergencies during pregnancy, labor process and postpartum period and subsequently its related care.

This could be explained by the belief that nurses are not authorized to take any action toward the admitted emergency cases except for helping doctors to take the action. This condition led them to neglect their basic role in emergency obstetrics life saving measures. Also, this may be attributed to absence of specific training course, improper job description and shortage of nursing staff which led to work overload and being involved in none nursing duties.

This result is consistent with *Nada et al., (2011)* who studied “*Quality of care for obstetric emergencies in 4 general hospitals in Egypt*” found that the

delay in the initial assessment and time spent from initial assessment until intervention started has negative effect on the care offered to the patient. Also, **Chodzaza & Bultemeier, (2010)** who study “*service provider’s perception of the quality of emergency obstetric care provided and factors identified which affect the provision of quality care, Malawi*” and found that the major factors contributing to poor quality of care were lack of nurses’ knowledge related to signs of obstetrical emergencies.

As regards correlation between total scores of nurses’ knowledge and practices, the finding of the present study showed that there was a positive statistically correlation between total knowledge and total practice scores before, immediately after and at follow up phases of instructional package implementation ($P \leq 0.001$). This result may be due to that the good level of knowledge has positive effect on the level of practice.

This result is supported by **Abdelhakm and Said, (2017)** who found that there was statistically significant correlation between total scores of nurses’ knowledge and practice before and after the application of nursing management protocol ($p < 0.01$). Also, **Attia, (2012)** found that there was highly statistically significant correlation between total nurses’ performance and total nurses’ knowledge.

Conclusion

Based on the results of the present study, it could be concluded that the instructional package has positive effect on nurses’ knowledge and practice regarding obstetrical emergencies, there was a highly statistically significant difference in relation to total nurses’ knowledge about obstetrical emergencies before, immediately after and at follow up phases of instructional package

implementation. Also, there was a highly statistically significant difference in relation to nurses' practice about obstetrical emergencies before, immediately after and at follow up phases of instructional package implementation. Moreover, there was a positive statistically significant correlation between total knowledge and total practice scores before, immediately after and at follow up phases of instructional package implementation. Therefore, the study hypothesis was supported.

Recommendations

In the light of the present study findings, the following recommendations are suggested:

- Developing awareness programs for nurses to enhance their knowledge regarding obstetrical emergencies.
- Dissemination of the instructional package to all obstetrics department at Benha University Hospital to improve nurses' knowledge and practices regarding obstetrical emergencies.

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