



# International Journal of Obstetrics and Gynaecological Nursing

E-ISSN: 2664-2301  
P-ISSN: 2664-2298  
IJOGN 2023; 5(1): 56-62  
Received: 03-12-2022  
Accepted: 05-01-2023

**Shimaa Mahmoud Mohammed Mostafa**

Master's degree in women's health and obstetric nursing, Faculty of Nursing, Minia University, Egypt

**Ekbal Abdel Raheem Emam**

Professor of Women's Health & Obstetrical Nursing, Faculty of Nursing, Minia University, Egypt

**Entisar Mohammed Youness**

Professor of obstetrics & gynecological Nursing, Dean of Nursing Faculty, Sphinx University Assuit, Egypt

**Corresponding Author:**

**Shimaa Mahmoud Mohammed Mostafa**

Master's Degree in Women's health and obstetric nursing, Faculty of Nursing, Minia University, Egypt

## Training program impact on nurses' knowledge and practice regarding obstetric triage

**Shimaa Mahmoud Mohammed Mostafa, Ekbal Abdel Raheem Emam and Entisar Mohammed Youness**

DOI: <https://doi.org/10.33545/26642298.2023.v5.i1a.108>

### Abstract

**Introduction:** Patients frequently make their first contact with the birth unit through the nurse in the obstetric triage unit. Also, in order to prevent denial and delay in providing the necessary care, the triage unit nurse plays a crucial role in recognizing patients who present with urgent or emergent conditions. Thus, an important part of the triage unit for nurses' orientation is the Obstetric Triage Education course, which is the first course to cover obstetric triage unit nursing care.

**Aim:** evaluate nurses' knowledge and practice regarding obstetric triage.

**Research Design:** The current research used a quasi-experimental pre/post-test design.

**Setting:** Conducted at delivery, Labor, Filter Clinic, and Highly Dependent Unit on Maternity and Child Minia University Hospital. Sample: A convenient sample of all nurses (63 nurses). Tools: Two tools; the first tool consisted of two parts a self-administered Questionnaire, the assessment of nurses' knowledge in relation to obstetric triage, and the second tool observational checklist to assess nurses' practice.

**Results:** findings of this study demonstrated that no nurses had adequate knowledge as well as a satisfactory practice about triage. Also, 100% of them had inadequate knowledge as well as an unsatisfactory level of total practice about triage.

**Conclusion:** there were positive correlations between total knowledge as well as total practice scores among the studied sample at 0.000 levels of statistical significance.

**Recommendation:** Regular educational programs help nurses maintain and refresh their knowledge and practice regarding obstetric triage.

**Keywords:** Evaluate, knowledge, obstetric triage, practice

### Introduction

The mismanagement of obstetrical emergencies is a problem that affects the entire world. Insufficient staff training, particularly among freshly licensed nurses, was the primary contributor to negative incidents affecting the management of these emergencies<sup>[1]</sup>.

Obstetric triage was established as a specialization of prenatal care in the 1980s and expanded in the early years of the 21<sup>st</sup> century. Obstetric patients presenting for care have increased along with the development of obstetric triage as expertise. According to the (ACOG) American College of Obstetricians and Gynecologists, volumes for obstetric triage typically outnumber hospital delivery totals by 20 to 50 percent<sup>[2]</sup>.

Pregnant women often have various medical, maternity, or fetal worries as they go into labor and birth their babies. The registered nurse delivering care is accountable for timely evaluation based on the degree of insight, the use of resources, the notification of providers, and the escalation of care<sup>[3]</sup>.

Typically, RNs handle obstetric triage, followed by an obstetric practitioner conducting a thorough examination of the pregnant woman and her fetus. The primary objectives of triage are to prioritize the patient for a thorough evaluation, find issues and clinical requirements, mobilize staff and resources for the patient's level of care and get ready for transfer to another institution if required<sup>[4]</sup>.

The Maternal Fetal Triage Index (MFTI) was introduced as part of a quality improvement effort. Prior to and following the introduction of the MFTI, we aimed to compare the length of L&D triage reviews.

In accordance with the MFTI's prioritization levels, we also evaluated how long L&D triage assessments took. According to our theory, the MFTI priority level would be correlated with how fast pregnant women would undergo a thorough evaluation in the triage section<sup>[5]</sup>.

The research found that using an acuity tool and learning about obstetric triage are crucial to a tool's adoption and ongoing use. AWHONN created a learning aid to teach pregnant nurses about triage concepts, acuity tools, obstetric triage, and the MFTI. Forty nurses evaluated the MFTI educational curriculum, which was changed based on their input. Nurses who complete it will receive one contact hour of ongoing nursing education through the AWHONN Online Learning Center. Prior to implementing the MFTI, AWHONN suggests that all nurses receive assessment and MFTI training<sup>[6]</sup>.

Clinical training, regarded as the most essential and fundamental component of professional training, accounts for a significant part of nursing education and maternity nursing. It must be exactly assessed using an effective and efficient evaluation instrument to improve its quality.<sup>[7]</sup>

Developing procedures for obstetric crises, including the triage process, is critical for providing the highest quality, least expensive nursing care and increasing client happiness. Furthermore, for women's general safety and well-being, nurse trainees should be highly informed and well-trained caretakers<sup>[8]</sup>.

### Significance of the Study

There is no standardized instrument for prioritizing and evaluating pregnant women in developing nations like Egypt. Even though there is an obstetric emergency unit, hospital triage is poorly organized in the obstetric department. A key component of enhancing the safety of the pregnant woman as well as her fetus and reducing medical problems is classifying the needs of the pregnant women by obstetric triage (OT) as well as non-pregnancy-related demands that are urgent or emergent.

This classification depends on how well-versed and trained obstetrical nurse is in timely fundamental evaluation, communication of nurses, planning, as well as application of immediate intervention. Thus, a key component of achieving high quality health services is the continuous advancement of obstetric nurses' knowledge and procedures which address current prenatal care<sup>[9]</sup>.

Yet, given the rising need for emergency services, the educational system for training emergency nurses is still insufficient. Prior research showed that the lack of nurses, knowledge and interest in inpatient care prevented the emergency room from implementing triage. There is no statistical report on the frequency of triage service applications in Upper Egypt, especially in research settings.

According to what I have seen, there are (63) obstetric nurses split across the three shifts. Each shift, about twenty to twenty-five emergency nurses care for fifty to eighty patients. On each shift, there is roughly one emergency nurse for every (35 to 40) patients in a triage room. This research aimed to support our neighborhood at the Maternity and Child Minia University Hospital with the appropriate training in obstetric emergencies and assess the

impact of training about triage on the performance of the nurses in those departments after applying the training program.

### Aim of the research

#### The aim of this research was to

Evaluate nurses' knowledge and practice regarding obstetric triage.

### Questions of the research

- What is nurses' knowledge level about obstetric triage?
- What is nurses' practice level about obstetric triage?
- What is the relation between nurses' knowledge level as well as practice level about obstetric triage?

### Research design

The goal of this research was accomplished using a quasi-experimental pre/post-test research approach.

### Research setting

This study was applied at the delivery, labor, filter clinic, and highly dependent unit at Maternity and Child Minia University Hospital.

### Sample

The sample included all nurses (63 nurses) who worked at data collection time at Maternity and Child Minia University Hospital; they were divided as follows: (16 nurses) in highly dependent units, (22 nurses) in the delivery room, (10 nurses) in the operating room, and (15 nurses) in the filter clinic; all previous nurses were enrolled to an emergency department.

### Tools of data collection

After thoroughly assessing the literature and other studies like it, the researcher created tools for gathering data. After that, five panels of obstetric and gynecological experts on the nursing staff amended the data collection instrument, which encompasses two tools:

#### The first tool

- A Self-Administered Questionnaire: It was used to assess and collect data related to two main parts:

**Part 1:** Examine the general characteristics of the nurses, including their age, education, years of experience, present job, experience in handling obstetric emergencies, and attendance at educational or practical training about triage.

**Part 2:** Determine the obstetric nurses' level of expertise in obstetric triage. Twelve open-ended questions were asked about obstetric triage's definition, purpose, use of triage colors, knowledge of obstetric triage scales, and other topics, including pregnancy classification, definition, and colors of triage, the function of triage, triage principles, and triage communication. Also, it included the types of triage scales, how triage can improve maternal and fetal outcomes, triage obstacles, levels of severity, actions according to levels of severity, time limits in urgent situations, and

prioritization according to clinical presentation.

### Scoring System

#### System for rating nurses' knowledge in obstetric triage

Nursing knowledge was graded using a three-point scale, with a score equal to Three for the answer completely correct, a score equal to Two for the answer partially correct, and a score equal to One for incorrect answers. The overall score was twenty-four, and the knowledge score was divided into two categories: inadequate knowledge (scores below 65 percent) and adequate knowledge (scores of 65 or above 65 percent).

### The second tool

#### Tool II: An observational checklist to assess nurses' practice

The researcher developed this checklist to evaluate the practice of emergency nurses regarding triage. It included forty-four questions, including triage communication (9) as participants use clarity when giving each other instructions; triage assessment (8) as participants assess the triage room for the availability of the patient's safety precautions such as bedside rails and upstair; triage categories based on MFTI (8) as they assign an MFTI prioritization score; and documentation of triage assessment findings (19) as they document chief symptoms, complaints, or information desired.

### Scoring system

For the nurses' practices, each item was given a score of three: Three for a fully completed practice, two for a partially completed practice, and One for a practice not completed.

Overall nursing practice scores were divided into the following two categories: If the score of less than seventy-five percent of the total score demonstrated, the practices of nurses were unsatisfactory. At the same time, a score of more than seventy-five percent of the total score indicated satisfactory practices.

### Tools' validity as well as reliability

A panel of five specialists from the obstetrics and gynecological nursing staff piloted the questionnaire to establish its validity. They examined the instruments for clarity, relevance, comprehensiveness, understanding, applicability, and ease of use. The Cronbach's alpha test was used to examine the stability of the internal consistency of the tools and determine test reliability for the knowledge as 0.895 and 0.912 for the observation tool.

### Pilot Study

Ten percent of the overall study sample underwent it (7 nurses). It was conducted to assess the tools' application and clarity, determine whether fieldwork was feasible, and look for any potential barriers that would stand in the way of the researcher's capacity to collect data. Based on the results of the pilot study, necessary adjustments were made, such as lengthening the time required for data collection and

training to sixty weeks and adding new questions to the tool to reinforce its contents. The primary study sample was made up of the pilot sample.

### Administrative design

The dean of the Faculty of Nursing at Minia University approved a formal approval letter for the conduction of the study that outlined the study's name, goal, and setting. This letter was then sent to the appropriate people at the chosen hospital, asking for permission to conduct the study.

### Ethical consideration

1. The Faculty of Nursing's dean as well as the director of Maternity and Child Minia University Hospital were officially consulted before the pilot study and the actual study was conducted.
2. The Faculty of Nursing ethics committee authorized the research idea.
3. After describing the study's nature and objectives to nurses who were willing to participate, they gave their consent.
4. The participants had the right to refuse to participate in and/or leave the research at any moment without giving a reason.
5. Data collection was done while protecting the privacy of study participants.
6. No health risks were indicated.
7. Participants received guarantees that all their information was kept in strict confidence, and anonymity was ensured by giving each nurse a number rather than their name to preserve their privacy.

### Data Collection Procedure

- Administrative authorities provided written approvals.
- The hospital director and the nursing director of the selected hospital granted their permission and consent for the study to be conducted.
- Data were gathered using a self-administered questionnaire that asked about personal information, as well as two tools used by staff nurses.
- All staff nurses received surveys after being informed of the goal and procedure for data collection.
- The staff nurses had between 25 and 30 minutes to respond to the questions.
- The information was gathered between the beginning of June 2021 and the end of August 2021.

### Statistical design

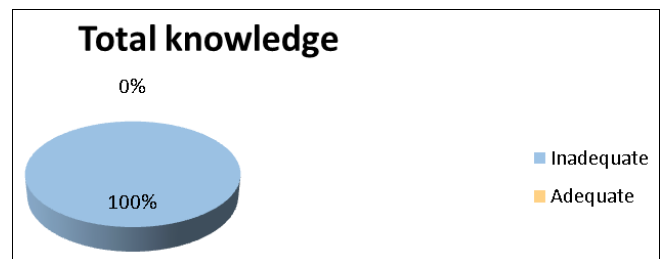
Using descriptive statistical tests and SPSS, the acquired data was tabulated, processed, analyzed, and summarized in order to test the study questions (IBM, 25). When the P-value is less than or equal to 0.01, it will be deemed highly significant. The threshold of significance was approved at P 0.05. The Pearson coefficient expresses the Spearman correlation coefficient ( $\rho$ ). A weak correlation is defined as less than 0.25, an intermediate correlation is defined as values between 0.25 and 0.74, and a strong correlation is defined as values between 0.75. The sign of the coefficient indicates the type of relation (positive or negative), whereas the value indicates the strength of the relation.

**Results of the research**

**Table 1:** Percentage distribution of obstetric nurses' socio-demographic data (no.= 59)

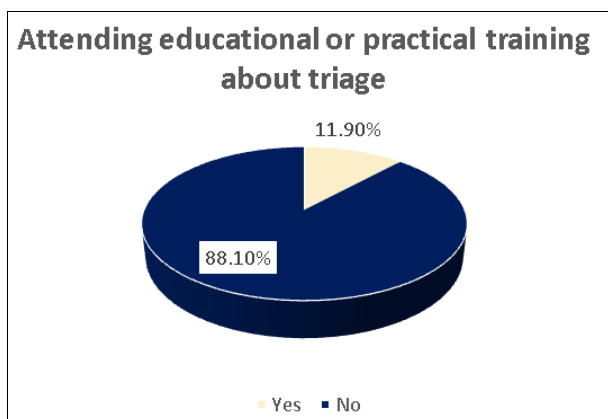
Items	(No. =59)	%
<b>Age</b>		
Less than 20years	7	10.1
20-25 years	28	40.6
26-30years	13	18.8
31-35yrs	8	11.6
More than 35years	3	4.3
Mean + SD = 23.51±2.663		
<b>Educational Qualification</b>		
Diploma	48	81.4
Bachelor	7	11.9
Higher	4	6.8
<b>Years of experience</b>		
Less than 5 yrs.	38	64.4
6-10 yrs.	16	27.1
11-15yrs.	3	5.1
More than 15	2	3.4
<b>Experience in handling obstetric emergencies</b>		
No	5	8.5
Yes	54	91.5
<b>Current working job responsibility</b>		
Delivery room nurse	20	33.9
Highly dependent units nurse	16	27.1
Operating room nurse	9	15.3
Clinical nurse	14	23.7
<b>Attending educational or practical training about triage</b>		
Yes	7	11.9
No	52	88.1

Table (1): shows the demographic items of nurses in the study sample. The table indicated that nurses' ages (40.6%) range from 20 to 25 years, with a mean age of 23.5± 2.7. More than half of them (64.4%) have years of experience less than five years, and more than one quarter (27.1%) have years of experience from six to ten years. Regarding their experience in handling obstetric emergencies, the highest number (90.5%) of them handled obstetric emergencies. In addition, more than two-thirds (81%) of the studied nurse's qualifications have a diploma.



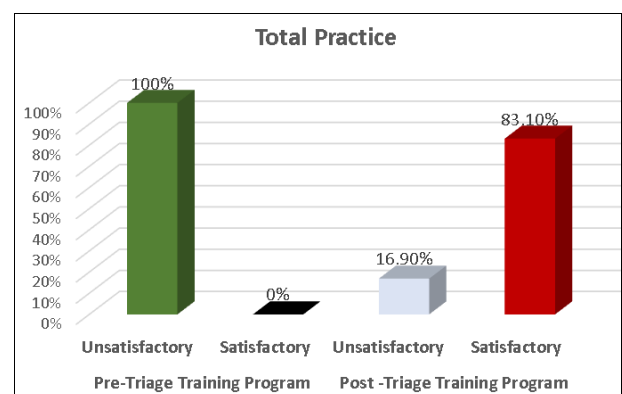
**Fig 2:** Percentage distribution of obstetric nurses' total knowledge regarding obstetric triage (no.= 59)

Figure (3): shows that 0.0% of nurses have adequate knowledge, while 100% have inadequate knowledge about obstetric triage.



**Fig 1:** Percentage distribution of obstetric nurses attending educational or practical training about triage (no.= 59).

Figure (2): mentions that (88.1%) of nurses don't attend any training or program about triage, while the minority (11.9%) of them do attend training or program about triage.



**Fig 3:** Percentage distribution of obstetric nurses' total practice during pre and post-training program (no.= 59)



Figure (3): shows that 83.10% of nurses have a satisfactory level of total practice post the triage training program, compared to 0% of the pre-triage training program.

**Table 2:** Percentage distribution of obstetric nurses' triage categories based on MFIT during pre and post-training program (no.= 59).

Trainers' observations during the training	Triage categories based on MFIT											P- value (DF) (McNemar)	
	Pre-Triage Training Program						Post-Triage Training Program						
	Not done practice		Incompletely done practice		Completely done practice		Not done practice		Incompletely done practice		Completely done practice		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.		%
Giving health education about MFIT	46	78	13	22	0	0	1	1.7	22	37.3	36	61	(.000**) 17.2
Obtain a subjective assessment of complaint/concern	42	71.2	17	28.8	0	0	2	3.4	24	40.7	33	55.9	(.000**) 14.5
Obtain vital signs, including pulse oximeter	8	13.6	40	67.8	11	18.6	2	3.4	10	16.9	47	79.7	(.000**) 8.15
Obtain FHTs with Doppler	6	10.2	41	69.5	12	20.3	2	3.4	8	13.5	49	83.1	(.000**) 9.44
Obtain medical history.	6	10.2	41	69.5	12	20.3	1	1.7	15	25.4	43	72.9	(.000**) 12.1
Assign MFTI prioritization score.	22	37.3	36	61	1	1.7	0	0	17	28.8	42	71.2	(.000**) 14.1
The patient will be taken to triage or the waiting room	37	62.7	21	35.6	1	1.7	0	0	22	37.3	37	62.7	(.000**) 15.1
Document prioritization score.	12	20.3	46	78	1	1.7	1	1.7	17	28.8	41	69.5	(.000**) 13.1

McNemar is used to comparing between the percentage of the group (before & after intervention)

\*\* : highly significant difference between pre and post-of the program (p-value ≤ 0.001)

The data in Table 6 indicate that the observed nurses' practice levels increased throughout the training and implementation phases, despite the fact that the majority of them did not practice fully even before triage training.

Giving MFTI health instruction, subjective evaluation, and taking the patient to triage or the waiting area all improved to achieve in full practice (61%, 55.9%, and 62.7%) of all triage competencies directly after program implementation.

**Table 3:** Correlation between total knowledge, and practice scores among studied sample pre and post-program (no. = 59)

Variable			Pre-Triage Training Program		Post -Triage Training Program	
			Knowledge	Practice	Knowledge	Practice
Pre-Triage Training Program	Knowledge	r	1	.521**		
		P value				
	Practice	r	.521**	1		
		P value				
Post -Triage Training Program	Knowledge	r	1		.518**	.000
		P value				
	Practice	r		.518**	1	
		P value				

Table (3): reveals a correlation between total knowledge and practice scores among the studied samples pre-and post-program; also, there are positive correlations between total knowledge and practice scores among the studied samples pre-and post-program at (0.000) levels of statistical significance.

**Discussion**

The validity of the maternal-fetal triage index, a high-quality instrument for improving patient care, has been demonstrated in research. Triage is a risk management technique used in all busy emergency rooms of hospitals. It involves a clinical assessment that separates patients for early diagnosis and treatment [10].

Because of the importance of this issue, obstetric nurses have been selected to be studied, as they are the cornerstone of obstetric triage. The current research aimed to evaluate the effect of assessing nurses' knowledge and practice regarding obstetric triage. The research question was, "what are the nurses' knowledge as well as their practice regarding obstetric triage?" A descriptive design was used to achieve the aim of this study. The results of the current study were discussed and compared with those of other related studies

and literature, as well as representing the researcher's interpretation of the current results.

As regard socio-demographic characteristics, the current study showed that nurses' ages (40.6%) range from 20 to 25 years, with a mean age of 23.5± 2.7; this result disagrees with Ali *et al.* [11] who revealed that the studied nurses were in the age group from 40-50 years. Also disagree with Ahmad *et al.* [12], who stated that more than half of the studied nurses (61.5%) were over 30 years; this finding may be interrupted due to the fact that the majority of staff who work in Minia-University Hospitals are newly graduated nurses.

In addition, more than two-thirds of the studied nurse's qualifications had a diploma. This finding aligns with an Egyptian study [9] conducted at the Labor and Delivery Emergency Unit at Mansoura University Hospital, General Hospital, and Health Insurance Hospital, Mansoura, which stated that more than fifty-eight percent of them had a diploma educational level. Around three-quarters of the nurses in the current study received technical nursing training in terms of schooling. This conclusion reflects a specific circumstance in Egypt, where there are more technical nurses than the Faculty of Nursing graduates. This

statistic may be explained by the large number of secondary schools (three or five years) and technical institutes compared to nursing Faculties nationwide.

More than half of nurses had years of experience less than five years, and more than one quarter had six to ten years. Regarding their experience handling obstetric emergencies, the majority of them handled obstetric emergencies. These findings of the current study disagree with Faheim *et al.* [8], who stated that more than half (54.0%) of nurses working in the obstetric emergency department have more than five years of experience. Also disagree with Ali *et al.* [11], who found that two-thirds of them (45.7%) have more than 20 years of experience at work. These findings may be interrupted due to the staff nurses' ages being twenty to thirty years old, which indicated that they had recently graduated and had few years of experience.

The current study's findings disagree with Abd El- Razik and Gamal [13], who revealed that the majority (84%) of studied nurses attended triage courses. They also are at odds with Subrahmanyam *et al.* [14], who found that more than two-thirds of studied nurses attend CNEs on obstetric emergencies. A study applied in Switzerland revealed a comparable outcome of less than two-thirds of the participants decreasing in the appropriate triage training [15]. These differences are due to the lack of continuous education and staff development in our setting.

Regarding obstetric triage knowledge, the present study demonstrated that none of the nurses had adequate knowledge, while all nurses had inadequate knowledge regarding obstetric triage enhancement in all knowledge items related to obstetric triage. This result could be demonstrated by the fact that the study's settings did not adhere to any rules or even permit participants to attend workshops on the application or principles of triage, which had an adverse effect on the participants' awareness and performance.

Similarly, [8] showed unsatisfactory nurses' knowledge for the majority of the participants. Also, [11] illustrated in their study that most nurses had poor knowledge regarding obstetric triage.

The present study outcomes demonstrated that none of the nurses had satisfactory communication techniques in obstetric triage. Also, the minority had satisfactory practice regarding communication practice with clients, assessment practice, triage communication practice, MFTI practice, and triage documentation. Finally, these results showed that none of the nurses had satisfactory total nursing practice, while all had unsatisfactory practice regarding obstetric triage.

The current study's low performance could be attributed to the nurses' inadequate knowledge, the absence of induction for freshly graduated and newly hired nurses, a decrease in training on the job, or a lack of ongoing education. In addition, most university hospitals lack money and inadequate supplies, materials, and equipment. Also, overcrowding in emergency rooms at university hospitals increases the burden of nursing care on large groups of nurses, leading to ineffective nursing care. Several research studies have emphasized this explanation.

This conclusion was also supported by a study conducted at three hospitals throughout the Beni-Suef Governorate, which found that the majority of the nurses did not practice emergency evaluation, clinical decision-making, or environmental problems in a manner that adequately

covered the target population.

Haghdoust *et al.* [16] disagreed with this conclusion, stating that the nurses in the study performed at a moderate to exceptional level. Similar findings were found by Aloyce *et al.* [17], who stated that 52% of triage nurses in research done in Dar EL-Salaam, Tanzania, had a skill level of at least intermediate. Also, in line with Kerie *et al.* [18], who reported that in research conducted in Addis Ababa, Ethiopia, more than fifty percent of the nurses had a fair level of triage abilities prior to training.

A favorable association between overall scores for total triage practices and triage knowledge was also supported by the outcomes of the current investigation. This indicates that nurses' performance in relation to the utilization of efficient simulated obstetric triage training scenarios was influenced by nurses' expertise. This study's findings aligned with Abd El- Razik and Gamal [13] report, who found that proper use of obstetric triage showed a substantial positive link with overall knowledge scores. Likely to this study [19] revealed a substantial statistical correlation ( $r = 0.559$ ) between the nurses' total knowledge and practices ratings.

Finally, improving nurses' knowledge and techniques in obstetric triage is a serious and crucial factor that impacts how they classify women and reduce maternal and newborn mortality and morbidity rates.

### Conclusion

According to the findings of the present research, it was determined:

The findings of the actual study demonstrated that none of the nurses had adequate knowledge as well as a satisfactory level of practice in triage. Also, all of them had inadequate knowledge and unsatisfactory total triage practice. Moreover, there were positive correlations between total knowledge and total practice scores among the studied sample at (0.000) levels of statistical significance.

### Recommendations

In light of the current study's findings, it is recommended that the following:

- Regularly running programs on sustainable obstetric triage training for obstetric nurses in delivery rooms and emergency departments.
- Incorporate undergraduate curricula and ongoing educational training programs about obstetric triage as well as theoretical and practical triage training for maternity nurses in hospitals.
- Provide the obstetric unit with an easy-to-read manual and instructional booklet on MFTI and obstetric triage to help nurses prioritize newly admitted cases based on the severity of obstetric symptoms.

### Acknowledgments

Special thanks to all nurses for their willing participation and cooperation.

### Conflict of Interest

Not available

### Financial Support

Not available

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Shimaa MMM, Ekbal ARE, EY Mohammed. Training program impact on nurses' knowledge and practice regarding obstetric triage. *International Journal of Obstetrics and Gynaecological Nursing*. 2023;5(1):56-62.

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