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RESEARCH PAPER.

COMPARISON OF THE KNOWLEDGE ON TRIAGE AND ITS ASSOCIATED FACTORS IN EMERGENCY DEPARTMENT NURSES OF THREE TERTIARY CARE HOSPITALS IN SRI LANKA

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ABSTRACT

Triage is an essential function of an Emergency Department which helps in sorting and prioritizing patients according to their need of care. It considers patients' level of acuity and potential for threat to life due to their condition, as well as patients' anticipated resource need and is the keystone of organization of care in emergency departments. A descriptive study was conducted in the emergency departments of, Three Tertiary Care Hospitals in the Central Province Sri Lanka. The research population included all nurses working in triage units of emergency departments of mentioned three hospitals and a self-administered questionnaire was used as the tool for data collection from the voluntary participants. Out of 84 participants, 58.3% had a good knowledge on triage and 21% had excellent knowledge on triage. In the analysis of triage scenarios, five out of ten scenarios were optimally triaged by more than 60% of participants. However, three scenarios were significantly under-triaged, while two were significantly over-triaged. Similar variations in triage accuracy were observed across all the scenarios. Out of 84 participants, 52.4 % had more than 10 years of experience as a nurse. However, 79.8% of them had less than 5 years of experience as a nurse in the emergency department and 61.9% had less than 2 years of experience as a triage nurse. 63% of the participants has enrolled in training programs related to nursing care but there was poor participation in training courses related to emergency care and triage. Majority of the nursing officers had a good knowledge on triage. But despite good theoretical knowledge, applying triage in practice can be challenging. Many nurses had not participated in training courses for advanced life support, trauma, or disaster management, which could contribute to lower performance in clinical scenarios. Nurses should be encouraged to pursue training in emergency, critical care, triage and trauma nursing. Conducting further research and quality improvement through audits, evaluations, and regular assessments could enhance triage knowledge and practice.

Key Words: Nursing Officers, Triage, Knowledge

INTRODUCTION

A hospital emergency department is the frontline care unit of a hospital(1). Providing emergency care to patients who arrive at the hospital without delay and without error improves patient care outcomes(2). The quality of the hospital also increases immeasurably through patient outcomes. It is essential to prioritize patient needs and treatment modalities accurately, thereby successfully achieving the life-saving goal expected in an emergency department(3).

Triage has been introduced to quickly assess, prioritize and refer patients to the appropriate level of care(4). Nurses working in emergency departments are specially trained for this. Nurses are fully responsible for accurately triaging patients. The accuracy of their decisions can lead to timely medical interventions, ensure patient safety and improve the overall efficiency of emergency care services(5).

The ability of nurses to make more accurate and informed triage decisions depends on their experience, clinical protocols, analytical thinking skills, and professional attitudes(6). In addition, this is influenced by their understanding of standardized classification systems such as the Emergency Severity Index (ESI) or the Australian Triage Scale (ATS) and their applications(7). A well-trained and experienced nurse can significantly reduce the time a patient waits for treatment. This can improve patient care outcomes and reduce the risks associated with delayed or incidental care, according to published study findings(8).

The efficiency of an emergency department has a significant impact on the efficiency of a hospital because it directly affects the mortality and morbidity patterns of the hospital(9). Proper management of emergency cases can effectively reduce health care costs. A successful triage system allows for the effective coordination and provision of optimal medical care based on the pathological conditions of the patient. Therefore, the services of emergency department personnel are essential for emergency departments(10).

Training consists of three aspects: knowledge, attitude and curiosity. In an emergency room, it is essential to make decisions quickly and act accordingly. This cannot be done based on knowledge alone(11). The ability to act on the spot and the personality to act appropriately must also be present. For this, good knowledge and the ability to work as a team must be perfect. If a triage system is not implemented correctly, the person who really needs urgent treatment will be neglected, and non-reversible morbidities or increased mortality risk can be expected for the patient. Therefore, the need for nursing staff equipped with up-to-date knowledge for triage is incomparable.

METHODOLOGY

Descriptive cross-sectional study was conducted in Three selected Emergency Treatment Units in tertiary care centers in Central province during Six months from December 2023 to June 2024. Nursing officers attached to Emergency medical care in selected tertiary care centers in central province. Nursing Officers permanently attached to the Emergency treatment units and having service duration in ETU more than 6 months were included for the study. Nursing officers in long term leave and nursing officers who had post graduate qualifications on triage related subjects were excluded. Sample size was 84, recruited through non probability convenient sampling technique was applied to recruit the study participants. Self-administered questionnaire was used as study instrument. All selected individuals were interweaved by the principal investigator, conducted in emergency treatment unit without disturbing routine clinical work. Privacy and confidentiality of the answers given o the questionnaire was preserved. Data analysis was facilitated by SPSS version 28.0. All continuous scale variables were described by mean and standard deviation. All categorical variables were described by using frequencies and percentages.

RESULTS

Eighty-four nurses who work in emergency departments and are involved in triaging in three tertiary care hospitals participated in this study. Out of the 84 participants, 79 nurses (94%) were female. Majority were in the age group of 30 to 39 years which accounted for 66.7 % of the sample. Minimum age was 29 years, and the maximum was 59 years. From the participants, 52.4 % had more than 10 years of experience as a nurse and out of this 52.4%, 7% of nurses has more than 20 years of clinical experience. However, it is important to note that, 79.8% of the total participants had less than 5 years of experience as a nurse in the emergency department and 61.9% had less than 2 years of experience as a triage nurse. When considering the education status, 63% of the participants were registered nurses holding a nursing diploma and 34.5 % had a degree in nursing and 2.4% had post graduate qualifications.

During the past three years, 75% of the participants has attended at least one training course or workshop relevant to their service as a nurse (Figure 1). However, when inquired separately on different courses, it was noted that most has not participated in important training needed for service in emergency department such as basic life support, advanced life support, training in triage, management of trauma and disaster care (Figure 2-7).



Figure 1: Training Attendance among participants regarding emergency Management/Triaging



Twenty-nine nurses have not participated in a BLS course during their service as a nurse and seven nurses each has participated in BLS 10 times and five times respectively during their career. Sixteen nurses enrolled in BLS twice (Figure 2).







Out of eighty-four nurses, 29 has not participated in ALS course during their service as a nurse. Fifteen nurses have enrolled in the training once and 20 has participated two times (Figure 3). It was interesting to see that, fifty-one nurses our of eighty-four, has not participated in any trauma care related training. All three emergency departments, where the nurses work does receive trauma patients. One person had attended 15 trauma related training courses during his/her career (Figure 4).



Percentage

(%)

25.0

58.3

16.7

100.0



Figure 5: Participation of Training programs related to advanced Pediatric Life support

Table 1 : Distribution of Knowledge levelsamong study participants

Frequency(N)

21

49

14

-

84

Majority has not participated in Pediatric life support training. All the 12 nurses in children's hospital ED have however, participated in the said course at least once(Figure 5). Only 18 nurses have attended training on management of patient in the emergency and critical care setting. Sixty nurses out of eighty-four, has not participated in disaster management training. With respect to assessment of the knowledge on triage system in emergency department, it was noted that, 21% had excellent knowledge on triage an 58.1% had good knowledge (Table 1). Majority of study participants had good level of knowledge regarding triage (n=49:58.3%). None of the participants were detected with poor knowledge.

When analyzing triage scenarios (Table 2), five out of ten scenarios has received an optimal triage category by more than 60% of the participants. Scenario b ,f and g have been significantly under triaged, while scenario c and d, has been significantly over triaged. Scenario a and i, which comes under optimal triage category of 1-, received 14% of under triaging, while majority optimally triaged them. In addition, the scenario with violent patient with physical threats has also been under triage and 25%. For triage category 2 scenarios, scenario - c has received 42% of optimal triage and 25% of over triage, and scenario - h have been optimally triaged by the majority (62%). Scenario-f, which comes in category two has been under triaged by a significant percentage as well. Similar variations were observed in scenarios for category 3 and 4. (Table 2)

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Table 2: Response for triage arrangement and decision making.

	Optimum	Over	Under
	triage	triage	triage
An Adult patient. Breathing with difficulty. Respirations of 8/min, Systolic blood pressure of 80mmHg	70(83.3)	-	14(16.7)
40 years of age and smelling strongly of alcohol. shouting at another patient whilst sitting in the waiting room. he suddenly stands up and begins to threaten with a knife the other patients who are waiting	22(26.2)	-	62(73.8)
An Adult patient. Face burn. Having severe pain. Respirations of 29, Pulse rate of 129/min	42(50.0)	25(29.7)	17(20.3)
Female. Pregnancy. Following road traffic accident. Respirations of 20/min, Pulse rate of 110/min, and Systolic blood pressure of 130mmHg	31(36.9)	47(55.9)	6(7.2)
Patient. Walking. Feeling discomfort. Headache. Systolic blood pressure 200mmHg	60(71.4)	17(20.2)	7(8.4)
Adult patient. Skin moderate pale, cool, and dry. Reacts to voice. Respirations of 28/min, pulse rate of 110/min, Systolic blood pressure of 90mmHg	52(61.9)	9(10.7)	23(27.4)
Adult patient on stretcher. Controlled bleeding from a deep laceration on arm. peripheral pulse palpable. Respirations of 20/min, pulse rate of 100/min, Systolic blood pressure of 130mmHg	43(51.2)	19(22.6)	22(26.2)
Adult patient with chest pain radiating to the left arm. Walking. Respirations of 30/min, pulse rate of 110/min, Systolic blood pressure of 90mmHg	62(73.8)	15(17.8)	7(8.4)
A mother presents with her six-month-old baby, who she says will not wake up. The child is breathing, but is floppy, cannot be roused and pulse rate 40/min	70(83.3)	-	14(16.7)
A 54 year old male who was seen in the emergency department with a fractured right radius and ulna 4 days ago with a loose cast. He has no pain	72(85.7)	12(14.3)	-

DISCUSSION

Triage is the sorting process of the patients that present to emergency department (ED), according to the patient's acuity and the need of care. Proper execution of triage helps to reduce the mortality rates of patients and the waiting times for patients who are critically ill. (10) Triage nurse therefore plays a significant role in the emergency department and maintaining their proficiency in knowledge and skills on triage, plays a crucial role in shaping the quality of patient care and their overall experience.

This study was performed to assess the of the knowledge on triage and its associated factors in ED nurses of three tertiary care hospitals in Sri Lanka. Eighty four nurses who work in ED and triage participated in the study and of them, 21% showed excellent knowledge on triage and 58,1% had a good knowledge. Hence overall, majority of the nurses had a good knowledge on triage, and the scores were relatively higher than the previous studies conducted in, Ghana (2), Hawassa, Ethiopia (3), South Africa (12), Saudi Arabia (13), Jordan (14), Addis Ababa, Ethiopia 2017(15). Good level of triage knowledge has the potential of translating into shorter waiting times, better patient flow across the ED, and timely clinical management. This good level of knowledge among participants could be due to the frequent practice and proper adherent to the triage guidelines daily. In Sri Lanka, ED s are overcrowded and has a high patient turnover. Each triage nurse would be triaging many patients per shift. And in all three hospitals, there are information on triage system printed and are ready at hand by triage site, to refer. Hence the triage nurses have access to update the knowledge and refer at any point during their shifts. According to Duko *et al.* (3), training on triage has a significant correlation with triage skill and practice. Their study found that triage knowledge and practice were further affected by the working experience of nurses, their educational status, triage training, and triage experience. In the current study, more than 50% of the nurses had more than 10 years of clinical experience and 72.6% had more than 5 years of experience. And all the participants held a diploma or a degree in nursing. In addition, 75% of the participants have enrolled themselves in a training program within 3 years of the study. Therefor the participants of this study were with considerable clinical experience, education and training. The overall good knowledge and 21% of excellent knowledge could be explained by this. In addition, high levels of triage knowledge could be due to the effective implementation of organizational policies that mandate the requirement for ED nurses to be kept updated with their triage knowledge and skills.

To test the application of triage knowledge, ten clinical scenarios were given to the participants to select the triage categories. It was noted during the analysis that there were frequent inaccurate determination of triage. Therefore, it is interesting to see that even though with high knowledge, it can be challenging when practicing the triage system and applying the knowledge in to practice. The setback with over triage of scenarios is that, patient will be utilizing more resource and time than they need to. This will affect the

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efficiency of the emergency department and increase the burden unnecessarily. With under triage, a patient who needs acute treatment could be missed or delayed and the morbidity and mortality of the patent can go up. (19,20). Also, in the given scenarios, it is concerning to see that patients who has parameters to suggest critically ill, has been under triages by a considerable percentage. The reason for the inaccurate selection of triage accuracy in this study cannot be determined certainty. Since the majority of the nurses in this study, has less experience in the ED and even less experience in triage could have played a role in this. When considering clinical scenarios separately, it was noted that the participants might not be familiar with some clinical scenarios such as scenario related to pregnancy, pediatric and behavioral disturbance. Having less exposure to these patients could a contributing factor for this. In addition, when considering the training courses, the majority of the participants have not participated in a training course on triage, advanced life support, trauma or disaster management and many has not enrolled in basic and advanced life support courses. This could be the reason for the less performance in clinical scenarios. Hence, this suggests despite the generally overall high level of triage knowledge, the study participants still need further education and training to improve their triage knowledge and practice. Another possibility is that the written scenarios may not provide enough information for decision making and may not adequately reflect the real clinical acuity. Studies that were performed in real triage environments has showed an accuracy between 77 and 94 % (17).

Knowledge and application of knowledge are two things that need to be clearly distinguished. There is no room for delays in a hospital emergency department. Here, the presence of staff with high awareness and their skills at an optimal level is extremely important for more effective patient care. The constant presence of staff in a hospital who have the ability to apply their skills, acquired knowledge, and practical and situational applications, improves the quality of patient care. This study revealed that nurses have good knowledge about triage. However, there are also some deficiencies in that knowledge. It was also possible to identify the areas where there are deficiencies in that knowledge. Therefore, in the future, policymakers should pay full attention to these areas of lack of knowledge and direct staff working in emergency departments to training programs that further develop their skills and knowledge.

More importantly, it is important to have experienced nurses or other health staff members with continuously updated knowledge working in emergency departments. Experience and skills play a very important role in the immediate operation of emergency departments, especially in a workplace where even the slightest delay cannot be tolerated. Further analysis shows that policymakers should pay close attention to the introduction and implementation of effective methods for properly deploying human resources so that the special qualities of nurses can be effectively utilized in providing emergency care.

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In this regard, it is expected that the knowledge of the officers working in a tertiary care unit regarding emergency care and the experience they gain from its use will be highly developed. A tertiary care unit can be expected to have a very high number of patients requiring emergency care services per day. This may include direct admission to the hospital as well as transfers of patients from other peripheral hospitals. Therefore, it is expected that health staff with high experience and comprehensive knowledge will be employed in a tertiary care unit. The results of this study also revealed a positive relationship between their knowledge and the length of service in the health committee. It seems that the current need is to make the necessary structural and policy changes so that this can be effectively implemented.

CONCLUSION

The findings of this study showed that majority of the participants had a good knowledge on triage. However, when the nurses were evaluated on clinical scenarios to apply their triage knowledge, frequent inaccuracies were observed. This suggests that despite good theoretical knowledge, applying triage in practice can be challenging. Additionally, many nurses had not participated in training courses for advanced life support, trauma, or disaster management, which could contribute to lower performance in clinical scenarios. The study recommends that, despite the overall high level of triage knowledge, further education and training are needed to improve practical triage skills.

Nurses should be encouraged to pursue training in emergency, critical care, triage and trauma nursing. This specialized training will not only improve their triage knowledge but also enhance the efficiency and patient care in ED. Additionally, having clinical supervisors available in triage areas to provide feedback and guidance, especially to newly employed nurses, would help to improve their practice and fill knowledge gaps. Conducting further research and quality improvement through audits, evaluations, and regular assessments could enhance triage knowledge and practice.

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