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Assessment Of Saudi Emergency Department Nurses' Knowledge About Triage System and Correlated Factors

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Abstract

Background: Emergency services classify patients based on the severity of their diagnoses using a triage system. One of the skills a nurse working in an emergency department needs to have is triage. Aim: This study aims to examine the nurses' knowledge regarding triage and identify the variables that affect emergency nurses' knowledge of the triage systems. Methods: This cross-sectional descriptive study was performed from April to June 2022, on (48) nurses working in the emergency department. (ED) at Makkah hospital in Saudi Arabia. A self-administered questionnaire with non-probability purposive sampling was used to gather the data by sociodemographic data and triage knowledge. Results: The findings revealed that 68.8% were female and 45.8 % with a mean age of 31.79. Nurses revealed moderate levels of triage knowledge. Bachelor science nursing degree (p = 0.005, B= 10.659), years of experience for ≥5 years (p = 0.002, B =10.670), and training courses on triage (p = 0.001, B= 12.418) were affecting factors with statistically significant on emergency nurses' knowledge. Conclusions: The results showed that emergency nurses knew about triage at a moderate level. The knowledge of nurses was influenced by their training, years of experience, and qualifications. Therefore, recommendations for training sessions and programs should be held and taken into account the connected increases in emergency nurses' knowledge of triage to improve the quality of nursing care and patient outcomes.

Keywords: *Triage system, emergency Nurses, knowledge, factors.*

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Introduction

Emergencies include accidents and other serious circumstances that call for immediate intervention. Patients with varied degrees of severity come at the emergency room concurrently, necessitating the use of a triage system (Sutriningsih et al., 2020). The triage process is a modern emergency department (ED) tool used to quickly assess a patient's acuity and rank them based on the severity of their issues (Fry & Burr, 2002; Moon & Park, 2017). Patients with a range of disorders who visit emergency rooms infrequently lack a definite diagnosis, urgency, or severity (Considine et al., 2007). To save the lives of patients suffering from life-threatening situations such shock, airway obstruction, and cardiac arrest, priority care should be provided. Uneasy, a packed emergency room (ED) can degrade the standard of service by distributing resources between patients who require emergency care and others who may have less urgent requirements (Considine et al., 2007; Iserson & Moskop, 2007).

The definition of triage is "placing the patient in the best possible situation at the best possible moment to receive the best possible degree of care and the allocation of suitable resources to satisfy the patient's medical demands." This hospital location enables the assignment of the caregiver to an appropriate assessment and treatment location (Gerdtz & Bucknall, 2000; Kelly & Richardson, 2001; Pozner et al., 2003). Patient triage not only guarantees that all patients receive care more quickly, but it also provides equitable distribution of emergency facilities according to the severity of each patient's condition and disease. This is especially crucial when there are time and resource limitations in the emergency department, including those brought on by crowding (Kariman et al., 2013). A different definition of triage is that when there are injured patients present, it is the act of managing multiple patients at once with limited resources (Djalali et al., 2011).

Since it can accomplish a number of departmental management goals when implemented properly in an emergency, triage is recognized as one of the fundamental components of emergency management (Veenema, 2008). One of these goals is to ascertain the work evaluation at an emergency room. The difficult and unpleasant process of triage is a major barrier in situations of crises and urgency. (Örtenwall, 2012; Rostampour et al., 2016)

It will only be possible to promptly diagnose patients with acute pain and administer life-saving therapies in the shortest amount of time with appropriate triage and patient priority. Nurses are crucial in disaster preparedness. They should understand the concept of a wave, which indicates critical conditions outside the power, and have a shared understanding of how to use it to protect public health and safety. (Esmailian et al., 2014; Tadrisi et al., 2011). However, given the rising need for emergency care, the educational system for educating emergency nurses is still insufficient. Previous studies found that the emergency room has not implemented triage because of a lack of information, nurses, and patient care motivation (Faheim et al., 2019). The most important factors to improve the quality of care and patient safety are continuing education and training programs linked to triage and advanced management of medical emergencies. Therefore, it is necessary to examine nurses' perceptions regarding triage and its associated factors in the emergency department.

Significance of the study

Skilled emergency nurses possess the abilities needed to do vital tasks quickly. Triage is one of the skills emergency nurses need to complete fast assessments, patient classification, and allocation. Nurses are able to prioritize patient care through the process of triage decision-making.

Aim of the study:

The present study aimed to examine nurses' knowledge regarding triage system and its associated factors in the emergency department.

Research Question

Q1: What is the knowledge level regarding triage for emergency department nurses?

Q2: What are the affecting factors regardingnurse triage knowledge score?

Research design:

The research design uses a cross-sectional descriptive study.

Setting

The data has been applied to working nurses at the emergency department at Makkah hospital in Saudi Arabia.

Subjects and method:

Subjects:

Non-probability purposive sampling of 48nurses from April to June 2022, on (48) nurses who worked in the before mentioned setting. Theinclusion requirements include being 18 years of age or older, working full-time to offer direct care to their patients, and being employed in thehospital for a minimum of one year. However, among the exclusion criteria were individuals who were on vacation, didn't complete the questionnaires correctly, or weren't present throughout the researchers' needed data-gatheringperiod.

Tool of Data Collection

A self-administrative questionnaire was usedto get the data. These instruments are made up ofthe following two components:

Part I: This part includes demographic data of the nurses, including their age, sex, marital status, educational level, and years of experience.

Part II: to assess nurses‟ knowledge about triagewas developed by (Phukubye et al., 2019). The triage knowledge questionnaire has 12 items triage is the sorting of patients into the priority of injuries or illness, the purpose of triage is to prevent the deterioration or deathof a patient while waiting in queue for their turn. Each of which can be answered with "agree" or "disagree." a score of 1 is awardedfor each correct response, while a score of 0 isawarded for each erroneous response. Triagescores can have totals ranging from 0 to 18. Greater triage knowledge or experience is indicated by a higher overall score. Before determining the final score, reverse-worded elements are reverse-coded. (Phukubye et al., 2019). The questionnaire had good reliability,with Cronbach’s alpha of 0.88.

Pilot study

In a pilot study, 10% of participants were used to examine the level of clarity, viability, application, and the average time required to becompleted by each respondent. Necessary changes were made. The participants in the overall study who provided these responses were not counted.

Validity of tools

The suggested tools are validated using face and content validity. Face validity entails looking at the items to determine whether the tools are measuring what they are supposed to. Analyzing whether the tools' content addressed the study's objectives is the goal of the content validity study. After the investigator constructed the tools, five specialists evaluated them. The tool was evaluated for language clarity, relevance, accuracy, completeness, simplicity, and applicability by experts in the nursing department at the aforementioned university; some sentences were rephrased withminor changes made. Then came the creation of the ultimate forms.

Reliability of tools

The reliability of the created tools was evaluated using the Cronbach alpha test. Test results for knowledge reliability among triage nurses were 0.88.

Field of work

Based on the findings of the pilot study, necessary revisions were then made. Upon receiving the study's conductors' approval from the hospital's directors. The researcher gathered information from the nurses in the aforementioned context using a self-administered questionnaire. Information was gathered during the period between April to June 2022. The researcher visited the department of the hospital under consideration, presented their credentials, explained the goals of the study, and then handed out a questionnaire for the subjects to complete on their own. A questionnaire was provided duringthe morning, evening, or night shifts. The questionnaire generally takes about 15-20 minutes to complete.

Administrative Design:

This study was authorized by the ethics committee . Also, the setting's director to gather the required information for the present study and discuss the study's purpose to obtain authorization.

Statistical analysis

The IBM SPSS software program version 22.0 was used to examine the data that were fed into the computer. (IBM Corp., Armonk, NY) quantitative data were described in terms of percentage and number. To confirm the distribution's normality, the Kolmogorov-Smirnov test was utilized. Utilizing the range (minimum and maximum), mean, standard deviation, and median, quantitative data were described. The 5% level was used to determine the results' significance. the student t-testCompares two groups under study for quantitative variables using normally distributed data. When comparing more than two groups and quantitative variables with regularly distributed, use the F-test (ANOVA). Regression to identify the knowledge-affecting component that is most independent of other factors.

Results:

Table 1 The mean age of the study nurses was (31.79 ± 5.81) years. 45.8% were aged between 30-39 years; 68.8 % of females and 52.2% of the study nurses were married. 72.9%of the study nurses had a bachelor's level of education, 43.8 % of the nurses had less than 5 years of experience, and two third of nurses had attended workshops/in-service on triage.

Demographic data	No.	%
Sex		
Female	33	68.8
Male	15	31.3
Age		
20-29	20	41.7
30-39	22	45.8
40 more than	6	12.5
Mean ± SD	31.79 ± 5.81	
Marital status		

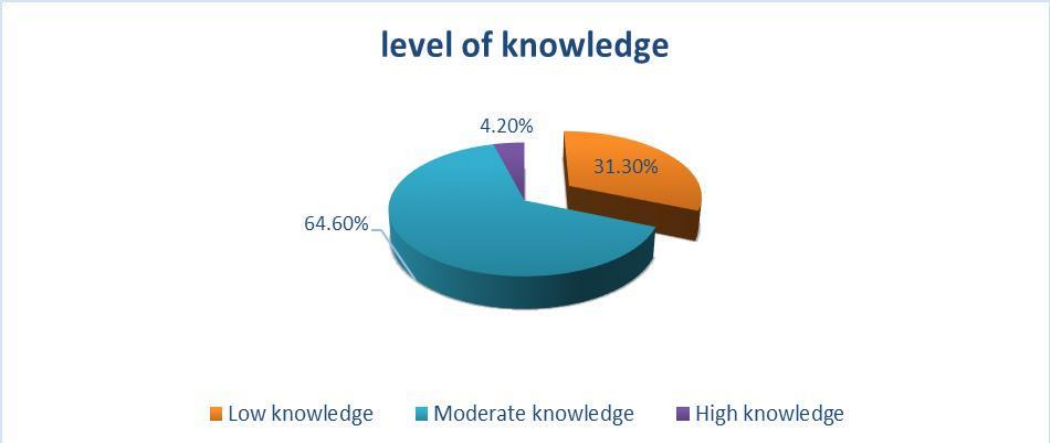
Single	19	39.6
Married	27	56.3
Divorced	2	4.2
Qualification		
Diploma	13	27.1
Bachelor	35	72.9
Years of experience		
<5	21	43.8
5-<10	19	39.6
≥10	8	16.7
Min – Max	0.80 – 22.0	
Mean ± SD	5.56 ± 3.81	
Median	5.0	
Attended workshop/in-service on triage		
No	13	27.1
Yes	35	72.9

Table 2 the total mean knowledge scorewas 10.94 (SD = 2.18). Displays nurses had the highest correct answer with statements relating to Canadian triage & acuity scale charts are suitable for children and adults, also thepatient's vital signs are taken after an emergency sign is identified (95.8%). While(89.6%). The triage of early warning signs is a tool used by medical services to quickly assess the severity of a patient's illness, and sort patients by priority for injury or disease. Additionally, the majority of nurses wereunaware that AVPU stands for awake, verbal, pulse, and unresponsive (16.7).

Q	Triage Knowledge	Correct answer No. (%)
1	Triage is the sorting of patients into the priority of injuries or illness.	43 (89.6)
2	The purpose of triage is to prevent the deterioration or death of a patient whilewaiting in queue for their turn	37 (77.1)
3	Triage early warning signs are a tool used by medical services to quickly assessthe severity of a patient's sickness.	43 (89.6)
4	There are two Canadian Triage & Acuity Scale charts, one for children and adult.	46 (95.8)
5	If an emergency sign is identified in the first step the patient is taken to vitalsigns first.	46 (95.8)
6	If no emergency signs are identified in step 1, but an urgent sign is identified in step 2, the patient is immediately triaged yellow and asked to wait	12 (25.0)
7	Canadian Triage & Acuity Scale priority level yellow should be referred to adesignated area for non-urgent	12 (25.0)

8	Patients triaged color WHITE should wait for 10 min before being attended	16 (33.3)
9	Nursing auxiliaries are not allowed to triage	40 (83.3)
10	AVPU is short for Alert, Verbal, Pulse, Unresponsive	8 (16.7)
11	Triage Early Warning Score consists of the following parameters: Mobility, Respiratory rate, Heart rate, Diastolic blood pressure, Temperature, and AVPU	46 (95.8)
12	A tiny baby under two months should always be referred to the senior health carepractitioner once they have been comprehensively triaged.	31 (64.6)
13	Patients' color green or (Priority 4) should be attended to first when triaging	16 (33.3)
14	Canadian Triage & Acuity Scale has 5 color coding or priorities.	23 (47.9)
15	Triage is difficult and costly to implement in district emergency units.	16 (33.3)
16	Patients with high social status e.g., town mayor, school principals, politicians,etc. should be treated as very urgent even if triaged as color green	38 (79.2)
17	The discriminator list is not important for triage purposes.	14 (29.2)
18	Triage knowledge is not important.	38 (79.2)
	Total Score (0–18) Min. – Max.Mean ± SD.Median	 7.0 – 15.0 10.94 ± 2.18 11.0

As shown in (Fig. 1), the majority ofnurses (64.6 %) had a moderate level of knowledge regarding triage, while 31.3 % hada low level of knowledge, and only 4.2% % were considered to have a high level of knowledge.



As shown in Table 3, the association between knowledge scores and the demographic data of the study participants was determined. A significant association was recognized between knowledge score and qualification, years of experience, and training courses on triage. But,

no significant differencewas detected in knowledge score and sex, age, or marital status.

Demographic data	Knowledge Mean ± SD	Test ofsig.	p
Sex Male Female	 62.59 ± 9.50 59.93 ± 13.16	 t=0.702	 0.486
Age 20-29 30-39 40 more than	 61.94 ± 12.65 62.37 ± 10.56 50.93 ± 12.87	 F= 2.411	 0.101
Marital statusSingle Married Divorced	 61.40 ± 10.22 59.88 ± 12.92 66.67 ± 23.57	 F= 0.328	 0.722
Qualification Diploma BSN	 52.99 ± 12.95 63.65 ± 10.55	 t= 2.923*	 0.005*
Total Years of experience <5 5-<10 ≥10	 54.76 ± 10.44 67.54 ± 9.67 60.42 ± 14.07	 F= 6.995*	 0.002*
Attended workshop/in-service on triage No Yes	 51.71 ± 11.65 64.13 ± 10.55	 t= 3.524*	 0.001*

This table 4 shows that qualifications, years of experience, and training courses regarding triage influenced emergency nurses' knowledge of triage (p=> 0.019, B= 7.158),(p= <0.001, 12.811), (p= <0.001 B= 12.071)

with statistically significant respectively.

	Univariate		#Multivariate	
	p	B (95%C.I)	p	B (95%C.I)
Sex (female)	0.486	-2.660(-10.283-4.963)		
Age	0.146	-3.771 (-8.907–1.366)		
Marital status (married)	0.570	-2.028(-9.164–5.107)		
Qualification (BSN)	0.005*	10.659(3.318–18.001)	0.019*	7.158(1.234–13.082)
Total Years of experience	0.002*	10.670(4.248–17.093)	<0.001*	12.811(7.811–

(≥5)				17.812)
Training in triage (yes)	0.001*	12.418(5.324–19.511)	<0.001*	12.071(6.083–18.059)

Discussion:

Triage is a part of contemporary emergency department care. Since nurses prioritize the needs of patients who are in critical condition during triage, they must have the appropriate training and experience to improve their triage skills (Ebrahimi et al., 2016). The present study finding discovered that more than half of the nurses had a moderate level of triage knowledge, with a mean score being 10.94 and an overall mean score of knowledge was 10.94 (SD = 2.18, range = (0–18). This could be a result of the emergency nurses having more experience. In addition, results were generally better than those found in earlier studies(Phukubye et al., 2019; Reisi et al., 2018) andfound that the participants' self-rated degree of knowledge and knowledge of ED triage as measured were consistent. High levels of triage expertise and proficiency may result in decreased emergency department (ED) overcrowding, shorter wait times, improved patient flow throughout the ED, and increased patient satisfaction. This also indicates that the statement on the question with the highest percentage of accurate answers as there are twoCanadian triage & acuity scale charts is suitable for children and adults (95.8%), if an emergency sign is identified in the first step thepatient is taken vital signs first (95.8%), triage early warning signs is a tool used by medical services to swiftly assess the severity of a patient's sickness(89.6%), Triage is the sorting of patients into the priority of injuries or illness(89.6%).

The majority of nurses were unaware that triage does not depend on the discriminator list (29.2). This finding is in line with a study by Fastani et al. (2010), which discovered that while 67% of respondents were knowledgeable about triage, 33% of respondents in an assessment of knowledge and skills of triage among nurses working in the emergency centers in Dar es Salaam, Tanzania, were not. Furthermore, the results of the current study were supported by (Afaya et al., 2017; Aloyce et al., 2014), who discovered that many nurses were knowledgeable about triage. Furthermore, it was found by (Asgari et al., 2018) that nurses' triage expertise was limited.

(Fathoni et al., 2013) stated that their triage skills were "moderate degree." In the study conducted by Haghigh et al. (2017), which looked at the triage knowledge of nurses from different disciplines, it was found that 36 nurses (51.4%) had low triage knowledge and 31 nurses (44.3%) had moderate triage knowledge. Nurses answered the most correctly when it came to the following topics: "definition of triage," "purpose of triage," "who is responsible for triage," "in the first evaluation," "color coding system," "evaluation very quickly," and "evaluation at regular intervals."

The study found a link between nurses' triageknowledge and their experience working in emergency departments. The nurses' knowledgeof triage increased as their time working in the ED grew. This improvement in triage knowledgecan be attributable to job exposure, several workshops and in-service training sessions attended in the ED, as well as the availability of online triage resources. According to research by(Forsgren et al., 2009), regular triage training could help nurses become more adept at handlingdifficult workplace situations. In line with earlierresearch (Andersson et al., 2006; Fathoni et al.,2010; Salonen et al., 2007) job experience and triage knowledge were associated, especially forindividuals who remained working at those emergency nurses who had worked in the ED formore than five years possessed greater triage skill than less experienced nurses in the nursing profession.

A number of variables, such as a triage nurse's education, years of experience, and training, affect how knowledgeable they are. Hospital performance, attitude, and communication are impacted by these elements. The nurses' participation in several triage decision-related

trainings, such as basic life support and ECG resuscitation training, attests to their adequate understanding (Kerie et al., 2018; McCann et al., 2007).

In this aspect, the study's findings are comparable with those of earlier studies andliterature that have stressed the significance of expertise and experience in decision-making throughout the triage process. Experience is oneof the most crucial and effective variables in nurses' decision-making for patient triage, asdemonstrated by research by (Andersson et al.,2006) It has also been observed that more experience improves decision-making stability intriage situations in the American study by (Hickset al., 2003). Furthermore, the level of knowledge of emergency department nurses at the Dammam Medical Complex (DMC) in Saudi Arabia was less than 70%, regarded as a moderate score, in contrast to the King Fahd Hospital emergency department nurses' degree of knowledge, which was over 70%. This can also be explained by the fact that the lack of appropriate training and educational opportunities is reflected in nurses' poor triage knowledge, and that the triage-related content in nursing curricula across different nursing programs is insufficient to prepare nurses for the triage system in emergency rooms (Javadi et al., 2016). Additionally, nursing awareness is low, which suggests that nurses' knowledge of triage has not been sufficient andcalls for retraining and ongoing education (Reisiet al., 2018). EDs and organizations need to promote auditing by allowing time for triage nurses to carry out the auditing to provide the triage nurses with pertinent and useful feedback.

Conclusion:

The emergency department (ED) is a very stressful and uncomfortable place to work because of the urgency and acuity of the patients and their families who present there. Without structure and efficient procedures, the ED can easily fill up with too many sick and vulnerable patients, especially during pandemics, catastrophes, and accidents. Triage is essential to ensure that patients are sent to appropriate locations with minimal wait times, that the ED runs well, and that resources are distributed sensibly in accordance with patient needs. Patients are ranked in order of the urgency of their medical needs. Overall, the study's emergency nurses demonstrated a mediocre degree of triage expertise. Additionally, the knowledge ratings of nurses were influenced by characteristics such as training courses in triage, years of experience, and certifications.

Recommendations:

Although the study's findings indicated that emergency department nurses had a moderate triage knowledge level, there were still gaps in their knowledge. Building formal unit-based triaging training programs is crucial in light of these findings as it will help create and enhance emergency nurses' triaging expertise in EDs.

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