Assessing Staff Nurses' Knowledge, and Practice Regarding Patients Triage

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Abstract

Background Triage is a key element in efficient management of major incidents and is the procedure by which the cases are prioritized relying on clinical acuity. therefore, nurses need to educated about triage to improve knowledge and practice has a potential impact on patients' outcomes. This research aims to assessing staff nurses' Knowledge and practice regarding patients triage. **Design:** Descriptive. **Setting:** The Emergency Hospital affiliated to Ain shams university hospitals. The sample included all available staff nurse their number 56 staff nurses who worked in aforementioned setting. Tools for data collection: two tools, Triage knowledge questionnaire and Triage observational checklist. **Results:** more than two third (66.1%) of nurses were in the age category <30 years with mean of 29.46±8.54 years. slightly more than half (51.8%) of studied nurses were male and more than one third (42.9%) had diploma. Additionally,): Reveals, total staff nurses' knowledge dimensions regarding triage, that generally low levels of Knowledge among the nurses in the study sample regarding triage Domins. The highest knowledge related to concept of triage (48.2%) and the lowest was related to stages of triage (41.1%). It marked total knowledge of staff nurse knowledge of triage (21,2%). The highest mean score of practice regarding triage (75.13±4.66). Shows, total nurses' practice dimensions regarding triage, there were generally very low levels of practice among the nurses in the study sample regarding practice of patient triage. The highest practice related to nursing implementation of triage (23.2%) and lowest was related to evaluation of triage process (16.1 %) There were generally inadequate practice among staff nurses regarding practice of patient 25%. **Conclusion:** generally low levels of Knowledge among the nurses regarding triage . there were generally inadequate practice among the nurses regarding practice of patient triage**. Recommendations:** Conduct training program and workshops periodically for nurses about patient's triage in all critical care units to improve knowledge and practice of nurses and designing a guideline about roles and responsibilities of triage nurse in emergency departments.

Key words: knowledge, Practice Patient ,Triage, Staff nurses

Introduction

The principle of triage in prioritizing care to large categories of individuals has been derived from its military origin for application in the civilian settings of initial emergency department (ED) care. Triage is a substantial element of emergency care. In most settings, triage involves an algorithmic system by which health providers can prioritize the cases relying on their anticipated acuity and resource needs. This is essential in conditions where demands for emergency care outstrip system capacity **(Tran, et al., 2021).**

Triage means sorting; it shows how to choose patients according to their life-threatening status. Due of the majority of large casualties brought to hospitals, it was typically employed in battle before being accepted in hospitals. There are some concepts should be followed in triage practice, including levels and colors: RED: refers to prompt necessity for resuscitation, GREEN indicates minor injury, YELLOW indicates delayed, subjects who can wait and BLACK means dead **(Belt, et al., 2020).** The first step to the emergency room is triage. A triage nurse's primary duties include: administering first aid; observing and reevaluating patients awaiting medical consultation; and prioritizing patients' medical care based on urgency **(Rob, et al., 2020).**

In addition to ensuring that all patients receive emergency examinations based on the severity of their clinical illnesses, an efficient

triage system aims to deliver appropriate and quick remedies for life-threatening disorders. Nursing care requires the ability to properly triage and prioritize patients, and the severity of the patient's disease doubles the significance of this procedure. Nurses are the first personnel in the triage department that take care of subjects. Emergency nurses' knowledge and experience are extremely crucial when making the right decisions. Usually in an unfamiliar and emotional environment, triage nurses should be able to make the right decisions quickly. For patients, nurses are among the most crucial groups of healthcare professionals **(Jan, 2023).**

An essential component of safe care is the evaluation of triage knowledge. To ensure high levels of knowledge and effectiveness in responding to health care requirements, nurses and other health care workers at all levels must constantly attend continuing education and maintain their current knowledge levels. Moreover, in order to predict and deliver safe care for patients throughout their lives, nurses must continue to improve their knowledge **(Berkowitz, et al., 2022).**

The functional effectiveness of EDs is significantly impacted by the knowledge and skills of nurses since prompt action by medical personnel can save valuable time for each patient and, more critically, because many lives depend on it. Furthermore, a rational allocation of emergency resources to patients can result from an experienced nurse's prompt and appropriate choice. During emergencies and high ED referrals, the importance of allocating resources appropriately becomes evident **(Martin, et al., 2021)**

Nurses‘ knowledge regarding triage is one of the important factors of supervision in emergency, if it is not performed at standard level; the clinical care outcomes of patients and efficiency of EDs get compromised. Triage is a procedure adopted to determine illness or injury severity to prioritize cases according to the medical care requirements, irrespective of their order of influx or other elements encompassing age, sex, and socioeconomics. There is a range of categories of triage that include ED triage (Emergency room), inpatient triage (ICU, Surgery, Outpatient etc), incidence triage (accidents, fire, air crashes etc), military triage (battlefield), disaster triage (bomb blasts), and telephonic triage (over the phone, referral services) **(Hai, et al., 2022).**

Significance of the study:

Nurses are the first people in the ED that take care of patients, experience and knowledge of the emergency nurses are crucial in the proper decision-making. Nurses working of ER should be able to make appropriate decisions regarding patients care in a relatively short time, usually in an unknown and emotional situation. (Martin, et al, 2021). While an inaccurate triage system wastes resources and leads to delayed patient admission and treatment, patient dissatisfaction, and unintended consequences, an accurate triage system can help identify patient treatment trends and streamline patient admission and stabilization procedures (Tobias, et al, 2022). So This research aims to assessing staff nurses’ knowledge and practice regarding patients triage.

Ethical code:

25.04.640

Aim

To assessing staff nurses’ knowledge and practice regarding patients’ triage.

Through.

1.Assessing staff nurses’ knowledge regarding patients’ triage.

2-Assessing staff nurses’ practice regarding patients’ triage.

Research question

1- What are staff nurses’ knowledge regarding patients’ triage.

2- What is the practice of staff regarding patients’ triage.

Subjects and Methods

Research design

Descriptive design was utilized in

conducting this study..

Setting

This study was conducted at emergency Hospital (medical& surgical departments) that affiliated to Ain Shams University Hospitals. Total bed capacity (66 beds).

Study Subject:

All available staff nurses (56-nurse) worked in aforementioned settings were included in the study.

Tools of Data collection:

The Data for this study was collected by using two tools:

1.**Triage knowledge questionnaire :** It developed by investigator based on **(Varghese, 2012**), to assess knowledge regarding patients' triage. It involves two parts:

I: Personal and Job features: This section collects data pertaining to personal and job informations of the participants including age, gender, qualification, experience in EDs and triage training.

II: Assess knowledge regarding patients' triage. It consists of twenty-six multiple- choice questions these questions were categorized into four main dimensions (concept of triage (4)items, process of triage(4), types of triage(9) and stages of triage (9) items.

Scoring system: Each question was assigned one score for correct choice and zero for incorrect one, therefore, the maximum possible total score was 26 For each dimension, the total scores of all items were calculated and divided by the frequency of the questions giving a mean score for the section. These mean values were converted into percent. Satisfied knowledge is defined at percent score of ≥60%, whereas unsatisfactory level is <60%. **(Varghese, 2012**),

2- Observational Checklist of Practice Triage:

Triage Observational Checklist: which includes two sections

I: aimed to assess the triage area infrastructure, equipment, supplies, medications and records.it developed by ***Mostafa (2021)*** and modified by the investigator. It encompasses 39 items categorized under five dimensions (infrastructure requirement, (4) items, availability of equipment (9) items, availability of supplies (11) items, availability of medication(8) items and availability of records (7) items.

Scoring system:

This part was assessed through two responses that are present or not present

II: aimed to assess staff nurse's practice regarding patients' triage, it developed by **Shaalan et al., (2008), Ahmed, (2015), Mohamed, (2017)** and modified by the investigator after literature reviewing **(Parenti et al., 2018)**. It consists of sixty-three items grouped into six dimensions of triage practice (identifying patient (2) items, assessment of chief complain of patient (18) items, nursing diagnosis (2) items, nursing planning (2), nursing implementation (24) items and evaluation of the triage process (15) items).

Scoring system:

The scoring system ranged from done (1), or not done (0), or not applicable for each dimension. The items' scores were calculated and the total divided by items' number, then means and standard deviation were calculated. The scores were turned into a percent score. Adequate practice was at ≥60% and inadequate at < 60% ***(Mohamed, 2017).***

Tools Validity:

After the construction of the tools, validity was tested for the knowledge questionnaire and observational checklist through distribution of the tools to five Experts in the nursing administration. The Jury included (one professor from Helwan University. one professor from Benha University, one professor from Ain Shams University and two assist professors from Ain Shams University. Modifications were performed based on their recommendation.

The operational design:

This work was performed through three phases namely preparatory, pilot and the field work.

I. Preparatory phase

It started from November 2021till January 2022. It includes literature review of international and national journals reported the various aspects of the research, using articles, textbooks, and thesis concerning the topics of the study. Based on this review modifications of the tools were done. Finally, the tools and the training program were revised.

II. Pilot Study

Pilot study was done during February 2022 to assess clarity of language, applicability & feasibility of the tools, evaluation of time required to fill the study tools and detect any obstacles that may be occurred during data collection. It was carried on 10% of the participants representing six nurses who were selected randomly. Knowledge Survey sheet was distributed to nurses in their workplaces. The time taken for filling the survey was 20 -30 minutes. Then the practice of the nurses was observed by the investigator through the observation checklist to determine their actual practice related to triage, the time taken to fill this tool was 25-30 minutes. No modifications were done based on the results. So, the nurses of the pilot study were incorporated in the main research.

III. Field Work

After securing official permissions to conduct the study, the researcher met individually with the nurses in the study setting, and explained to them the purpose of the research. They were invited to participate after being informed of their rights.

Candidates who consented for participation were given the questionnaire, with clear instructions about its completion. Each respondent took 20-30 minutes to fill-in the sheet. The researcher was present all the time for any clarifications required. Then, researcher collected the filled forms and checked them for any missing data.

The work was done in each department from 11:00 AM to 1:00 PM, with arrangement of the head nurse in order to avoid any work interruption. The staff nurses were then observed individually by the investigator using the observation checklist to evaluate the actual nurses' practice. The observation lasted 25-30 minutes for each nurse. Data collection took two months extending from beginning of March to end of April 2022

IV. Administrative design

Official permission for this work was obtained from Director of the target Hospital through letter from Nursing Faculty Dean of Ain Shams University. The investigator met director of the target hospital, and explained research objective to obtain cooperation and support during the work.

V- Statistical design:

The data was revised, coded, and analyzed using the "statistical package for social sciences, version 22.0 (SPSS Inc., Chicago, Illinois, USA)". Quantitative elements were expressed as mean± standard deviation (SD), whereas qualitative ones were expressed as frequency and percentage of mean± standard deviation (SD). Chi-square (x^2) test was adopted to compare proportions between qualitative items. T-test was implemented for comparison of related sample. Pearson's correlation coefficient (r) was applied to assess the association degree between two sets of variables, multiple linear regressions: It was adopted to estimate the dependence of a quantitative items based on its relation to one or more independent parameters. The confidence interval was set to 95% and 5% was the margin of accepted error. P-value significance was as the following:

– $P<0.05$: Significant.

– $P<0.001$: Highly significant.

– $P>0.05$: Insignificant.

Results

Analysis:

Table (1): more than two third (66.1%) of nurses were <30 years with mean age was 29.46±8.54 years. slightly more than half (51.8%) of studied nurses were male and more than one third (42.9%) had diploma. Additionally, slightly more than three quarter (76.8%) were years of experience 1-<10 years

Figure (1): Shows that, (60.7%) of study sample not received training regarding triage.

Table (2): Reveals, total staff nurses' knowledge dimensions regarding triage, that generally low levels of Knowledge among studied staff nurses regarding triage dimensions . The highest knowledge related to concept of triage (48.2%) and the lowest was related to stages of triage (41.1%).

Table (3): Shows, total staff nurses' practice dimensions regarding triage, there were generally very low practice levels among staff nurses regarding practice of patient triage. The highest practice related to nursing implementation of triage (23.2%) and lowest was related to evaluation of triage process (16.1 %).

Table (4): Demonstrates, relation between staffs' knowledge about Triage regarding to their personal job characteristic that, there were significant relationship (p≤.05) between nurses' knowledge regarding triage and all personal data. There was significant relationship between nurse's knowledge and age ($\chi2=4.608$, $p=0.1$), Also, there was considerable relationship between participants' knowledge and years of experience ($\chi2=2.034$, $p<0.362$) as well as courses on triage ($\chi2=3.276$, $p<0.07$)

Table (5): Demonstrates relation between practice of Triage regarding to personal job characteristic; there were remarkable relationship (p≤.05) between practice regarding triage and all personal data as well as age ($\chi2=2.741$, $p=0.257$). Also, there was considerable relation between practice and qualification was found ($\chi2=6$, $p=0.006$).

Part I: personal and job characteristic of the studied nurse

Table (1): Participants' characteristics (N=56).

personal and job characteristic	No.	%
Age (years):		
< 30	37	66.1
30- 40	13	23.2
>40	6	10.7
Mean±SD	29.46±8.54	
Sex :		
Male	29	51.8
Female	27	48.2
Educational qualification		
Diploma	24	42.9
Diploma above average	16	28.6
Bachelor degree of nursing	16	28.6
Years of experience		
1-<10	43	76.8
10-<20	10	17.9
>20	3	5.4

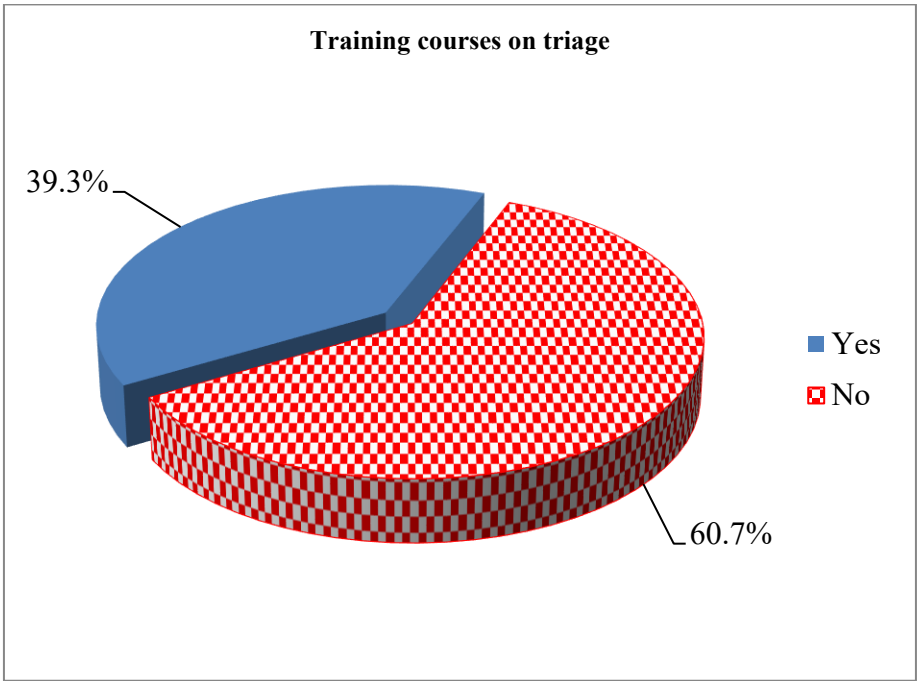

Figure (1): Attending training courses on triage among nurses in the study sample (n=56)

Table (2): Total staff nurses' knowledge dimensions regarding triage (N=56).

Dimensions	No.	%
Concept of triage	27	48.2
Process of triage	26	46.4
Types of triage	24	42.9
Stages of triage	23	41.1
Total	21	39.5

Table (3): Total nurses' practice dimensions regarding triage (N=56).

Dimension of practice	No.	%
Identifying patient	11	19.6
Assessment of chief complain of patient	12	21.4
Nursing Diagnosis	8	14.3
Nursing Planning	9	16.1
Nursing Implementation	13	23.2
Evaluation of triage process	9	16.1
Total	13	25

Table (4): Relation between staff nurses' knowledge about Triage regarding to their characteristic (N=56).

Characteristics	Knowledge		
	No.	%	
Age (years):			
< 30 years	11	91.70%	
30- 40 years	1	8.30%	
>40 years	0	0.00%	
x^2	4.608		
p-value	0.1		
sex:			
Male	5	41.70%	
Female	7	58.30%	
x^2	0.626		
p-value	0.429		
Marital Status:			
Single	7	58.30%	
Married	4	33.30%	
Divorce	1	8.30%	
x^2	1.534		
p-value	0.464		
Educational qualification			
Diploma	5	41.70%	
Diploma above average	4	33.30%	
Bachelor degree	3	25.00%	
x^2	0.194		
p-value	0.907		
Years of experience			
1-<10 years	11	91.70%	
10-<20 years	1	8.30%	
≥20 years	0	0.00%	
x^2	2.034		
p-value	0.362		
Training courses on triage			
Yes	2	16.70%	
No	10	83.30%	
x^2	3.276		
p-value	0.07		

x^2: Chi-square test

Table (5): Relation between staff nurses adequate of practice regarding Triage and their characteristic (N=56).

Characteristics	Practice		
	No.	%	
Age (years):			
< 30 years	11	78.60%	
30- 40 years	1	7.10%	
>40 years	2	14.30%	
x^2	2.741		
p-value	0.254		
Gender:			
Male	6	42.90%	
Female	8	57.10%	
x^2	0.596		
p-value	0.44		
Marital Status:			
Single	6	42.90%	
Married	7	50.00%	
Divorce	1	7.10%	
x^2	1.074		
p-value	0.584		
Educational qualification			
Diploma	6	42.90%	
Diploma above average	7	50.00%	
Bachelor degree	1	7.10%	
x^2	6		
p-value	0.06		
Years of experience			
1-<10 years	12	85.70%	
10-<20 years	1	7.10%	
≥20 years	1	7.10%	
x^2	1.505		
p-value	0.471		
Training courses on triage			
Yes	2	14.30%	
No	12	85.70%	
x^2	1.891		
p-value	0.072		

x^2: Chi-square test

Discussion

Triage is a system implemented in emergency when the frequency of subjects needing care exceeds the available resources to treat the largest frequency of patients. It has evolved to become a potential part of the ED, as long waiting times to see the ED physician /nurse require immediate identification at triage of those with high-risk conditions. The subjects arriving at ED wait for long time. ED triage helps in classifying those patients based on illness severity and decide both location and priority of therapy **(Bullard et al., 2017).** This work aimed to assessing staff nurses' knowledge and practice regarding patients triage.

Discussing the findings of this research was divided under forth main sections. The first concerned the characteristic data of the staff nurse. The second section staff nurses knowledge regarding triage . The third part is about staff nurses practice regarding triage . The fourth part related to relation between the study variables to personal and job characteristic .

The current study showed that, more than two thirds of subjects aged <30 years with mean age was 29.46±8.54 years. slightly more than half of studied nurses were male and more than one third had diploma. Additionally, slightly more than three quarters were years of

experience 1-<10 years. More ever slightly less than two thirds do not attend training courses.

This result is in agreement with **AlMarzooq (2020)** who studied "ED Nurses' Knowledge Regarding Triage" and found that one third of the study participants had from 31-35 years. The educational level indicated that most of the nurses had bachelor's degree, whereas those with technical diploma represented less than half. Regarding training courses, more than three quarters of nurses had the "Advanced Cardiac Life Support (ACLS)" training; however, the triage courses were only one quarter of participants undergone the triage courses.

This research displayed that generally low levels of Knowledge among the participants in the study sample regarding triage dimensions . The highest knowledge related to concept of triage and the lowest was related to stages of triage. This finding is consistent with. Bahlibi et al. (2022) showed only a few nurses were determined to have adequate knowledge **regarding)**. It was proposed that such results might be due to emphasized that every nursing staff in need to acquired technical and theoretical information that is crucial to improve their skills in their work. This result was agreed with Mostafa (2021) who show highest the majority of the study subjects response to triage knowledge regarding "basic concept of triage items." purpose of the triage process"

Regarding total staff nurses' practice dimensions relating triage, there were generally very low practice levels among staff nurses regarding practice of patient triage. The highest practice related to nursing implementation of triage and lowest was related to evaluation of triage process

The findings were supported by **AlShatarat et al. (2022)** who studied "Triage knowledge and practice and associated factors among ED nurses." and showed a decline in nurses' practice regarding planning and implementation of triage. They added that several strategies that are aligned with the focus of the current study on improving nursing implementation during triage, indicating that targeted interventions and education can lead to enhanced nursing practices in this critical area. This broader perspective on interventions aligns with the multifaceted nature of nursing implementation during triage, which involves various aspects such as respiratory and circulatory interventions, vital sign monitoring, and maintaining a safe environment.

This work demonstrated a considerable variation regarding evaluation of triage. This finding is consistent with **Mohammed Mostafa et al. (2023)** who discussed that there was an improvement in triage assessment, triage communication, triage documentation and triage evaluation

The current study revealed there was a remarkable relationship between knowledge and nurses' age, qualifications, and years of experience, There was a remarkable relationship between nurse's practice and their age and years of experience, ..

In agreement with the current work, **AlMarzooq et al. (2020)** stated that there was a potential relation between age and knowledge, where the knowledge of ED nurses increases when they become older among. Furthermore, a considerable relation was also noted between years of experience and knowledge. This indicates that knowledge increases with years of work .

Conclusion

Based on the findings of this research, generally low levels of Knowledge among staff nurses regarding triage dimensions. The highest knowledge related to concept of triage and the lowest was related to stages of triage. and there were generally very low practice levels among studied staff nurses regarding practice of patient triage. The highest practice related to nursing implementation of triage and lowest was related to evaluation of triage process.

Recommendations

Based on our findings, we suggest:
For hospital administration

- Conduct periodic training program and workshops for nurses about patient's triage

especially at critical care units to increase patient safety and quality of care.

- Designing an instructional guideline about triage nurse roles and responsibilities in EDs.

- Implementing a triage system in hospitals, which can be used effectively during emergencies and disasters.

- Establish job orientation for newly graduates' nurses to enhance knowledge, practice and attitude about triage and continuous education.

- Increase the frequency of highly qualified nurses in the ED as the total mean score of knowledge and practice increased with high qualifications.

- Publication of the guideline and establishing educational program in EDs to improve nurses' practice for all patients.

For staff nurses

- Triage nurse roles and triage process should be included in the curriculum of Nursing Schools, Nursing Institutes and Faculties of nursing.

- The triage nurses should receive education and apply their knowledge into practice to determine the patient's triage acuity level successfully

- Reducing triage waiting time require the presence of triage nurses at triage desk during all the shifts and all the time

Further research's

- Effect of triage training program for staff nurses on patient outcome.

- Assessing factors affecting knowledge, practice and attitude regarding triage among staff nurses.

- Further longitudinal research should be established to assess the impact of the researchers' guideline educational program on the nurses' practice toward triage in ED

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