Original Article

Effect of Implementing Teaching Guidelines regarding Obstetric Triage on Nurses' Performance

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1.ABSTRACT

Abstract: The obstetric triage system is more specific since it considers factors like the state of labor, fetal health, testing, and interventions for obstetric issues. **Aim:** To evaluate the effect of implementing teaching guidelines regarding obstetric triage on nurses' performance. **Design**: A quasi-experimental design was used to conduct this study (pre/post-test). **Settings**: the research was carried out in the Emergency Labor and Delivery Unit at Mansoura University Hospital. **Sample**: non-probability convenience sampling technique was used to select the sample of the study. One group of nurses consisted of sum fifty nurses at three shifts working in the previously selected areas.**Tool for data collection**: A structured interviewing questionnaire: It included three parts; part 1 about nurses' characteristics, part 2 to assess nurses' knowledge regarding patients' triage system, and part 3 about Adapted Obstetrical Triage Acuity Scale (AOTAS). **The Results:**The effect of teaching guidelines on the total score of nurses' knowledge, their Reported performances (recording, procedures), response, and quality of care, that there is satisfactory knowledge post teaching guidelines. this study reveals that there are highly statistically significant differences between pre and post-teaching guidelines with a P-value <0.001. **Conclusion**: Based on the study findings, Triage application after teaching guidelines had positive, and efficient in improving nurses' knowledge and practices. **Recommendation:** Application standardized triage toimprove patient care, improve outcomes, and improve staff competency through continuing education and development of clinical protocols in accordance with the rules and regulations.

Keywords: *Nurse's performance, Teaching guidelines, Obstetric triage*

2.Introduction:

The obstetric triage approach is more focused since it takes into account things like the stage of labor, the health of the fetus, testing, and interventions for obstetric problems. It has been hypothesized that one factor influencing the nurses' decision to use triage was their familiarity with the system. Triage expertise is a vital ability for obstetric nurses (Magnone et al., 2019). When the emergency department (ED) lacks the required resources, triage is the process of prioritizing or grouping patients for care and treatment (Mirhaghi et al., 2015).

The triage system in emergency care is a mechanism for acquiring patient information and commencing a decision-making process that categorizes and prioritizes the needs of patients seeking care (Bond, 2018). The triage approach is also extremely important from a strategic standpoint in the organizational structure of emergency units. As soon as a patient enters the EU, they are evaluated as part of global triage (Mejzinolli et al., 2020). A nurse performs this task, which includes several processes such as

assessment upon arrival, data gathering, interview along with physical examination and assessment of vital signs, assignment of a priority code, color code, and reassessment. There are 4 available priority codes: Red (very crucial), Yellow, and (moderately critical) 3, "green," or "not critical" (not very critical) White (4 is not necessary) (not critical) (Christ et al., 2017).

These colored triage instrument Codes, sometimes known as emergency codes, were created to inform medical staff members who need to know about a serious situation without disturbing patients or visitors. Based on their training, a predetermined team of medical professionals—including nurses, doctors, and other staff—responds quickly and effectively when a code is called (Butti, et al., 2017).

Obstetric triage helps the registered nurse to classify patients based on the type and severity of their presenting signs, symptoms, or complaints. It also makes it easier to assess patients with the help of a color-coded acuity. The beginning of labor, fetal membrane rupture, hemorrhage, hypertension,

and fetal assessment is among the evaluation criteria on this scale (World Health Organization, 2020).

This tool also addresses serious complaints of pain, abdominal injuries, infections, symptoms, substance misuse, psychiatric issues, respiratory distress, fetal wellness, cervical dilatation, and important pregnancy-specific characteristics. The program also addresses aberrant vital signs and hemodynamic stability as shock signs (Smithson, et al., 2019).

The principal advantages of triage systems that provide an ethical analysis of "normal" EU triage and involve patient safety considerations include, but are not limited to, quick assessment, appropriately detailed evaluations, and documentation. identifying actual labor and releasing a pregnant woman who is undergoing false labor (Baird and Troiano, 2017). Triage ultimately seeks to preserve and protect threatened human lives as much as possible by prioritizing patients who urgently require life-sustaining care (Anderson et al., 2015).

The triage system, or biomedical ethics, is based on the guiding principles of respect for autonomy, beneficence, lack of maleficence, and justice. These principles act as a starting point for defining the moral challenges in emergency unit triage. Healthcare professionals in the EU have an ethical obligation to attempt to assist patients by listening to their concerns and handling them in accordance with recognized standards of care. By creating a system of triage, they attempt to raise the standard of care by making the best use of the currently available resources (Iserson and Moskop, 2015).

In the EU, nurses play a critical role in administering the triage system and caring for patients with minor illnesses to serious injuries. In this role, the triage nurse must make quick decisions regarding priority admitting to decide the order in which patients will receive treatment (Bayliss et al., 2017).

2.1 Significance of the problem:

The majority of maternal deaths occur after or shortly after birth, which makes maternal morbidity and mortality a significant public health issue, particularly in West Africa where maternal mortality ratios are still very high. The most common direct emergency obstetric causes are hemorrhage, hypertension, obstructed labor, and sepsis. Since these issues may be treated, most of these deaths could be avoided with proper emergency obstetric care **(WHO, 2020).**

A review of the literature has revealed that the emergency unit study in obstetric and gynecological nursing in Egypt is very small, indicating a gap between the evidence and reality of practice on the international level of care. As a result, the triage aspect must be applied for the provision of high-quality maternity care. Healthcare workers' difficulties with the triage process may be caused by their incapacity to diagnose numerous patients at once and a lack of support (Ebrashy, et al., 2019). To achieve sustainable development in terms of maternal mortality and morbidity, continued work to enhance healthcare systems is essential **(Sharma, e al., 2015)**. This can be facilitated by a rapid triage system for all patients presented to the hospitals to determine if there are any emergency or priority signs and to provide appropriate emergency treatment **(World Health Organization, 2016)**. The demand for high-quality obstetric care and treatment has led to the advent and development of a field known as obstetric triage, so this study is thus carried out to evaluate the effect of implementing teaching guidelines regarding obstetric triage on nurses' performance.

2.2 Aim of the study:

This study aimed to evaluate the effect of implementing teaching guidelines regarding obstetric triage on nurses' performance through:

- Assess nurses' knowledge and practices regarding obstetric triage.
- Teaching guidelines about triage for the studied nurses.
- Comparing the nurses' performance (knowledge and practices) pre and post-teaching the guidelines implementing.

2.3 Research hypotheses:

H1: The nurses' knowledge is expected to improve in post-obstetric triage after teaching the guidelines implementing compared to the pre-implementing.

H2: The nurses' practices are expected to improve in post-obstetric triage after teaching the guidelines implementing compared to the pre-implementing.

H3: There is a positive correlation between the nurses' knowledge and practices after guidelines teaching.

2.4 Operational definitions:

Triage is the process of ranking patients according to their seriousness so they can get the best care in the quickest amount of time.

Obstetric triage is a brief, comprehensive, and systematic approach for prioritizing the health of the expectant mother and her fetus for a complete evaluation.

3.Subjects and Method:

3.1Research design:

A pre-experimental research design (one group pre-test post-test) was utilized in this study.

3.2Setting:

The research was carried out in the obstetric and gynaecology emergency unit at Mansoura University Hospital, Egypt. The emergency unit locate in ground floor and received emergency cases &normal delivery cases during hot day(Sunday , Tuesday , and Thursday). This setting was selected because it serves the most populated region which provides emergency triage assessment and treatment for patients. This place was selected because it serves a lot of patients from all over Egypt, and it is considered an educational area

3.3Subjects:

The non-probability convenience sampling technique was used to select the sample of the study. One group of nurses consisted of fifty nurses working in the previously selected areas who participated in the study. All nurses available at the time of the study were enrolled.

3.4Data collection tools:

Two tools were used

Tool (I):A structured interviewing questionnaire will be developed by the researchers after reviewing the related literature and research studies. It included three parts:

Part: 1 is about nurses' characteristics such as age, level of education, and years of experience.

Part: 2 to assess nurses' knowledge regarding patients' triage system including the following items concept of triage, levels, coded colors, and principles of triage

Part 3 Adapted Obstetrical Triage Acuity Scale (AOTAS): this tool was adopted by **Smithson et al, 2013**. It will be adapted by the researcher, designed to assess nurses' knowledge regarding sorting patients' complaints according to levels of the AOTA Scale (survival, emergency, urgent, not urgent level) in the emergency unit.

Scoring system of nurses' knowledge:

Included two levels, (2) points for the correct answer and one point for an incorrect answer or don't know the answer. The total score was (0-42 degrees).

Tool II:An observational checklist Designed and prepared by the researcher to assess nurses' performances in the maternity emergency unit. It consists of two parts

Part I: Observational checklist designed and prepared by the researcher to assess nurses' reported performances (recording and procedure practices) among the attending patients in the maternity emergency unit.

A scoring system of nurses' **reported performances (recording and procedures):** included two levels: (2) points for doing correctly items and (1) points for not doing practices. The score converted to a percentage (%) = (the observed score /the maximum score) x100.

The total score was 0-24 grades:

- Unsatisfactory performance when the total score was <50%.
- Satisfactory performance when the total score was>50%.

Part II: To assess nurses' response to triage application in the maternity emergency unit pre/post teaching guidelines regarding obstetric triage.

A scoring system of nurses' response:

Included two levels: (2) points for the correct answer and (1) points for an incorrect answer or does not know the answer. The total score was (0-32 grades).

- Unsatisfactory response when the total score was <50%.
- Satisfactory response when the total score was>50%.

3.5Pilot study:

A pilot study was conducted on 10 % of the study subjects (5 nurses) to test the applicability of the tool and whether there was any modification. As no modification was done and few nurses were presented in the selected setting, the pilot study was included in the study.

3.6Content and face validity:

Tool I and tool II were developed by the researchers based on thorough systematic review of relevant literature then were translated by the researchers into Arabic language. The Arabic version of all these tools was tested for content validity by three (3) experts in the related field. The necessary modifications were done according to the experts' valuable comments.

3.7Test of reliability:

Questionnaire items were tested for reliability by the Alpha Cronbach's test. The alpha

reliability of part 2 (knowledge) was 0.87, the reliability of part 3 was 0.89, and the reliability of tool two (practices) was 0.85.

3.8Methods of data collection:

Fieldwork:

- The study will be submitted for review by the research's ethical committee.

- The material that was available to the researchers, including books, journals, periodicals, and internet searches, would be analyzed, both recent and older.

- After introducing himself, the researcher will go over the study's objectives with each subject and obtain their consent to participate. Understanding of the triage assessment made by nurses (pretest). The study will contain all tools that each participant used for 35 to 40 minutes.

- The researcher will design and carry out the training and educational sessions, which may take the form of lectures or on-the-job training.

- The theoretical portion of the protocol will be presented through lectures and group discussions, with educational media used as data shows. Posters and flyers created by the researcher will be sent to nurses in the EU and featured triage information.

- Each session will last an hour for a discussion of the material and fifteen minutes for questions and discussion. The following are the subjects for each day: Maternity nurses will learn the following on Day 1 (the first session): The terms "triage" and "types of triage" are used to define the terms "urgent" and "non-urgent" on the triage scale's time scale.

- The observational checklist of reported performances (recording and procedures) will be used for the practical section of the exam to evaluate the nurses' documentation of each process as it is completed. taught the session's conclusion and session's finish as well as the emergency signs, priority signs, objective and subjective data, and conclusion. There will be two workshops for each location, lasting two days, to teach the practical aspects of triage. Each discussion will last an hour, with an additional 15 minutes for questions and closing remarks.

After implementing the educational and training events in the EU, follow-up for nurses with a post test would be conducted. A month after the guidelines have been taught, a second post-test will be administered. The first post-test will take place right away. Data collection for this study was carried out through the emergency unit over eight months.

After introducing themselves, explaining the study's goal to participants, and obtaining their consent to participate in the study, interviewers will show up three days a week from 10 am to 2 pm to speak with nurses in the EU.

The nurses' knowledge of the triage protocol was tested beforehand. For each study participant, the duration of each tool was 30 to 35 minutes.

The researcher created and put into practice the educational and training sessions, which took the form of lectures and on-the-job training. The theoretical portion of the protocol was presented through lectures and group discussions, employing educational media as data shows. Posters and flyer created by the researcher with information on triage protocol were delivered to the nurses at the maternity emergency care unit. The practical part will be conducted by an observational checklist of reported performances (recording and procedures), to assess whether nurses are recording and documenting every procedure after being done.

Evaluation the effectiveness of the guidelines on the nurses' retention of knowledge and practices was assessed by two post-tests. Follow-up for nurses with posttest was done after implementing the educational and training sessions in the previously mentioned setting.

Administrative approval

The accountable parties granted administrative approval (directors of Mansoura University Hospital and the head of the emergency care unit). The researchers introduced themselves to the emergency room nurses and explained the nature and goal of the study to them.

3.9Ethical consideration: Before enrolling in the study and following an explanation of its goal, the nurses provided their written informed consent. They were informed by the researchers that the data would only be utilized for research purposes. At any point during the study, nurses had the option to leave the study.Ethical approval was obtained from the Research Ethics Committee at the Faculty of Nursing – Mansoura University. All ethical considerations were considered for privacy and confidentiality. Written consents were obtained from the nurses participating in the study after a brief explanation of the study's aim and they were reassured that the information obtained would be private and used only for the study with their right to withdraw at any time without any consequence. The subject of this study will not address religious,

ethical, moral, or cultural issues among women and the Research Ethics Committee at the Faculty of Nursing – Mansoura University CODE is 0367

3.10Statistical analysis:

The SPSS computer program version 23 software was used for data entry and statistical analysis. The Anderson-Darling test and homogeneity variances were used to check the date's normality before further statistical investigation. Numeral and percentage (N,%) descriptions were used for categorical variables. A chi-square test is used to compare categorical variables; continuous variables are defined by the mean and standard deviation (Mean, SD). The continuous variables were compared using the T-test. The relationship between quantitative and qualitative variables is determined using Pearson's and Spearman's correlations. Statistical significance was considered at P- value ≥ 0.05.

4.Results:

Table (1): reveals that 47.1% of studied nurses were in the age group of 40-50 years and the majority of them (58.6%) were nursing diplomas, 68% of them were female, and two-thirds of them (45.7%) more than 20 years of experience at work.

Table (2): reveals that regarding the general knowledge of nurses about the general triage system (concept, coded colors, principle, and levels of triage scale) in the EU, with the mean scores of 6.72 ± 1.63 pre-teaching guidelines compared with the mean scores18.56 $\pm$ .49 postteaching guidelines and there are highly statistically significant difference between pre and post teaching guidelines with P-value<0.001.

Table (3): reveals that the knowledge of nurses' about the critical signs, symptoms, and time of initial assessment for every level and prioritizing of patients' complaints according to the Adapted Obstetric Triage Acuity Scale(AOTAS) (survival, emergency, urgent, and not urgent levels) with the mean score 6.00 ± 1.67 compared with the mean score 6.61 ± 1.89 post teaching guidelines and there are highly statistically significant difference between pre and post teaching guidelines with P-value<0.001.

Table (4): reveals that regarding recording practices of the nurses among recording of reporting data, safety measures with sorting patients and recording every procedure after done with the mean score (17.78 ± 1.56), compared with the mean scores (18.00 ± 3.00) post teaching guidelines and there are highly statistically significant difference between pre and post teaching guidelines with P-value<0.001.

Table (5): reveals that regarding nurses' responses among triage applications in the EU with a mean score (of 22.05 ± 3.09) pre-teaching guidelines, compared with the mean score (33.22 ± 1.43) post-teaching guidelines and there are unsatisfactory responses pre-teaching guidelines, compared with satisfactory responses post teaching guidelines, with P-value <0.001.

Table (6): Reveals that, The effect of teaching guidelines on the total score of nurses' knowledge, their Reported performances (recording, procedures), response, and quality of care, that there are unsatisfactory knowledge pre-teaching guidelines with the mean23.34 $\pm$ 5.61 compared with satisfactory knowledge with the mean score 31.18 $\pm$ 1.22 post teaching guidelines. Regarding the total knowledge score of nurses among AOTAS, there are unsatisfactory knowledge pre-teaching guidelines, compared with satisfactory knowledge post-teaching guidelines with P-value<0.001, Regarding total, reported Performances (recording and procedures)score level there are unsatisfactory reported Performances score level pre-teaching guidelines, compared with satisfactory Performances score level post teaching guidelines with P-value <0.001.

5.Discussion

The obstetric triage unit is where pregnant patients who enter the hospital system are first processed to get obstetric and emergency medical care. As it entails evaluating labor conditions and fetal well-being and arranging tests and interventions for obstetric difficulties, obstetric triage is more specialized than general and trauma triage(**Rashidiet al. 2019**). Patient dissatisfaction and lengthy wait times are the two most significant problems with obstetric triage (**Gargamo et al., (2019**). Patients must wait a long time to be examined, which may delay the provision of necessary care and treatment, cause patient dissatisfaction, and increase mortality and morbidity . According to research, cutting down on waiting times actually shortens hospital stays, decreases treatment costs, and conserves hospital resources . Despite these advantages, there is disagreement on the fundamentals of obstetric triage and the guidelines and standards that should be followed in this procedure (**Sedaghat et al., (2021).**

Regardless of the frequency of obstetric visits to the ED, all obstetric nurses must have access to the necessary resources and demonstrate important competencies to provide safe, efficient, and stable emergency treatment to children patients

in the ED setting. The emergency nurse leader bears an excessive amount of responsibility for ED readiness, including staff competency evaluation, policy and procedure development, equipment and supply acquisition, quality improvement planning, implementation, documentation, disaster preparation, and staff education **(Snow, 2016)**. So, this study aimed to, evaluate the effect of implementing teaching guidelines regarding obstetric triage on nurses' performance.

The result of the current study revealed that the study subjects aged 21 to 58 years, less than half of the nurses researched were in the age range of 40 to 50 years, according to the current study. The majority of the nurses studied were under 30 years old. So, when it comes to emergency unit service, age matters a lot. This finding was in line with those of a different study by Gargamo et al., (2019), which reported that more than a third of participants were between the ages of 20 and 30 years, with a mean age of 30.38+5.2 years. It was also somewhat in line with Sedaghat et al., (2021), who reported that the mean age of subjects in their study was 41 years old.

According to the current study, women made up the majority of nurses. The findings of a different survey conducted by Fathoni et al. (2013), which found that more than two-thirds of nurses were female, were corroborated by the findings of this study.

More than half of nurses had a diploma as far as education level was concerned. This finding was in line with the findings of another study conducted by Fathoni et al. (2013), which found that the majority of nurses held a diploma.

The present study revealed that the mean knowledge score of the examined nurses was lower in the pre-test than in the post-test, with mean scores of 6.72 1.63 pre-teaching guidelines compared with mean scores of 18.56 .49 post-teaching guidelines, and there is a high statistically significant difference between the pre and post teaching guidelines.

These findings corroborated those of Pouraghaei et al. (2013), who noted that the training program connected to the start of the triage phase significantly increased participants' knowledge and performance. The knowledge of the participants had increased posttest triage skills, according to Kerie et al. (2018).

These findings corroborated the initial study premise that, before teaching the rules for using triage, nurses' knowledge and behaviors were lacking. According to the researchers, since more

than half of the nurses in the current study only had a diploma, their expertise in triage and practice before learning WHO guidelines were limited.

The nurses' knowledge and practices were better in the post-test following the teaching of the guidelines compared to before, which confirmed the second and third study hypotheses. The post-test evaluation proved that imparting the recommendations to nurses significantly improved their performance, according to the researchers' interpretation of these results.

This confirms the findings of a study by Quaile (2018), who found that implementing an educational session, administering a pretest, and then completing a posttest improved knowledge among emergency unit medical staff.

Additionally, the current findings were consistent with those of a study conducted by Allen et al. (2015), which revealed that, in the pretest, more than two-thirds of study participants had inadequate knowledge of the triage system. Additionally, Robert et al(2014) .'s findings revealed that fewer respondents knew about triage before the survey. These results were at odds with those of Afaya et al. (2017), who found that roughly two-thirds of the respondents were familiar with the triage system in the pretest.

Regarding nurses' knowledge of the critical signs, symptoms, time for initial assessment, and prioritizing patients following the adopted obstetric triage acuity scale (AOTAS), the study's findings show that nurses are knowledgeable about the critical signs, symptoms, time for initial assessment, and prioritizing of patients' complaints following the AOTAS (survival, emergency, urgent, and not urgent). The success of the teaching guidelines may have contributed to the rise in nurses' knowledge. This finding results supported by a study done by Grover et al., (2017) reported that education and training of healthcare providers on obstetric triage protocol and the use of an acuity tool contribute to the successful implementation of triage protocol in the emergency unit.

The study's findings are in line with a study by Magnone et al. (2019), which found that the use of an acuity tool and healthcare personnel with obstetric triage knowledge and training facilitate the implementation of the triage protocol.

In contrast, the study's findings support a study by Wallace et al. (2019) titled "Standardization of Emergency Code Calls in Oregon," which found that emergency codes were

created to alert appropriate medical staff to a serious situation while avoiding alerting patients and visitors. A predetermined team of doctors, nurses, and other staff members respond quickly and effectively when a code is called based on their training in the triage procedure application.

The study's findings concur with a study by Magnone et al. (2019), which found that using an acuity tool and having health care personnel with knowledge of obstetric triage helps in the successful application of the triage protocol.

The study's findings, on the other hand, are consistent with a study by Wallace et al. (2019) titled "Standardization of Emergency Code Calls in Oregon," which found that emergency codes were designed to alert relevant medical staff to a serious situation without disturbing patients or visitors. Based on their training in the triage protocol application, a pre-designated team of doctors, nurses, and other staff members respond quickly and effectively when a code is called.

Regarding the impact of teaching guidelines on nurses' overall knowledge, reported performances (recording, procedures), and responses in relation to the application of obstetric triage guidelines that showed a highly statistically significant difference between pre and post-teaching guidelines, these findings are similar to those of a study by Waldo (2009) that highlighted the significance of ongoing staff education in the improvement of emergency nursing performance in patient assessment.

The current study showed that there were no statistically significant pre-teaching guidelines compared with highly statistically significant post-teaching guidelines regarding the relationship between total nurses' performance score level (recording and procedures) among the application of obstetric triage protocol in the emergency unit. The study results supported by the study done by **Malyon et al., (2014)** remarked that the use of the obstetric triage strategy, especially when combined with teaching sessions, has significantly improved the nurses' performance. The obstetric triage protocol was used as a framework to direct documentation and triage terminology, which improved concurrent decision-making and auditing. The quality of medical services also increased as a result.

The current investigation discovered moderately strong, significant positive connections between the total mean knowledge and practice scores of the nurses under examination. From the perspective of the researcher, the effects on enhancing the nurses' knowledge and improving their practices may be primarily dependent on the nurses' ability to learn knowledge and practices from the instruction of guidelines rather than from their individual qualities. This finding was supported by the research findings of Kerie et al. (2018), who discovered a substantial beneficial association between nurses' level of triage knowledge and behaviors. These findings corroborated the study's main finding, which is that after teaching the guidelines to the nurses, there is a positive association between their knowledge and practices.

For all nurses working in the emergency room, triage training becomes a requirement. Because of this, properly training emergency nurses in triage and retaining qualified, experienced nurses for triage would save many lives, prevent disabilities, lower complications, and lessen problems as well as cut healthcare costs. As a result, with the right triage training, triage nurses may function more effectively and confidently (Faheim et al., 2019).

6.Conclusion:

Based on the study findings, Triage application after teaching guidelines had positive, and efficient in improving nurses' knowledge and practices. Also, there are highly statistically significant differences between pre and post-teaching guidelines with P-value <0.001.

7.Recommendations

According to these results, the study recommended that:

- Application of standardized triage training protocol to improve patient care, improve outcomes, improving staff competency through continuing education and development of clinical protocols in accordance with the rules and regulations.

- Further studies and replication of the current study with a larger sample in different settings are required for generalizing the results.

8.Study limitations:
The researcher was only able to conduct the study with a small group because of exposure to educational programs (such as lectures and training) that covered some of the challenges that nurses face on the job.

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11.Authors' contributions

All Authors contributed equally to this manuscript; conceptualization, preparation, and implementation of the program, methodology, investigation of formal and administrative procedures, data entry and analysis, writing-original draft, writing-manuscript, editing, and revision.

All authors read and approved the final manuscript.

12.Competing interests

The authors declare no competing interests.

13.Availability of supporting data:

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Table (1): Distribution of the nurses according to their demographic characteristics data (n=50).

Demographic data		N	%
Age (years):	< 30	11	22.0
	30-	14	28.0
	40-	24	48.0
	50-<60	1	2.0
Level of education:	Nursing diploma	36	72.0
	Bachelor of Nursing	4	8.0
	Master of Nursing	3	6.0
	Bachelor of Medicine	7	14.0
Gender	Male	34	68.0
	Female	16	32.0
Years of experience:	1-	12	24.0
	10-	14	18.0
	20-	23	46.0
	30-<40	12	12.0

Table (2): Distribution of nurses' knowledge regarding patients' triage system (concept, coded colors, principle and levels of triage scale) (pre and post-educational and teaching guidelines)(N=50)

items	Pre%	Post%	P value*
Is triage protocol applied in your hospital?	35.0	100.0	<0.001*
Does the work system help you with the triage	15.0	42.9	<0.001*
Do you know the principles of triage	15.0	42.9	<0.001*
Did you practice triage before?	15.0	42.9	<0.001*
Arrangement of triage levels?	3.0	8.0	0.01
The color code of triage?	30.0	100.0	<0.001**
Number of triage levels	30.0	100.0	<0.001**
Trained about triage to be applied in the emergency unit?	30.0	100.0	<0.001**
Knowledge score regarding AOTAS	6.72 ± 1.63	18.56 ± .49	<0.001**

Table (3): Distribution of nurses' knowledge regarding AOTAS (survival, emergency, urgent, and not urgent levels), in the emergency unit of a Maternity hospital (pre and post-teaching guidelines) (N=50).

Time management to initial assessment Emergency		pre	post		t*	P value*
level and color codes	No	%	No	%		
Time of first-level survival(blue code)	43	86.0	50	100		<0.001
Time of 2nd level emergency (red code)	9	18.0	48	96.0	13.12	<0.001
Time of third level urgent(yellow code)	10	20.0	44	88.0	23.15	<0.001
The time of the fourth level is not urgent(green code)	10	20.0	50	100	5.92	<0.001
Arrangement color coding according to emergency	23	46.0	43	86.0	7.09	0.05
	Min.	Max.	Mean	SD		
Total knowledge score	6.00	10.00	6.67	1.89		0.001

Table (4): Distribution of HCPs' observational checklist assessment regarding their reported performance (recording) toward triaged patients (pre and post-teaching guidelines) (N=50).

Recording, documentation, and safety	Pre		Post		P value*
Measures	N	%	N	%	
Woman identification	42	84.0	47	94.0	0.03
Completeness of data file	48	96.0	50	100.0	0.25
Documentation at file	47	94.0	50	100.0	0.13
Woman consent	48	96.0	50	100.0	0.25
obstetric, medical, and family history	47	94.0	50	100.0	0.50
Risk assessment of current pregnancy	39	78.0	50	100.0	0.25
Sending women to the US	47	94.0	50	100.0	0.50
Total recording score	Mean= 22.04SD= 1.68		Mean= 23.03SD= 1.51		0.13

Table (5): Distribution of nurses' observational checklist regarding their practice performance (procedures) toward attending triaged patients (pre and post-teaching guidelines), (N=50).

Items	Pre		Post		P -value	
	No	%	No	%		
Preparing equipment	48	96.0	50	100.0		
Hand hygiene before procedures	4	8.0	42	84.0	<0.001	
Document' Woman complains	47	94.0	50	100.0	0.13	
Document weight, BP, and body temperature	46	92.0	50	100.0	0.02	
Abdominal and lower limb examination	14	28.0	24	48.0	0.07	
Document fetal movement and fetal kicks	14	18.0	50	100.0	<0.001	
Document 'urine sample and blood sample	38	76.0	50	100.0	<0.001	
Total performance score	Mean 22.04	SD 2.09	Mean 33.22	SD 1.43	t** 5.96	P value <0.001

Table (6): Distribution of nurses' responses regarding triage application *(*pre and post-teaching guidelines), (n=50).

Items	Pre		Post		P value*
	N	%	N	%	
Triage protocol not complicated	11	22.0	51	72.0	<0.001
Triage protocol is not affected by the number of	12	24.0	60	86.0	<0.001
Triage by prioritizing according to severity	14	28.0	50	100	<0.001
Triage protocol no negative issues	10	20.0	38	76.0	<0.001
Triage protocol has a lot of positive issues	14	28.0	50	100	<0.001
Triage protocol needs training	39	78.0	50	100	<0.001
Triage improves the quality of care	36	72.0	50	100	<0.001
Triage codes are important	30	60.0	36	72.0	0.14
levels of triage are important	21	42.0	50	100	<0.001
Decrease length of stay	14	28.0	50	100	<0.001
Improves performance	15	30.0	50	100	<0.001
diseases	19	38.0	50	100	<0.001
cases	25	50.0	50	100	<0.001
Needing triage specialist	32	64.0	50	100	<0.001
Triage improves the quality of care	39	78.0	50	100	<0.001
Helps in first aid in crises	39	78.0	50	100	<0.001

	Mean	SD	Mean	SD	t**	P value
Total Response score	23.34	5.61	31.18	1.22	12.78	<0.001

Figure. (1): Correlations between the studied nurses' scores of knowledge and practices at post-test