

Nurses' Performance of Golden Hours for Trauma in Helwan General Hospital

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Abstract: The golden hour was originated by R Adams Cowley using research from World War I which demonstrated that the mortality and morbidity of injured patients increased with the amount of time to resuscitation and definitive care: there was an increase of 10% with a 1-hour delay and an increase of 75% with a 10-hour delay. Aim: of this study was to assess nurses' knowledge, and practice about the golden hour of trauma in emergency department. Design: A descriptive exploratory design was used. Sample: A convenient sample of all available nurses (50 nurse') from both sex working in emergency department. Setting: Emergency department in Helwan General Hospital. Tools: Tool (I) involved nurses' self-administered interview questionnaire sheet that included two parts, part I included demographic characteristics of nurses as (Gender, age, sex, level of education, years of experiences and training courses about the golden hour of trauma), and part II included nurses' knowledge regarding to the golden hour of trauma as (knowledge about the golden hour of trauma definition, types, role of the trauma nurse, and triage...etc.) Tool (II) Observational checklist sheet to assess the level of nurse practice. Results: 68% of nurses included in the study had unsatisfactory level of knowledge, 64% incompetent practice toward the care of trauma patients'. Also, there was a highly statistically difference between nurse' socio-demographic characteristics and their knowledge, and practice . Conclusion: Nurses' experience, training regarding nursing care of traumatic patients are at a weak and inadequate level and need developing nursing care standards to improve nurses' knowledge and practice. There was a highly statistically significant correlation between the study subjects' total level of knowledge and their total level of practice. Recommendation: - Continuous educational programs should be planned on regular basis to nurses' caring of traumatic patients for enhancing emergency nurses' knowledge and practice to achieve high quality of care.

Keywords: Golden Hour- Nurses' Performance- Trauma.

1. INTRODUCTION

Trauma is a leading cause of death in the first four decades of life. There is a trimodal peak of death and the first peak occurs within seconds to minutes. It is usually due to laceration of the brain stem, heart, aorta, and other large vessels and the victims most often succumb to the trauma. The second peak occurs within minutes to hours later and can be due to diverse injuries and significant blood loss. This group is potentially at risk of death, which may be averted if aggressive and appropriate management is instituted at the earliest. The concept of the golden hour arose from the treatment of this group of patients (*Abhilash & Sivanandan, 2020*).

The initial assessment of the trauma patient is called the primary survey; it is based on*ABCDE*: (A) air way; (B) breathing; (C) circulation; (D) disability. A secondary survey is performed once the primary survey is complete and life-threatening injuries are treated, it is consisting of a history and rapid, complete head-to-toe examination to identify problems. The secondary survey does not begin until the primary survey has been completed and the resuscitation phase has been initiated. If at any time during the secondary survey the patient's condition deteriorates, a return to the primary survey with implementation of life-saving interventions indicated (*Legome & Shockley, 2016*).

Trauma nurse plays a vital role in ensuring that adequate care of the patient has been established. This include notification of the appropriate hospital personnel and verification that the necessary equipment for resuscitation, breathing, circulatory support and control of bleeding. The role of trauma nurse expanded as problem solving and decision-making. The emergency nurse is a key component of this team. The nurse's responsibilities vary with each situation, the number of emergencies, the available professional personnel, and the policies of the individual institution (*Professional Development Framework, 2020*).

AIM OF THE STUDY:

Assess nurses' Performance of golden hour for trauma in Helwan general hospital.

Research questions

- 1-What is the level of nurses' knowledge regarding the golden hour of trauma?
- 2-Did the level of nurses' practice during the golden hour of trauma improve the outcome of patient's care?
- 3-What is the effect of actual nursing performance on patient's outcome?

2. SUBJECTS AND METHODS

I. Technical design

Research Design:

A descriptive exploratory research design was utilized for the condition of this study. It usually provides the least control over variables. The data collected either contribute to the development of theory or explain phenomena from the perspective of the persons being studied. Qualitative studies are well suited to investigating possible relationships or interactions among variables (*De Villiers, Dumay & Maroun, 2019*).

Research Settings:

This study was conducted at the emergency department at Helwan General Hospital which is affiliated to the Ministry of Health; the emergency department at Helwan General Hospital consists of an examination room, a triage room, a stitch room, a cardiopulmonary resuscitation room, and two rooms for monitoring cases.

The working hours are three shifts in the morning, afternoon, and night shifts. **Subjects:**

A convenient sample of all available nurses (50 nurses) from both sex working in the emergency department in Helwan general hospital affiliated at the Ministry of Health who are willing to participate in the study.

Tools of the study:

Tool I: Nurses' Self-administered interview questionnaire.

It was developed by the investigator based on the relevant and recent scientific literature review and was written in Arabic to suit nurses level of education. To assess the nurses' demographic characteristics and knowledge regarding to the golden hour of trauma. It included the following parts;

Part I: Demographic characteristics of nurses (Appendix I) such as (Gender, age, level of education, years of experiences and training courses about the golden hour of trauma).

Part II: Nurses' knowledge regarding to the golden hour of trauma (Appendix I): This includes (knowledge about the golden hour of trauma definition, types, role of the trauma nurse, and triage...etc.).

Scoring system:

A scoring system was followed to assess Nurses' knowledge regarding the golden hour of trauma. The tool will be contained 46 questions, the total scores of the questionnaire were 46 grades, the right answer was scored as a single point, and the wrong answer was scored as a zero point. These scores were summed and were converted into a percent score. The total score was classified into two categories;

Score % = (the observed score / the maximum score) × 100

- satisfactory Knowledge if score >75%
- unsatisfactory Knowledge if score <75%

Tool II: Observational checklist to assess nursing care of traumatic patients

It was adapted from (Mohamed, W., 2013), modified and filled by the investigator to assess the level of nurse practice regarding care of patient in golden hour of trauma. It included the following items Primary assessment it includes questions about the recognition of how to deal with patients' airway obstruction, types of trauma, etc., secondary assessment about measuring vital signs, general survey, and head-to-toe assessment, and nursing care of specific organs that are affected, according to the types of trauma, care of head injury, chest, abdomen and fractures ,and application of universal precautions.

Scoring system:

A scoring system was followed to assess Nurses' practice; each competency skill was assigned a score according to sub-items. The total score of nurses' practices was 129 grades. Each items was evaluated as (not competent) was taken (zero) score, and competent was taken (one) score.

The scores were summed up and were converted into a percentage score.

It was classified into two categories.

- Competent if score $\geq 75\%$
- Incompetent if score $< 75\%$

Operational Design:

Preparatory Phase:

This phase was conducted through reviewing literature related to nurses' performance regarding the care of patients in golden hour of trauma. A review of the current and past available literature in the various aspects of the problems using books, articles, internet, periodicals, and magazines were done. This served to develop the study tools for data collection. During this phase, the investigator also visited the selected place to get acquainted with the personal and the study setting. The development of the tools was under supervisors' guidance, and experts' opinions were considered.

Validity and reliability

Validity: is whether or not the instrument means what it is designed to measure (Bajpai & Bajpai, 2014).

Reliability: is the consistency of the measurement instrument the degree to which an instrument measures the same way each time, it is used under the same condition with the same subjects (Alumran, HOU &Hurst, 2012).

The reliability of the tools will measured through ten percent of the sample using the established questionnaire and retested after one week on the same sample and the results will be the same in each time.

Pilot Study:

A pilot study was carried out on (10%) (n=50 nurses) of the subjects under the study was included and chosen randomly from the previously mentioned setting then later included to the sample.

To test applicability, feasibility, practicability, clarity of the constructed tools. The pilot study had also served to estimate the time needed for each subject to fill in the study tools. According to the results of the pilot study, no modifications were done for the used tools.

Fieldwork:

- An approval was obtained from a scientific, ethical committee of the faculty of nursing at Helwan University and the study subjects individually to give a verbal agreement to participate in the study.

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- Data collection of this study was started and completed within seven months from the first week of July (2019) to the end of January (2020).
- First, the investigator introduced herself to the studied subjects and gave a brief explanation about the study and its Purpose before any data collection.
- Each nurse was interviewed individually to gather the necessary data of the study.
- Data collection was being done two days/week by the investigator in the morning and afternoon shifts.
- The required time to collect data from each nurse for about 30-40 minutes.
- Self-administered questionnaire for assessment nurses' knowledge was being filled by the nurses who were caring of patients' in golden hour of trauma.
- Observational checklist for assessment of nurses' practice regarding care of patients' in golden hour of trauma was being filled by the investigator.
- The study subjects were assured that the information collected would be treated confidentially and that it would be used only for the study.

Filed work will include two phases as follow:

- 1- Assessment phase.
- 2- Implementing phase.

I- Assessment phases: This includes:

- 1- Interview with available subjects individually before collection of data to explain the aim and objective of the study and take their approval to participate in the study before any data collection then basic assessment was being done, and data was being collected from all subjects.
- 2- Assess the nurses' knowledge regarding the care of patients' in the golden hour of trauma.

II- Implementation phase : this includes:

- Direct and indirect observation for each nurse during care of patient in golden hour of trauma each nurse take time about (30minute).

III. Administrative Design:

Official permission for this the study was obtained by submission of official letter issued to the dean of the faculty of nursing, Helwan University and the director of previously mentioned study setting. The investigator then met the hospital director before starting data collection to obtain their approval and assistance in conducting the study and explained the aim of the study and the methods of data collection.

Ethical considerations:

An approval was obtained from scientific ethical committee of the faculty of nursing at Helwan University and the study subjects' prior data collection. The investigator clarified the objective and aim of the study to the subjects included. The investigator assured maintain anonymity and confidentiality of the subjects' data and the subjects have the right to withdraw from the study at any time. Ethics, values, culture, beliefs were respected. **IV. Statistical Design:**

The collected data was synthesized, analyzed, and tabulated using suitable statistical methods. Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS). Quantitative data were expressed as mean \pm standard deviation (SD). Qualitative data were expressed as frequency and percentage.

The following tests were done:

- Chi-square (χ^2) test of significance was used in order to compare proportions between qualitative parameters.
- Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables

- The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:
 - Probability (P-value)
 - P-value <0.05 was considered significant (S).
 - P-value <0.001 was considered as highly significant (HS).
 - P-value >0.05 was considered Not significant (NS).

3. RESULTS

Table (1): Shows that 44% of the studied subjects were in the age between (20- 30 years old) with a mean age (33.61, \pm 7.39). Regarding marital status 70% of them were from married. In relation level of education 46% of the studied subjects were from health technical institute. As regards training courses 56% of the studied subjects had training course and 50% of them had a duration of <5 years from last training courses. In addition to 32.1% of them their course field was about injuries.

Figure (1): Illustrates that 32% of the studied subjects had satisfactory knowledge regarding the care of patients with trauma. In contrast, 68% of them had unsatisfactory knowledge.

Figure (2): Reveals that, 36% of the studied subjects had competent. While, 64% of them had incompetent level of practice.

Table (2): shows that there was statistically significant correlation between the study subjects, level of knowledge and their demographic characteristics, level of education, years of experiences and training courses, regarding care of traumatic patients with p-value ($p < 0.05$).

Table (3): reveals that there was a statistically significant correlations between the study subjects level of practice and their level of education, demographic characteristics and training courses, with p-value ($p < 0.05$). While there was a highly statistically significant correlations between nurses demographic characteristics, years of experience, and their total practice regarding the care of traumatic patients.

Table (4): clarifies that, there was a highly statistically significant correlations between the study subjects' total level of knowledge and their total level of practice.

4. DISCUSSION

As regard personal data of studied nurses' current study shows that less than one half of studied nurses have age group (20-30 years), health technical nursing, with a year of experience of 1-5 years. The majority of them are married and have a female gender.

Congruent with previous results (**El-Gawad et al., 2019**), reported that the majority of studied nurses were females and married.

On contrast, **Shehab et al. (2018)**, who applied their study in Egypt to evaluate Impact of an educational program on nurses' knowledge and practice regarding care of traumatic brain injury patients at Intensive Care Unit, and showed that the majority of studied nurses had a year of experience of 2-4 years, had a female gender and had a secondary diploma, and all of them received training courses.

Also, Mohammed et al. (2016), who applied their study in Egypt to assess nurses' performance in providing care to patients' undergoing chest tube, and reported that the majority of studied nurses had a nursing diploma degree of education, and had an experience of 2-5 years, and not receiving training courses. This difference back to difference in setting between studies that each one had a rule that control in personal characteristics and training courses.

Regarding total knowledge about the golden hour of trauma the present study reports that more than two thirds of the studies nurses have unsatisfied level of knowledge.

On the same line, (**Hassan et al., 2017**), who applied their study in Egypt to identify the level of nurses' knowledge and practice for trauma patients during the golden hour of care, and showed that more than two thirds of studies nurses had unsatisfied level of knowledge regarding care of traumatic patient.

Khatab et al. (2019), who implemented their study in Egypt to assess the nurses' performance for patients with cerebral stroke during first golden hours through assessing nurses' level of knowledge regarding cerebral stroke and their nursing management during first golden hours, assessing level of nurses' practices for patients with cerebral stroke during first golden hours and assess factors affecting their performance in management of patients with cerebral stroke during first golden hours, and illustrated that near to two thirds of studies nurses had unsatisfied level of knowledge regarding cerebral stroke during first golden hours.

Al-Gabri et al. (2020), who carried out their study in Egypt to identify to assess factors affecting nurses compliance regarding the care of patients with chest trauma, and found that more than two thirds of studies nurses had unsatisfied level of knowledge about chest trauma compliance.

Also **Shehab et al. (2018)**, who conducted their study at Zagazig University Hospital, Egypt to evaluate the effect of implementing an educational program on nurses' performance regarding traumatized patient during the golden hour in emergency room, and clarified that more than two thirds of studies nurses had unsatisfied level of knowledge about traumatized patient during the golden hour. All previous studies agreed with actual study because all of them applies on the same studied sample (nurses) and in the same country (Egypt) (**Mohammad, 2018**).

Based on the investigator's point of view, there is impact need of traumatic Egyptian nurse to be supported by educational program to enhance their level of knowledge regarding traumatic injuries

To be able to focus on the priorities in an injured patient, a definite system or drill needs to be implemented. The advantage of such a system is that priorities are established and as every member of the team follows the system; communication between team members is easier and more meaningful. The main steps in the early management of trauma are primary assessment, resuscitation (perform primary assessment and resuscitation together, reassessment of airway, breathing, and circulation (ABC), and secondary assessment. The purpose of the primary assessment is to identify life and limb-threatening injuries (**Abhilash & Sivanandan, 2020**).

According to total practices about care of traumatic patients, the present study demonstrates that more than half of the studied nurses had incompetent practices about care of traumatic patients.

In agreement with previous results (**Khatab et al., 2019**), reported that more than three fifth of studied nurses had unsatisfactory practices regarding care for patients with cerebral stroke during first golden hours.

Also, near to previous results, (**Almarhabi et al., 2020**), who achieved their study in Ain Shams University, Egypt to assess the nurses' performance for patients with traumatic head injury during golden hour through assessing nurses' level of knowledge and levels of practice regarding traumatic head injury and their nursing management during golden hour. And assessing the factors that affect nurses' performance for patients with traumatic head injury during golden hour, and showed that more than two thirds of studied nurses had unsatisfactory practices. Similarity between actual study and these studies back to similar culture and study sample.

Hassan et al. (2017) disagreed with previous words as they found that the great majority of studied nurses had unsatisfactory practices regarding care of traumatic patient during golden hour.

Also **EL-Marakby et al. (2018)**, who applied their study in Helwan University, Egypt, to assess nurses' knowledge and practice regarding advanced cardiac life support, and displayed that majority of studied nurses had adequate practices.

Regarding relationship between total knowledge and personal data, the current study showed that there is relationship between total knowledge and years of experience, receiving training course and level of education p- value are 0.005, 0.014 and 0.038 respectively, but there is no relation between total knowledge and nurse's age, sex and marital status p- value are 0.938, 0.870 and 0.649 respectively.

On the same side, (**Abd et al., 2019**) reported that there was relationship between total knowledge about care for traumatized patients during golden hour and years of experience, receiving training course p-value are 0.001 and 0.005 respectively. And there was no relation between total knowledge and nurses' age and marital status p-value are 0.29 and 0.26 respectively.

Also (**Hassan et al., 2017**) showed that there was no relation between total knowledge of studied nurses and personal data (age, sex and marital status) p-value were 0.41, 0.43 and 0.41 respectively.

This is contrary with **Mohamed et al. (2020)**, who implemented their study in Ain Shams University, Egypt to assess nurses' performance for patients with traumatic head injury during golden hour, and showed that there was high significant relation between total knowledge of studied nurses and gender.

Based on the investigator's point of view, this results may be due to the number of sample wasn't comprehensive as number of females in current study was more than numbers of males to show differences.

Also (**Magda & Youssef, 2019**), reported that there was no relationship between total knowledge and attending training course p-value are 0.122, this back to that a very low percent 8.3% of studied nurses in Magda & Youssef, 2019 study attended training course that not enough to show relation in a real picture.

Concerning total practice about care of traumatic patients and its relation to personal data, the current study reveals that there is relationship between total practice and years of experience, level of education and receiving training course p-value are 0.019, 0.001 and 0.003 respectively, and there is no relation between total practice and nurses age, sex and marital status p-value are 0.884, 0.434 and 0.943 respectively.

On the same line, (**Magda & Youssef, 2019**) found that there was no relation between total practice and nurses age, gender and level of education p-value were 0.416, 0.434 and 0.465 respectively.

This was disagreed with **Hassan et al. (2017)**, who illustrated that there was no relation between nurses performance and their educational level.

Based on the investigator's point of view, this may be due to lack of continuous in-services educational program, lack of orientation for newly graduated nurses and level of education.

Also, **Abd et al. (2019)** differed from current study results regarding relation between total practice and nurses age, sex and marital status p-value were 0.001 for all.

Regarding relationship between total knowledge and total practice regarding care of traumatic patients, current study displays that there is significant relationship between total knowledge and total practice p-value is 0.001.

This similar to **Abd et al. (2019)**, who reported that there was significant relationship between total nurses' knowledge and total practice regarding care of traumatic patients during golden hour p-value is 0.000.

Also, **Mahday et al. (2016)**, who conducted their study at Ain Shams University, Cairo, Egypt to assess effect of educational nursing guidelines on nurses' performance in neuro-critical care unit, and showed that there was relationship between total nurses' knowledge and total practice.

On the other hand (**Magda & Youssef, 2019**) displayed that there was no between total nurses' knowledge and total practice regarding care of patient with chest trauma p-value 0.130.

Based on the investigator's point of view, this may back to poor total nurses' knowledge and total practice and due to absence of pre-employment orientation program and in services training courses.

Finally the study will broaden literature on the knowledge and practice on traumatic patients', which will help to prevent complications and improve quality nursing care for traumatized patients' and to develop a health education module.

Table (1): Frequency and percentage distribution of the studied subjects regarding to their demographic characteristics (n=50).

Socio-Demographic data	No.	%
Age (years)		
20-30 years	22	44.0
31-40 years	19	38.0
41-50 years	5	10.0
51-59 years	4	8.0
Mean±SD	33.61±7.39	
Marital Status		
Married	35	70.0
Single	11	22.0
Divorced	2	4.0
Widowed	2	4.0
Level of Education		
Nursing Diploma	22	44.0
Health Technical Institute	23	46.0
Bachelor of Nursing	5	10.0
Training courses		
Yes	28	56.0
No	22	44.0
Duration of last training course (years) (n=28)		
<5 years	14	50.0
5-10 years	9	32.1
>10 years	5	17.9
Course field (n=28)		
Communication ways	5	17.9
Dealing with emergencies	5	17.9
Emergency	6	21.4
First aid	3	10.7
Injuries	9	32.1

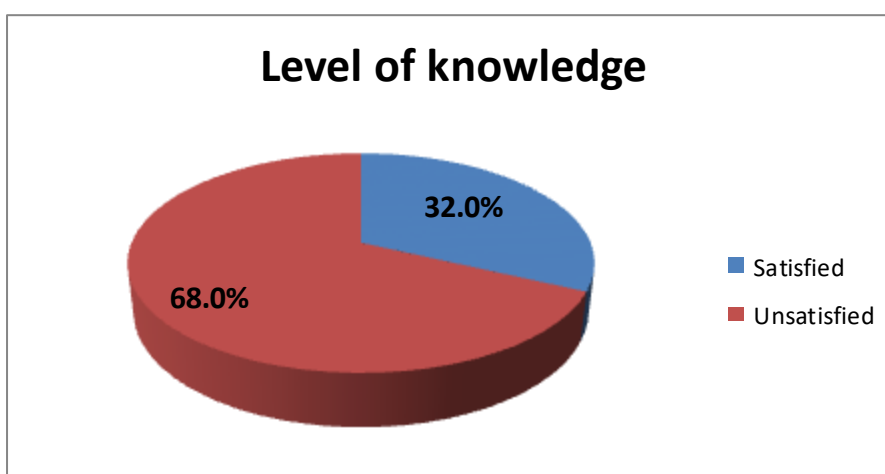


Figure (1): Percentage distribution of the studied subjects regarding to their total levels of knowledge about the care of patients with trauma (n=50).

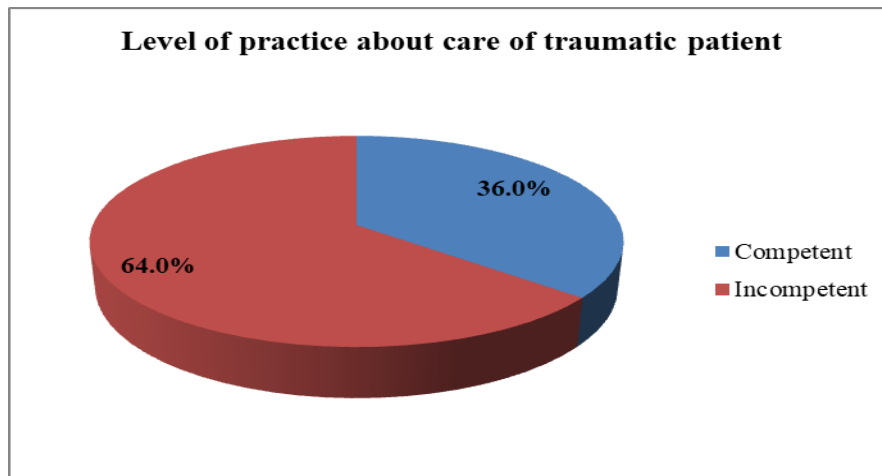


Figure (2): Percentage distribution of the studied subjects regarding to their total levels of practice about the care of traumatic patients (n=50).

Table 2: Correlation between socio-demographic characteristics of the study subjects and their total knowledge regarding care of traumatic patients (n=50).

Demographic data	Level of knowledge				Chi-square test	
	Satisfied (n=16)		Unsatisfied (n=34)		x ²	p-value
	No.	%	No.	%		
Gender						
Male	5	31.3%	11	32.4%	0.006	0.938
Female	11	68.8%	23	67.6%		
Age (years)					0.712	0.870
20-30 years	8	50.0%	14	41.2%		
31-40 years	5	31.3%	14	41.2%		
41-50 years	2	12.5%	3	8.8%		
51-59 years	1	6.3%	3	8.8%		
Marital Status					1.645	0.649
Married	12	75.0%	23	67.6%		
Single	2	12.5%	9	26.5%		
Divorced	1	6.3%	1	2.9%		
Widowed	1	6.3%	1	2.9%		
Level of Education					5.269	0.038*
Nursing Diploma	4	25.0%	18	52.9%		
Institute of Technical healthy	9	56.3%	14	41.2%		
Bachelor of Nursing	3	18.8%	2	5.9%		
Years of Experience					12.785	0.005*
1-5 years	6	37.5%	18	52.9%		
5-10 years	1	6.3%	12	35.3%		
10-15 years old	4	25.0%	1	2.9%		
>15 years old	5	31.3%	3	8.8%		
Training course					6.088	0.014*
Yes	13	81.3%	15	44.1%		
No	3	18.8%	19	55.9%		

Table (3): Correlation between socio-demographic characteristics of the study subjects and their total practice regarding care of traumatic patients (n=50).

Demographic data	Level of Practice				Chi-square test	
	Competent (n=18)		Incompetent (n=32)		x ²	p-value
	No.	%	No.	%		
Gender						
Male	7	38.9%	9	28.1%	0.613	0.434
Female	11	61.1%	23	71.9%		
Age (years)						
20-30 years	9	50.0%	13	40.6%	0.636	0.884
31-40 years	6	33.3%	13	40.6%		
41-50 years	2	11.1%	3	9.4%		
51-59 years	1	5.6%	3	9.4%		
Marital Status						
Married	12	66.7%	23	71.9%	0.386	0.943
Single	4	22.2%	7	21.9%		
Divorced	1	5.6%	1	3.1%		
Widowed	1	5.6%	1	3.1%		
Level of Education						
Nursing Diploma	4	22.2%	18	56.3%	7.791	0.019*
Institute of Technical healthy	10	55.6%	13	40.6%		
Bachelor of Nursing	4	22.2%	1	3.1%		
Years of Experience						
1-5 years	5	27.8%	19	59.4%	18.964	<0.001**
5-10 years	2	11.1%	11	34.4%		
10-15 years old	5	27.8%	0	0.0%		
>15 years old	6	33.3%	2	6.3%		
Training course						
Yes	15	83.3%	13	40.6%	8.528	0.003*
No	3	16.7%	19	59.4%		

Table (4): Correlation between nurses level of knowledge and level of practice regarding care of traumatic patients (n=50).

		Total score of knowledge
Total score of practice	r	0.726
	p-value	<0.001**

**p-value <0.001 HS (highly significant).

5. CONCLUSION

On the basis of the present study, it was concluded that:

There were more than two third of the studied subjects had unsatisfactory knowledge regarding to the care of traumatic patients. Nearly two third of the studied subjects had total incompetent practice regarding to the care of traumatic patients. On the same line, there is a highly statistically significant correlations between the study subjects' level of knowledge and their total level of practice.

6. RECOMMENDATIONS

On the light of the current study, the following recommendations were suggested:

- 1- Continuous educational programs should be planned on regular basis to nurses' caring of traumatic patients for enhancing emergency nurses' knowledge and practice to achieve high quality of care.
- 2- Workshops, seminars and Conferences should be arranged periodically and closely at a departmental level.

Recommendations for further researches:

- Further research studies are needed for ongoing assessment of nurses, including large samples about nursing management for a traumatic patient for generalizing of the results.
- More researches should be done on this filed under the title of strategy to improve the performance of nurses working in emergency care departments caring for traumatic patients.

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