

# Effect of Obstetric Triage's Training Program on Nurses' Knowledge and Satisfaction at Obstetrics Emergency's Unit

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DOI: <https://doi.org/10.5281/zenodo.6752357>

Published Date: 26-June-2022

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**Abstract:** Background: Triage is the process of prioritizing patients based on the acuity of the problem to take the best treatment in the shortest possible time. It includes brief and focused assessment and patient allocation to an acuity level, which determines the length of time a patient can safely wait for therapeutic screening examination and treatment. Aim: current study evaluates the effect of obstetric triage's training program on nurses' knowledge at obstetric emergency's unit. Study design: A Quasi-experimental one group pre-test, post-test design was used for this study. Sampling: purposive sample including nurses in ER or labor unit who have a bachelor degree and at least one year of experience. Data collection tools: includes three tools; first tool for studied nurses' socio-demographic characteristics, second tool for assessing studied nurses' knowledge regarding obstetric triage, and third tool for assessing nurses' satisfaction. Results this study showed that that there is highly significant difference in nurses' level of knowledge between pretest and posttest regarding obstetric triage and the most of the studied nurses were satisfied with the study. Conclusion the present study concluded that the studied nurses had poor level of knowledge about obstetric triage in pretest, which is conversely changed in posttest. There was highly significant statistically between pretest and posttest. Recommendation conducting more detailed educational sessions about obstetric triage will be more effective way to empower nurses' level of knowledge.

**Key words:** Obstetric Triage – Triage Nurse- Nurses' satisfaction.

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## 1. INTRODUCTION

Emergency departments needed structured triage guidelines to implement this process, so several countries have designed and presented different triage systems. The American College of Emergency Physicians also emphasizes supporting triage systems and believes that the quality, safety, and efficiency of patient care processes will be improved by implementing standardized emergency department triage acuity tools (Moudi, 2020).

The demand for high-quality obstetric care and treatment has led to the advent and development of a field known as obstetric triage. Obstetric triage unit is the place where maternal patients entering the hospital system are initially processed to receive emergency medical and obstetric care. Obstetric triage is more specialized than general and trauma triage, as it involves

assessing labor condition and fetal well-being and preparing tests and interventions for obstetric problems (Goodman, 2017).

The role of obstetric triage in the care of pregnant women has expanded significantly. Factors driving this change include the Emergency Medical Treatment and Active Labor Act, improved methods of testing for fetal well-being, increasing litigation risk, and changes in resident duty hour guidelines. The contemporary obstetric triage facility must have processes in place to provide a medical screening examination that complies with regulatory statutes while considering both the facility's maternal level of care and available resources (Ali, 2016).

### Significant of the study

In Egypt, approximately 2,900 women and girls die each year due to pregnancy-related complications. Additionally, another 58,000 to 87,500 Egyptian women and girls will suffer from disabilities caused by complications during pregnancy and childbirth each year (WHO, 2018). The complexity of physiological and psychological implications of pregnancy highlights the necessity of an experienced and knowledgeable nurse to complete the history and physical assessment for pregnant women. Therefore this study will be conducted to empower nurses with new updated knowledge and practice regarding obstetric triage to enable them to start timely and accurate assessment with careful surveillance and identify complications and initiate appropriate intervention.

### Aim of the study

The aim of current study is to evaluate the effect of obstetric triage's training program on nurses' knowledge at obstetric emergency's unit, this aim will be fulfilled through the following objectives:

1. Assess nurses' level of knowledge regarding obstetric triage.
2. Assess nurses' satisfaction level with obstetric triage training program.
3. Apply training program regarding obstetric triage.
4. Determine the effectiveness of nursing intervention through comparing the results of pre and posttest.

### Hypotheses

Training program on obstetric triage will be effective in improving nurse's knowledge and level of satisfaction regarding obstetric triage.

## 2. SUBJECTS AND METHODS

### I. Technical design

The technical design for this study includes the research design, study setting, subject of the study, and tools of data collection.

#### Research design:

A Quasi-experimental design was used for this study "one group pre-test, post-test".

#### Setting:

The study was carried out at obstetric emergency unit in hospital of obstetrics and gynecology, which affiliated to Ain Shams University.

#### Subject:

**Sample type:** A purposive sample of nurses working on obstetric emergency unit. Nurses were selected according to inclusion criteria as follows:

#### Inclusion criteria:

1. Having a bachelor degree or post graduate studies.
2. Minimum one year experience as an emergency nurse.

## International Journal of Novel Research in Healthcare and Nursing

Vol. 9, Issue 2, pp: (105-120), Month: May - August 2022, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

**Sample size:** 60 nurses has been selected according to the criteria of selection to participate in this study over 6 months.

### Tool validity and reliability

Tool's validity and reliability were done by panel of expertise in the field of maternal and newborn health nursing. The tools were reviewed for simplicity of language, comprehensiveness and understandability. The reliability was done by crombach Alpha coefficient test equal 65%

### Data collection tools

The data for this study was collected using three tools as follows:

#### The first tool: structured interviewing questionnaire

It was designed by the researcher after literature reviewing and this tool is related to Socio-demographic characteristics of the participants as age, sex, educational level, work experience and occupation.

#### The second tool: Knowledge assessment sheet

It was developed by researcher to assess nurses' level of knowledge regarding obstetric triage, contains a total of 13 items such as definition of triage system, obstetric triage, purpose of obstetric triage, visual acuity chart colors, triage acuity scale, waiting time during triage, barriers to implement triage and nursing role.

This tool was applied before and after the educational session to assess effect of educational session on nurses' level of knowledge.

**Scoring system:** it is based on nurses' responses to 21 items on a 3-point Likert scale "poor knowledge, average knowledge, good knowledge". Total score of knowledge was 63, which divided as following; poor knowledge less than 50% which equal 0 to 32 of total score of knowledge, average knowledge from 50% to 75% which equal from 33 to 47 from total score of knowledge, good knowledge more than 75% to 100% which equal 48 to 63 from total score of knowledge.

#### The third tool: Assessment of nurses' satisfaction

It was adopted from **Awad, 2020** and modified by the researcher to assess nurses' level of satisfaction. It contains 7 items.

**Scoring system:** it is based on women responses to 7 items on a 3-point Likert scale "1=satisfied, 2=uncertain, 3=unsatisfied. Score (1), indicating a higher level of satisfaction regarding educational program. Conversely, score (3), indicating low satisfaction. Higher scores reflect more positive perceptions regarding obstetric triage importance as a nursing role.

## II. Operational design

### Pilot study:

A pilot study was conducted on 10% of subject which was 10 women of study's sample. The aim of the pilot study was to determine the clarity, feasibility and applicability of the study tools, and estimate the time needed for completing the questionnaires and also to test the clarity of questions and simplicity of language. Those participants of pilot study were excluded from the study sample.

### Field Work

After official permission obtained from previously mentioned settings. The study was carried out over six months started from beginning of June 2020 to the end of December 2020. The average time spent to fill in the tools was 30 minutes for the self-administered questionnaire, 10 minutes for Likert scale assessment, and 45 minutes for the observational checklists. The researcher went to the study setting one day per 2 weeks from 9 am to 2 pm.

### Assessment

The researcher explained the aim of the study and obtaining a verbal consent from the studied sample to participate in the study. Pre-test knowledge assessment interviewing questionnaire was applied to assess nurses' knowledge about obstetric triage. Fulfilling of the pretest consumed 30 minutes by the nurse. Assessment phase help the researcher to keep the base line of nurses' knowledge of obstetric triage.

### Implementation

implementation of the educational program conducted in 4 sessions. The time of each session ranged between 30 – 45 minutes, according to the nurses' needs and circumstances of the group work. Nurses divided into groups, and each group involved between 3 and 4 nurses. The educational program was divided into theoretical part and practical part. The theoretical part of educational program was conducted into 2 sessions in the form of lecture session and group discussion session. While the practical part conducted into 2 sessions of demonstration and redemonstration. The researcher prepared case studies previously for nurses to practice and demonstrate the use of Obstetric Triage Algorithm, all used case studies are mentioned in Educational Kit.

Each session started with a recapping of what had been given through the previous sessions and the objectives of the new one. The researched worked hard to maintain simple language to meet nurses' level of understanding and researcher was very open to their questions and allowed them to express their thoughts effectively. The researcher was very careful for soliciate feedback form nurses on timely manner.

The researchers handed an interactive educational kit to nurses for further reading and understanding.

### Evaluation

#### 1. Post training program's evaluation of Nurses' performance

The researcher used posttest knowledge assessment interviewing questionnaire to evaluate nurses' level of knowledge about obstetric triage after one month of training session.

#### 2. Evaluation of Nurses' Satisfaction:

After educational session, the nurses' satisfaction questionnaire was applied to assess nurses' satisfaction regarding the whole educational program.

### III. Administrative design

Official letters were obtained from Dean of Faculty of Nursing, Helwan University and the Director of Hospital of Obstetrics and Gynecology, which affiliated to Ain Shams University

### Ethical consideration

The study protocol was approved by the ethics and research committee in the faculty of nursing, Helwan University. Official permissions to conduct the study were secured. All participants gave their oral informed consent to participate in the study sample. They were informed about the study purpose, procedure and about their rights to refuse or withdraw without giving reasons. They were reassured about the anonymity of the information collected, and that it would be used only for the purpose of scientific research.

### IV. Statistical design

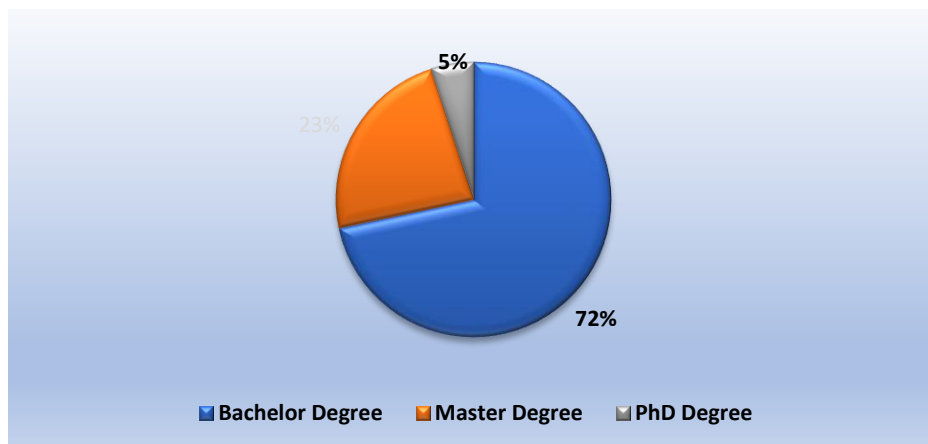
Data entry and quantitative data analysis was done by the IBM - SPSS (Statistical Package for the Social Sciences) software (Version 23.0) and AMOS 20.0.0 (Build 817). Data were presented, analyzed and tabulated using descriptive statistics in the form of frequencies and percentage for qualitative variables, means and standard deviations for qualitative variables, test of significance (Chi-Square test and T test) were applied to test the study hypothesis, correlation coefficient was calculated between knowledge and practice and high Statistically significant was considered at P value <0.000.

### 3. RESULTS

**Table (1):** Distribution of the studied nurses according to their socio demographic characteristics (N= 60).

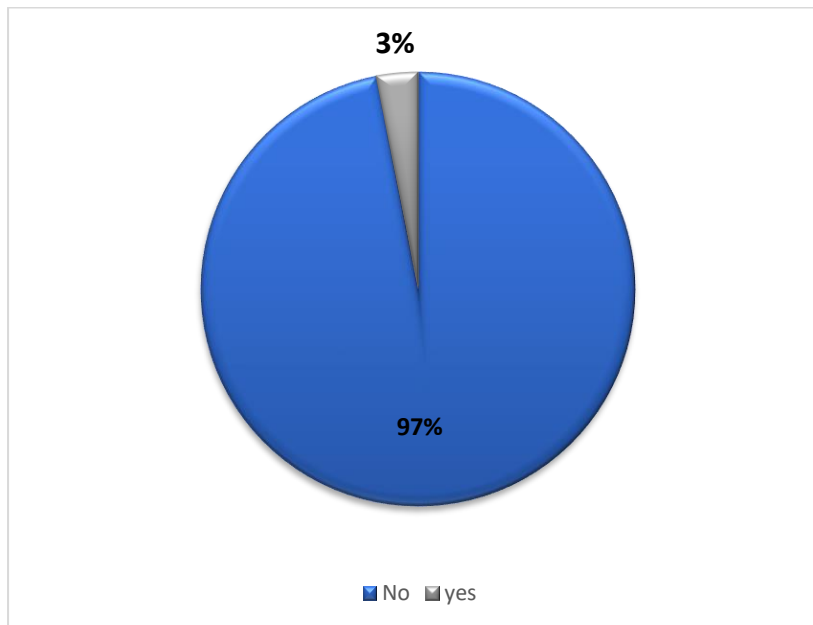
Items	Studied Nurses	
	no.	%
<b>Age (Years)</b>	16	26.7
Less than 25	24	40.0
From 26 to 35	17	28.3
From 36 to 45	3	5.0
More than 45		
<b>Mean ± SD</b>	30.33 ± 7.13	
<b>Sex</b>		
• Female	60	100.0
• Male	0	0.0
<b>Years of nursing professional experience</b>		
• From 1 to 5	22	36.7
• From 6 to 10	13	21.7
• From 11 to 15	14	23.3
• More than 15	11	18.3
<b>Mean ± SD</b>	2.23 ± 1.14	
<b>Years of working as emergency's nurse</b>		
• Less than one	1	1.7
• From 1 to 3	26	43.3
• From 4 to 5	9	15.0
• More than 5	24	40.0
<b>Position</b>		
• Staff Nurse	44	73.3
• Charge Nurse	10	16.7
• Head Nurse	6	10.0

Table 1: shows that 40% of studied nurses aged from 26 to 35 years, with Mean ± SD of age 30.33 ± 7.13 years. 44% of studied nurses were staff nurses. Regarding nurses' years of experience, 36.7% had 1 to 5 years, while 18.3% of them had experience more than 15 years with Mean ± SD of 2.23 ± 1.14 year of experience. 43.3% of studied nurses had years of experience of working in emergency department from 1 to 3 year.



**Figure 1** Distribution of studied Nurses according to their level of education (N=60)

This figure shows that 75% of studied nurses had a bachelor degree education, while 5% of them had a PhD degree.



**Figure 2** Distribution of studied Nurses according attending training of emergency (N=60)

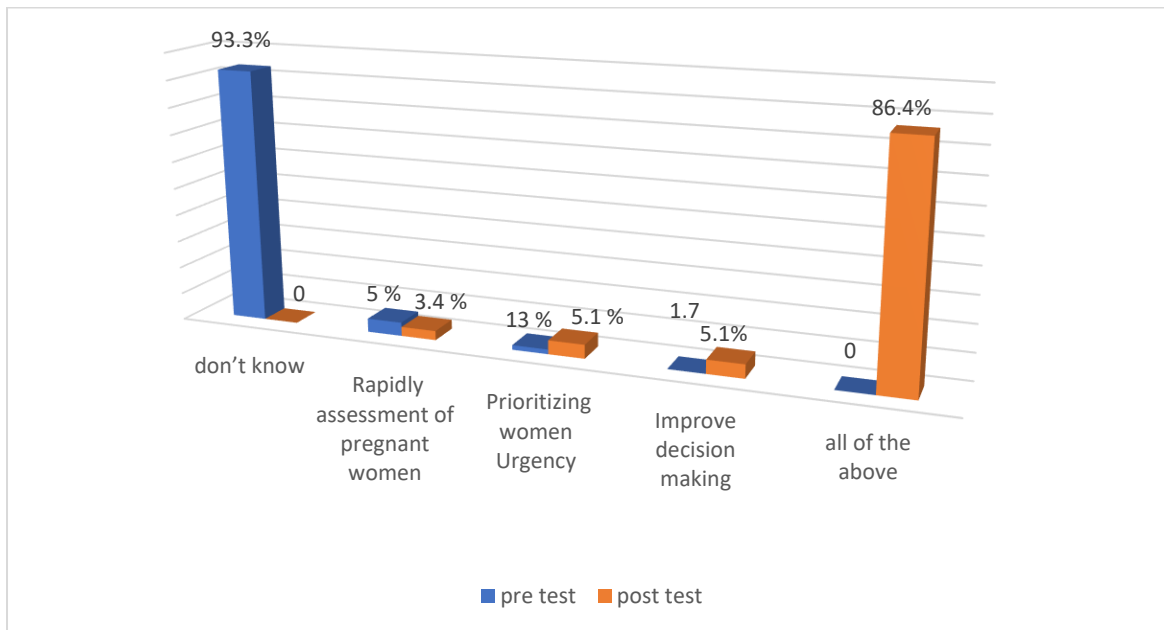
This figure shows that only 3% of studied nurses had a training in the field of pregnancy emergency.

**Table (2):** Distribution of the studied nurses according to their level of knowledge regarding Obstetric Triage (N= 60).

Items	Studied nurses					Chi-square	P Value
	Pre-test		Post- test				
	no.	%	no.	%			
<b>Definition of triage system</b>							
• Correct and complete	2	3.3	53	88.3	105.07	.000**	
• Correct and incomplete	2	3.3	7	11.7			
• Don't Know	56	93.3	0	0			
<b>Definition of Obstetric Triage</b>							
• Correct and complete	1	1.7	50	83.3	106.07	.000**	
• Correct and incomplete	3	5.0	10	16.7			
• Don't Know	56	93.3	0	0			
<b>Common types of Obstetric Triage</b>							
• Correct and complete	1	1.7	52	86.7	103.14	.000**	
• Correct and incomplete	1	1.7	7	11.7			
• Don't Know	58	97.6	1	1.7			
<b>Acuity levels of Obstetric Triage Acuity Scale</b>							
• Correct and complete	0	0	51	85	111.25	.000**	
• Correct and incomplete	0	0	7	11.7			
• Don't Know	60	100	2	3.3			

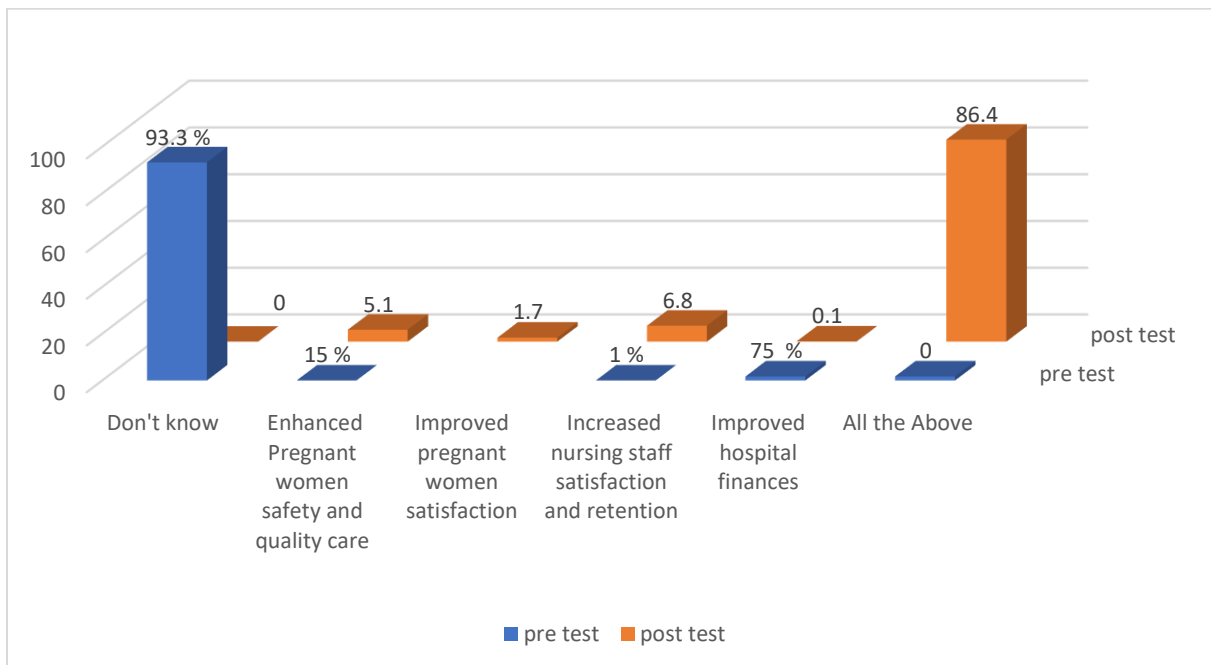
\*\* Highly statistically significant P<.000

Table 2 illustrates that there was highly significant improvement between pre- post educational sessions regarding nurses' level of knowledge related to understanding the definition, common and acuity level of obstetric triage system (P<.000).



**Figure 3** Nurses’ level of knowledge regarding purpose of obstetric triage

Figure 3 shows that studied nurses had limited idea about the purposes of Obstetric Triage, but this idea was improved after educational session and expressed statistically highly significant difference between pre- post educational sessions results ( $P < 0.000$ ). As 93.3% of nurses didn't know the purpose of obstetric triage, while 86.4% of them were able to list all purposes of obstetric triage correctly.



\*\* Highly statistically significant  $P < .000$

**Figure 4** Nurses’ level of knowledge regarding function of obstetric triage

This figure shows that studied nurses had limited knowledge about functions of obstetric triage which has been completely changed positively improved after training program and expressed statistically highly significant difference between pre-post educational sessions ( $P < 0.000$ ).

International Journal of Novel Research in Healthcare and Nursing

Vol. 9, Issue 2, pp: (105-120), Month: May - August 2022, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

**Table (3):** Distribution of the studied Nurses according to their level of knowledge regarding visual acuity chart colors (N= 60).

Items	Studied Nurses					Chi-square	P Value
	Pre-test		Post- test				
	no.	%	no.	%			
<b>Red Color Code</b>							
Cardiac respiratory distress	0	0	3	5.1	105.86	.000**	
Seizures	1	1.7	3	5.1			
Eclampsia	2	3.3	3	5.1			
No fetal movement	1	1.7	5	8.5			
Active hemorrhage	0	0	3	5.1			
Urge to push	0	0	0	0			
Diabetic Coma	1	1.7	1	5.1			
Don't Know	55	9.1	0	1.7			
All the Above	0	0	41	69.5			
<b>Yellow Color Code</b>							
• Contraction every 2 minutes	0	0	2	3.4	110.11	.000**	
• Multi-para in active labor	0	0	0	0			
• Decrease fetal movement	4	6.7	5	8.5			
• Abdominal Pain	0	0	3	5.1			
• Preterm labor	0	0	1	1.7			
• Premature rupture of membrane	0	0	7	11.9			
• Don't Know	56	93.3	0	0			
• All the Above	0	0	41	69.5			
<b>Green Color Code</b>							
• Nausea and vomiting	1	1.7	8	13.6	112.77	.000**	
• Diarrhea	1	1.7	1	1.7			
• Stable gestational hypertension	0	0	4	5.1			
• Wound care	2	3.3	1	1.7			
• Vaginal discharge	0	0	2	3.4			
• Don't know	56	93.3	0	0			
• All the Above	0	0	43	72.9			

\*\* Highly statistically significant P<.000

Table 3 display that there is highly significant improvement regarding nurses' level of knowledge related to using visual acuity chart color codes and parameters of each code of them (red- yellow- green) in pre- post educational sessions (P<0.000).

**Table (4):** Distribution of the studied Nurses according to their level of knowledge regarding Maternal Fetal Triage Index "MFTI" (N= 60).

Items	Studied Nurses					Chi-square	P Value
	Pre-test		Post- test				
	no.	%	no.	%			
<b>Definition of MFTI</b>							
• Correct and complete	0	0	51	86.4	119.00	.000**	
• Correct and incomplete	0	0	8	13.6			
• Don't Know	60	100	0	0			



<b>Appropriate time to use MFTI</b>						
• Correct and complete	0	0	56	94.9	115.06	.000**
• Correct and incomplete	0	0	4	3.4		
• Don't Know	60	100	1	1.7		
<b>acuity levels of MFTI</b>						
• Correct and complete	0	0	53	89.8	119.00	.000**
• Correct and incomplete	0	0	6	10.2		
• Don't Know	60	100	0	0		
<b>Assessment area while using MFTI</b>						
• Vital Signs	3	5	5	8.5	108.83	.000**
• Fetal Heart Rate	0	0	5	8.5		
• Pain level assessment	0	0	2	3.4		
• Copying with labor	0	0	2	3.4		
• High risk signs	1	1.7	2	3.4		
• Don't know	56	93.3	0	0		
• All the Above	0	0	44	74.6		
<b>Role of Obstetric Triage Nurse</b>						
• Correct and complete	1	1.7	51	86.4	106.34	.000**
• Correct and incomplete	3	5.0	8	13.6		
• Don't Know	56	93.3	0	0		

\*\* Highly statistically significant  $P < .000$

This table emphasized that there is highly significant improvement in nurses' level of knowledge regarding MFTI in posttest in compared to pretest ( $P < 0.000$ \*\*). As regard definition of MFTI, 86.4% of studied women gave correct and complete answer, while in pretest 100% of them gave incorrect answer. 94.9% of studied nurses gave right answer related to the appropriate time to use MFTI in posttest. 89.8% of them can define the acuity level of MFTI in posttest. In compared with 93.3% of them didn't know the role of nurse in obstetric triage in pretest, 86.4% were able to give correct and complete answer in posttest.

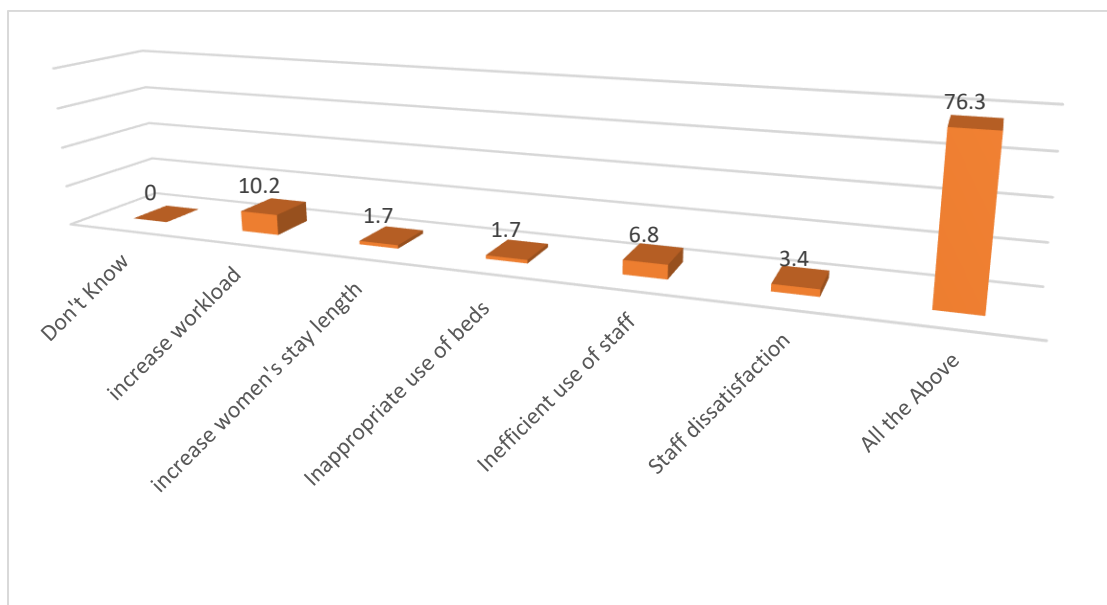


Figure 5 Nurses' level of knowledge regarding barriers of obstetric triage

This figure shows that 67.3% of studied nurses identify all barriers of obstetric triage and only few percentages 1.7% selected increasing women’s length of stay and inefficient use of staff as a barrier to apply obstetric triage.

**Table (5):** Distribution of the studied Nurses according to their knowledge about the efficiency of obstetric triage (N= 60).

Items	Studied Nurses					
	Pre-test		Post- test		Chi-square	P Value
	no.	%	no.	%		
<b>Use of categories and time frames during triage is helpful and decrease work load?</b>						
• Efficient	4	6.7	53	89.9	104.122	.000**
• Non-Efficient	0	0	6	10.2		
• Don't Know	56	93.3	0	0		
<b>Triage process Allows you to use your clinical judgment?</b>						
• Efficient	3	5.0	59	98.3	104.21	.000**
• Non-Efficient	1	1.7	1	1.7		
• Don't Know	56	93.3	0	0		
<b>Triage Enables you to obtain medical assistance more appropriately?</b>						
• Efficient	3	5.0	54	91.5	104.29	.000**
• Non-Efficient	1	1.7	6	8.5		
• Don't Know	56	93.3	0	0		
<b>Using of triage Means the Department is more organized and efficient?</b>						
• Efficient	4	6.7	56	94.9	104.60	.000**
• Non-Efficient	0	0	4	5.1		
• Don't Know	56	93.3	0	0		
<b>Triage is helpful in assessing clinical urgency accurately of nurses who attend to emergency department?</b>						
• Efficient	0	0	55	91.5	115.66	.000**
• Non-Efficient	1	1.7	5	8.5		
• Don't Know	59	98.3	0	0		

\*\* Highly statistically significant P<.000\*\*

Table 5 shows that there is highly statistically significant difference between pre- post educational sessions with P<0.000\*\*. According to efficiency of obstetric triage system nurses didn't know if the triage is efficient to their work or not, while in posttest they realized how the triage is efficient to their work.

**Table (6):** Distribution of the studied nurses according to their level of total knowledge (N= 60).

Items	Studied Nurses					
	Pre-test		Post- test		Chi-square	P Value
	no.	%	no.	%		
<b>Total knowledge</b>						
• Poor knowledge	55	91.7	0	0	112.50	.000**
• Average knowledge	5	8.3	6	10.090.		
• Good knowledge	0	0	54	0		
Mean ± SD	21.88 ± 3.33		58.48 ± 6.3			.000**

\*\* Highly statistically significant P<.000

Table 6 shows that there is highly significant difference in studied nurses' total knowledge level between pre and post educational session with value 0.000\*\*. As 91.7% of studied nurses had poor knowledge at pretest, while 90% of them had good level of knowledge at posttest.

**Table 7:** Correlation coefficient (r) association between studied nurses' total score of knowledge and their educational level, years of nursing experience and their years of experience in emergency department

Variables	Level of education		Years of nursing experience		Years of ER experience	
	R	Sig. 2 tailed	r	Sig. 2 tailed	r	Sig. 2 tailed
Level of knowledge	-0.177	0.176	-.009	0.946	-0.170	.194

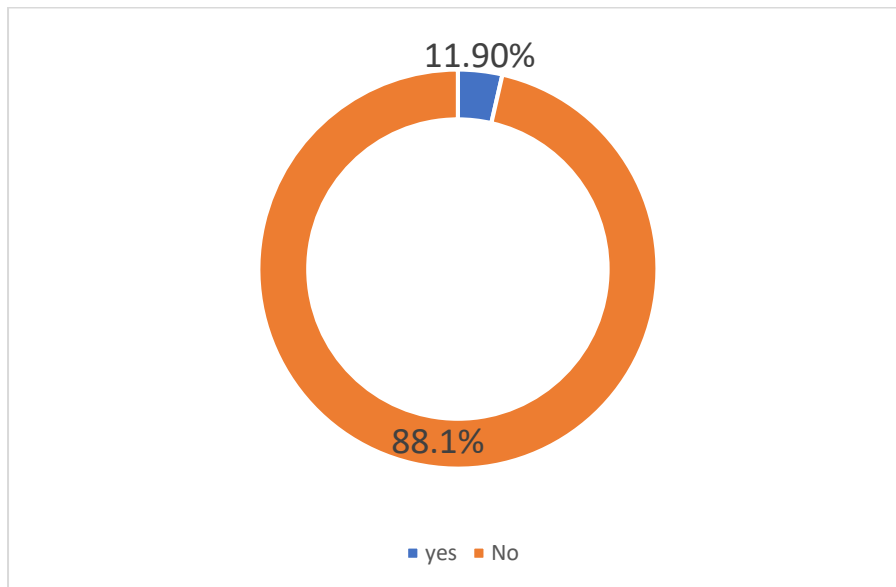
\*Correlation is statistically significant at the 0.01 level (2 tailed).

Table 7 illustrates the pattern of correlation association between studied women's total score of knowledge (and their educational level, years of nursing experience and their years of experience in emergency department. It's clearly that there is weak negative non-significant correlation between total score of knowledge and level of education ( $r = -0.177, p = 0.176$ ). In addition, there is weak negative non-significant correlation between women's total score of knowledge and years of nursing experience ( $r = -.009$ ) at  $P < 0.946$ . Also, there is weak negative non-significant correlation between women's total score of knowledge and years of working in ER department ( $r = -.170$ ) at  $P < 0.194$ .

**Table (8):** Distribution of the studied nurses according to their level of satisfaction regarding the nursing educational program (N= 60).

Items	Studied Nurses	
	no.	%
<b>Did the Triage training give you sufficient knowledge of what it involves and how it would work?</b>		
• Satisfied	55	98.3
• Uncertain	0	0
• Not satisfied	4	6.8
<b>Did the Triage training give you confidence in assessing nurses and undertaking their immediate care?</b>		
• Satisfied	56	94.9
• Uncertain	0	0
• Not satisfied	3	5.1
<b>Trainer allows you to express your thoughts and listen carefully to you</b>		
• Satisfied	55	93.2
• uncertain	0	0
• Not satisfied	44	6.8
<b>Did all of your question were answered completely?</b>		
• Satisfied	53	89.8
• Neutral	1	1.7
• Not satisfied	6	8.5
<b>Educational kit was clear, comprehensive and simple to be understood</b>		
• Satisfied	56	93.2
• Uncertain	0	0
• Not satisfied	4	6.8

This table shows that an appreciable number of studied nurses had satisfaction regarding educational sessions, hard copies, asking and answering questions, and way of communication, while only few percentages of them were not dissatisfied.



**Figure 6** Nurses' additional comments regarding the improvement of obstetric triage training program

This figure shows that around 88.1% % of studied nurses saw that the training program was comprehensive and need no improvement while 11.9% of them recommended some points for improvements such as increase time of the session, include all layers of nurses as technical institute nurse and diploma nurse in the program.

#### 4. DISCUSSION

Triage nurses play a key role in the prioritization of the needs of patients in critical conditions and in need of immediate attention, so it is very important to study and identify different ways and methods to enhance triage nurses' professional capabilities (**Bijani,2018**).

The findings of the current study revealed that the majority of studied nurses were aged from 26-35 years old, while the minority age was more than 45years old and about one third of them aged from 36- 45 years with Mean  $\pm$  SD of age  $30.33 \pm 7.13$ . Similarly (**Mbombi,2019**), reported that most of the studied nurses in this study were between the ages of 35 and 49, followed by one third of studied nurses in the age group of 20-35 and only few percentages more than 50 years old. This indicates that nurses in the Emergency Departments represent the most active working age group, as the oldest were the fewest.

Regarding nurses' level of education, the present study finds out that there was no statistically significant correlation between their level of education and their level of knowledge. Despite of the majority of studied nurses had a bachelor degree of education, and the minority of them had a PhD degree, it is worrisome that great proportions of them were not aware with obstetric triage. There was no statistically significant between nurses' level of education and their level of knowledge. On the same line (**Al-Marzooq,2020**), concluded that there is no association between educational level and the correct knowledge about triage among nurses.

Conversely (**Phukubye, 2019**), found that the majority of the respondents were enrolled nurses and auxiliary nurses, and these groups have one-year and two-year nursing certificates. Nurses with diplomas made up one quarter compared with few percentages has bachelor degree and post-graduate studies. This difference may be due to that nursing colleges in South Africa have a greater intake and output of nursing graduates than universities do.

Regarding nurses' professional working years, this study showed that the two fifth of studied nurses had 1 to 5 years of experience, while about one third of them had 11 to 15 years of experience with Mean  $\pm$  SD of experience years  $2.23 \pm 1.14$ . In this study there was no statistically significant between nurses' professional working years and their level of knowledge or level of practice.

Conversely (**Yakong, 2017**), showed that working experience was correlated with nurses' level of knowledge and practice of obstetric triage. This increase in knowledge and practice level about triage could be due to the work exposure, also attending a lot of workshops/in-service training on triage.

Regarding nurses' working years in Emergency Department, this study showed that the two fifth of studied nurses had 1 to 3 years of working experience in ER, while about two fifth of them had more than of 5 years of experience in ER. In this study there was positive statistically significant between nurses' professional working years in ER and their level of practice ( $p < .000^{**}$ ).

On the same line (**Awad, 2020**), revealed that there were statistically significant association between nurses' years of working experience in emergency department and score of total knowledge and score of total practice. On other hand, on **1984** Benner published his theory on the five-stages of skill acquisition, emphasized that nurse needs to have at least three years or more of working experience in the same job environment to be competent.

According to the current study finding, there was major deficiency in nurses' knowledge regarding obstetric triage indicated that lack in service training courses regarding obstetric triage. In this regard, the study done by **Duko, 2019** who studied triage knowledge and skills among nurses in emergency units of Specialized Hospital in Hawassa, Ethiopia showed that only 17% of the participants had received triage training

Regarding level of nurses' level of knowledge, the present study revealed that the implementation of the training program for nurses under study led to significant improvements in nurse's knowledge with highly statistically significance in nurses' knowledge with P value .000\*\*. As In pretest, the level of nurses' knowledge regarding definition and types of obstetric triage was low as most of studied nurses didn't know the definition and types of obstetric triage, while in posttest there was an improvement in their level of knowledge as the majority of studied women gave correct complete answer. The present study findings may attribute to the successful theoretical and practical training sessions which given by the researcher.

According to Acuity level of obstetric Triage Acuity Scale, the present study revealed that there was highly statistically significance in nurses' knowledge with P value .000\*\*. As in pretest all of studied nurses did not identify the acuity level, which is totally improved in posttest as more the four fifth of studied nurse gave correct and complete answer and mention the five levels of Acuity Scale.

On the other hand, this study agreed with the study of **Basso, 2016** who studied the Acuity Assessment in Obstetric Triage in Canada identified the five-category Obstetrical Triage Acuity Scale (OTAS) as follows; Resuscitative, emergent, urgent, less-urgent, non-urgent.

Regarding the purpose of obstetric triage, the present study showed that there was highly statistically significance in nurses' level of knowledge between pretest and posttest with P value .000\*\*. In pretest, the majority of studied nurses didn't know the purpose of obstetric triage while the minority of them identified that rapidly assessment of pregnant women as a purpose of obstetric triage. In posttest there was a marked improvement in their level of knowledge as the more than four fifth of them identified improve decision making, prioritizing women urgency and rapidly assessment of pregnant women.

This result is supported by the study done by **Olofinbiyi, 2020** who studied a perception survey on the roles of nurses during triage in a selected public hospital in Kwazulu-Natal Province in South Africa, reported that purposes of obstetric triage could be managing women's flow in emergency department, initiate appropriate treatment plan based on women's clinical case, provide efficient care, proper documentation and smoother communication between patients and healthcare providers.

Considering importance of obstetric triage, the present study revealed that there was highly statistically significance in nurses' knowledge with P value .000\*\*. As in response to pretest the majority of studied nurses did not know the function of obstetric triage. While in posttest, there was noticed improvement in nurses' level of knowledge regarding functions of obstetric triage as the more than four fifth of them identified enhanced pregnant women safety and quality of care, improve pregnant women satisfaction, increase staff satisfaction and retention, and improved of hospital finances as functions of obstetric triage.

These results are Close to other study done **Riad, 2019** who studied nurses' perception toward implementation of an emergency department Triage System in Egypt stated that obstetric triage helps to prioritize women in emergency

department, decrease workload, control overcrowding, provide adequate and high quality of care, reduce women waiting time and increase level of satisfaction, decrease numbers of unnecessary occupied beds.

Regarding Visual Acuity Chart, the current study showed that there was highly statistically significance in nurses' knowledge in pretest compared to posttest with P value 0.000\*\*. In pretest the majority of studied nurses did not know how to use visual acuity chart to determine women's severity level.

In posttest, around three quarters of studied nurses could understand the color code of visual acuity chart and the parameters of each color. Also, they were able to use visual acuity chart to assess women's acuity and severity level and set the management plan of nursing care effectively.

This study was agreed with the report published by *AWHONN, 2016*, in United States reported that visual acuity chart is an effective tool to assess women's acuity condition. The chart consisted of three-color code red, yellow and green nurse can use the parameters of each color code to determine women's severity level, waiting time for reassessment and required action and care.

Regarding to nurses' level of knowledge regarding the appropriate time of using maternal fetal triage index tool (MFTI), the present study revealed that there was highly statistically significance in nurses' knowledge in pretest compared to posttest with P value .000\*\*. As in pretest all of studied women didn't know when to using MFTI. After training session, the posttest assessment showed improvement in studied nurses' level of knowledge. As the most of them gave correct and complete answer "using MFTI at 16 weeks of pregnancy".

On the same line *Association of Women's Health, Obstetric and Neonatal Nurses, 2021* in United States reported that maternal fetal triage index should be used to assess pregnant women's acuity level of care after 16 weeks of pregnancy.

Considering the acuity level of Maternal and Fetal triage Index, the current study showed that there was highly statistically significance in nurses' knowledge with P value .000\*\*. As in pretest all of studied nurses did not identify the acuity level of MFTI, which is totally improved in posttest as more the most of studied nurse gave correct and complete answer and mention the five levels of maternal and fetal triage index's Acuity level.

These results come in accordance with the studies done by *Iqbal, 2021*, who studied evaluation of maternal-fetal triage index in a tertiary care labor and delivery unit who reported that maternal-fetal triage index is a standardized tool for obstetric triage in which pregnant women are classified based on acuity using a five-level system ranging from priority 1 (highest acuity) to priority 5 (lowest acuity) as follows; State, urgent, prompt, non-urgent, requested or scheduled.

Regarding assessment areas while using maternal and fetal triage index, this study revealed that there was highly statistically significance in nurses' knowledge between pretest and posttest with P value .000\*\*. As in pretest, the most of studied nurses didn't know assessment areas during triage, only few percentages of them identify vital signs as assessment area. In posttest, there was noticed improvement in their level of knowledge as about three quarters of studied nurses gave correct and complete answers and were able to identify all areas which must be assessed during triage.

These results agree with the report published by *Association of Women's Health, Obstetric and Neonatal Nurses 2021*, which stated the during using of maternal and fetal triage index nurses must assess maternal vital signs, fetal heart rate, pain level assessment, coping with labor, signs of high risk and emergencies.

According to nurses' level of knowledge regarding the role of obstetric triage nurse, the present study revealed that there was highly statistically significance in nurses' knowledge in pretest compared to posttest with P value .000\*\*. The study finding revealed that the majority of studied nurses the most didn't know the exact role of obstetric triage nurse. While in posttest, the most of studied nurses gave correct and complete answer.

On the same line, this study agree with the study conducted by *Laskowski 2020*, who studied responding to trauma: your priorities in the first hour, reported that the role of obstetric triage nurse is to ensure assessment of women by observation of general appearance, collection of a focused history in order to identify the presenting problems and clinical risk, institute first aid measures where necessary, measure complete vital signs, assessing labor signs and appropriate documentation of all findings.



**International Journal of Novel Research in Healthcare and Nursing**

Vol. 9, Issue 2, pp: (105-120), Month: May - August 2022, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

From the researcher points of view, this deficiency in nurses' level of practice in pre-training session may be due to that the training system for preparing emergency nurses still insufficient compared with the growing demand for emergency services in Egypt.

According to efficiency of obstetric triage system, this study illustrated that there was highly statistically significance in nurses' level of knowledge with P value .000\*\*. As in posttest, the majority of studied nurses reported that obstetric triage was an efficient tool to decrease workload, enhance nurses' clinical judgment, help nurse to obtain appropriate medical assistance and organized women efficiently according to their clinical urgency. Only few percentages reported that obstetric triage is non-efficient to their work.

This result was similar to the study conducted by *Abd El-Razik 2018*, who studied the effect of nurse's application of structure obstetrics triage guideline on pregnant women outcomes in Egypt reported that simulation of obstetrical triage was an efficient tool to improve nurses' performance in emergency department, nurses' clinical judgment and improve their overall practices.

Regarding studied nurses' satisfaction level, the current study confirmed that the majority of studied women were satisfied with the training session, given educational kit, way of communication with researcher, while less than one fifth of studied nurses were neutral or dissatisfied. This could be considered as a good indicator for the effectiveness of health training session regarding cervical cancer prevention and early detection.

It is worth mentioning that most of studied nurses mentioned that training session improved their confidence in assessing women's conditions and initiate immediately care.

On the same line the study done by *Awad,2020*, who studied the effect of implementing obstetric triage training on nurses' knowledge and practice reported that Concerning the nurses' satisfaction regarding the simulation obstetric triage training among working nurses in labor, delivery and emergency units at different setting, the present study findings illustrated that majority of them were satisfied with the researchers' performance, the simulation training scenarios and the training exercises. This level of satisfaction may be due to the well-structured training program conducted by researchers.

**5. CONCLUSION**

The present study concluded that the studied nurses had poor level of knowledge about obstetric triage in pretest, which is conversely changed in posttest. There was highly significant statistically between pretest and posttest.

**6. RECOMMENDATION**

Based on the study finding, there is an urgent need to conduct more detailed educational sessions about obstetric triage will be more effective way to empower nurses' level of knowledge.

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