

Research Paper: Evaluating the Disaster Triage Knowledge of Nurses Personnel in Public Hospitals of Ilam



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ABSTRACT

Background: Educational planning and managing critical situations of accidents and disasters are among the most important issues. Triage, which means the classification of patients and injuries based on specific situations and needs, is one of the important tasks of hospitals at times of disasters. In this study, triage knowledge and practice of nurses working in hospitals affiliated to Ilam University of Medical Sciences are evaluated.

Materials and Methods: This is a cross-sectional and analytic study conducted in 2017. The statistical population comprised all nurses working in Ilam Medical Sciences hospitals. Using Cochran's formula, 174 people were sampled and 160 of them completed the study questionnaires and returned them. The main tool of collecting data was a researcher-made questionnaire based on Canadian triage scale. Validity of the questionnaire was assessed by 10 members of the Ilam University of Medical Sciences. The reliability of the questionnaire was between 0.83 and 0.89 using Cronbach α coefficient. The obtained data were analyzed using descriptive and inferential statistics in SPSS.

Results: The Mean \pm SD duration of nurses' working in the emergency department was 5.2 \pm 3.4 years, of which 46.2% had an experience of using triage. The Mean \pm SD score of nurses' knowledge and practice of triage were respectively 10.44 \pm 2.11 and 9.22 \pm 2.14 out of 15. There was no significant relationship between work experience, gender and age with knowledge and practice of triage, but there was a significant relationship between knowledge and practice of nurses about triage with nursing educational degree.

Conclusion: The level of nurses' knowledge and practice of triage in hospitals of Ilam University of Medical Sciences is moderate.

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1. Introduction

Triage is sorting of patients by priority groups for receiving essential aids [1], based on the severity of their conditions. It is done to perform the best practice of the treatment which is one of the most important goals of an emergency department [2]. The goal of triage in disasters with limited medical resources is to provide maximum emergency services to the majority of injured people in the shortest possible time. Appropriate triage in the scene of accident has a direct impact on other practical aspects [3]. The prompt identification of patients with severe illnesses, and rapid implementation of vital measures are possible with triage and prioritization of patients [4]. Although the history of establishing a triage unit in hospitals of Iran dates back to a few years ago, most of the emergency departments in the country have recently started to use this system, which is generally done by nurses [5].

Triage is performed in pre-hospital and in-hospital phases and in normal and critical situations. In normal situations, due to the limited space of hospital, low number of staff and equipment, or in critical situations with increasing number of patients, the ability to treat all patients reduces and patients have to wait longer to receive proper treatments [6]. The pre-hospital triage itself is divided into triage in normal and critical situations. Under normal situations, this kind of triage is based on the answers to three questions: 1. Is there a need to transfer the patient to the treatment center?; 2. Based on the distance and type, which hospital is more suitable for the patient?; and 3. Which devices and equipment is more suitable for the patient transfer?

The goal of triage is to identify high-risk patients in the accident scene and take immediate actions. In critical situations, the task of triage team is also to evaluate patients quickly, and to take certain health measures and prioritize them for transfer to health centers. In this type of triage, sometimes after initial evaluation and identification of injuries requiring surgery, patients are hospitalized in a place near the operating room and then prioritized by the surgeon to determine the urgency of the surgery. Since the triage is carried out at the scene of an accident, a safe place near the scene are provided and the different areas are distinguished using different colors. Finally, after classification, patients are placed in their own area to receive treatments [7].

In-hospital triage is also divided into triage in normal and critical situations. Triage in normal conditions is

generally performed in emergency departments of hospitals with at least 30000 admissions per year [4]. This type of triage is carried out in the shortest possible time based on factors such as patient's vital signs, physical examination, consciousness level, traumatic mechanism, and individual factors such as age and underlying diseases. In critical situations, in-hospital triage is performed at the hospital entrance; i.e. before entering the wards, clinics or emergency room. The triage is performed on the patients outside of the hospital, and each patient is placed in a predetermined area to avoid congestion [2].

Triage in disasters (critical situations) has different goals and processes than triage in normal conditions [7]. In times of disaster, due to the large number of injured people and the limited facilities and services, there is a need for accurate categorization and allocation of services [8].

Iran is a disaster-prone country [9]. Previous crises in Iran have often challenged Iran's disaster management system in coping with disasters and their complications [10]. When an incident occurs, the greatest demand for healthcare services is within the first 24 hours after occurrence, and 85% to 95% of the survivors are found in the first 24 hours after disasters [11]. Therefore, during disasters, Iranian hospitals must quickly increase their capacity for admission.

Unfortunately, there are serious concerns about the triage knowledge of nurses. In different studies, nurses and nursing students' knowledge and practice of triage at the time of disasters have been assessed and reported poor or less than average level. Stiell et al. reported average triage practice of Canadian emergency department nurses [12]. In the study of Meyer et al., nurses in emergency centers of a hospital in South Africa had moderate triage practice [13]. Rabeian et al. reported average triage practice level for nurses of teaching hospitals affiliated to Tehran University of Medical Sciences during disasters [14].

At the time of disasters, the speed of delivering emergency services in health centers is of particular importance in reducing mortality and morbidity. On the other hand, assessing the knowledge and practice of nurses in different educational centers can reveal the necessity of initial education and holding training workshops in the covered centers. Moreover, there is no study on evaluating the preparedness of nurses for performing disaster triage. In this regard, this study attempts to investigate nurses' knowledge and practice of disaster triage in hospitals affiliated to Ilam University of Medical Sciences (IUMS).

2. Materials and Methods

The present study is a descriptive and analytic study conducted in 2017. Statistical population consists of all nurses working in hospitals affiliated to IUMS, including Imam Khomeini, Shahid Mostafa Khomeini, Ayatollah Taleghani, Imam Ali, Imam Reza, Imam Hossein, Shohada, Valiasr, and Rasul-e Akram hospitals (n=319). Using the Cochran formula and random sampling technique, the sample size was obtained as 174, of which 160 received a questionnaire and returned them after one day. Inclusion criteria were having at least 6 months of experience in the emergency department and willingness to participate in the study. The study samples were assured that their information would be kept confidential.

The data collection tool was a researcher-made questionnaire based on the Canadian Triage and Acuity Scale (CTAS). The CTAS has been used in many studies with acceptable reliability and validity [15-17]. The questionnaire has three sections; first section surveys demographic characteristics of the participants (age, gender, marital status, educational level, and work experience in emergency). The second section assesses the triage knowledge of nurses with 15 questions, one point for each correct answer and 0 for the wrong ones. The total score ranges from 0 to 15. The third section evaluates

the triage practice of subjects. It has 15 case questions, according to each case, the participants' decision making and actions are assessed at each level of triage, one point for each correct answer and 0 for the wrong ones. The total score of questionnaire was 30. The score less than 50% of the total score indicates poor level; the score between 50% and 75% shows moderate level; and the score higher than 75% of total score indicates high level of knowledge and practice.

Validity of the questionnaire was assessed and confirmed by ten faculty members of the IUMS, and the reliability of the questionnaire for the triage knowledge and practice sections were reported 0.83 and 0.79, respectively using the Cronbach α coefficient. The collected data were analyzed in SPSS v.19 by performing descriptive and inferential statistics.

3. Results

Of nurses participated in this study, 92 (57.5%) were female with a Mean \pm SD age of 30 \pm 4.11 years, and 68 (45.5%) were men with a Mean \pm SD age of 31 \pm 5.12 years. Moreover, 62.5% of participants were married and 37.5% were single. Their mean work experience was 5.2 \pm 3.04 years where 46.2% had triage experience (Table 1).

Table 1. Demographic characteristics of the participants

	Group	No.	%
Gender	Male	68	42.5
	Female	92	87.5
Age groups, y	20-25	48	30
	26-30	52	32.5
	31-35	37	23.2
	>35	23	14.3
Educational level	High school diploma or lower	32	20
	Bachelor degree	86	53.7
	Master degree or higher	42	26.3
Work experience, y	1-5	32	20
	6-10	37	23.2
	11-15	39	24.3
	>16	52	32.5

Table 2. Correlation test results between triage knowledge and practice of nurses in terms of demographic characteristics

Demographic Characteristics	Sig. (r)	
	Triage Knowledge	Triage Practice
Age	0.3(0.9)	0.8(0.11)
Work experience	0.4(0.10)	0.2(0.7)
Gender	0.16(0.67)	0.7(0.22)
Educational level	0.009(6.1)	0.006(5.09)

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The Mean±SD triage knowledge score of nurses was 10.44±2.11 out of 15 and their Mean±SD triage practice was 9.72±2.14. This shows that their triage knowledge was higher than their triage practice, while both was at moderate level. Statistical test results indicated no significant relationship between triage knowledge and practice of nurses with age, gender, and work experience; however, a significant relationship was found between them and educational level (Table 2).

4. Discussion

One of the important indicators of disaster preparedness is to examine the level of triage knowledge and practice of emergency personnel. This study aimed to determine the knowledge and practice of nurses working in IUMS hospitals regarding triage. The results indicate that nurses' triage knowledge and practice were at moderate level. Aghababaeian et al. in their study also reported pre-hospital average knowledge and practice triage for emergency medical services staff in Khuzestan Province, Iran [18]. However, in Javadi et al. study, emergency department nurses in teaching hospitals affiliated to Shahid Sadoughi University of Medical Sciences and Health Services in Yazd Province had poor triage knowledge and practice level [19]. Rahmani et al. in evaluating the knowledge and skill of disaster management team in Shahid Rajaei Hospital, Gachsaran, Iran regarding disaster triage, reported that their disaster triage knowledge and skill was poor [20]. Similar to this study, Haghighi et al. reported that the triage knowledge of nurses in teaching hospitals affiliated to Ahwaz University of Medical Sciences was undesirable [21].

A review of the studies conducted in Iran indicates that the level of triage knowledge and practice of nurses in both normal and critical conditions (disasters) is moderate or poor. This shortcoming calls for providing educational trainings courses in the field of triage at the time of disasters for different hospital staff in Iran, especially those working in the emergency departments. In Reay et al.

study [22], emergency department nurses in Canada had high triage decision making, while in Tzeng et al. study [23], majority of hospital nurses in Taiwan demonstrated poor readiness for disaster responses.

In the current study, nurses' disaster triage knowledge was higher than their practice, which shows that their education and theoretical knowledge is higher than practical knowledge. This is consistent with the findings of Javadi et al. and Rahmani et al. [19-20], but disagrees with Aghababaeian et al. [18]. In examining the effect of demographic characteristics on triage knowledge and practice of nurses, results of our study showed that age, gender, and work experience of nurses had no association with triage knowledge and practice, but their educational level has significant relationship with their triage knowledge and practice. In Haghighi et al. study, gender and work experience had association with nurses' triage knowledge [21], while in Aghababaeian et al. study, emergency medical services staffs' education had correlation with their knowledge and performance regarding prehospital triage which is consistent with our results [18].

5. Conclusion

The results indicate that nurses' triage knowledge and practice were at moderate level. In addition, their triage knowledge was higher than their practice, which shows that their education and theoretical knowledge is higher than practical knowledge. It is recommended that emergency departments of hospitals in Iran use sustainable scales for nurses' better judgment and agreement over patients' condition (triage) along with equipping them with trained human resources and triage tools. Development of a national triage scale and granting of a professional emergency nursing license can provide a good basis for knowledge-based practice for nurses.

Nursing triage with an emphasis at the time of disasters as a situation where nurses play an important role in treating injuries, can be a proper ground for the richness of emergency nursing. Moreover, during disasters, if the patients are not well prioritized at the very first moments of hospitalization, they may not be helped during the next few hours. In other words, triage is as an information-related profession. Nurses with correct knowledge of triage provide appropriate treatment for the patient. Therefore, the nurses' weakness in triage can negatively affect the quality of treatment.

Ethical Considerations

Compliance with ethical guidelines

All participants were allowed to withdraw from the study at any time. This study was conducted according to the ethical guidelines No. 7, 8, 17 provided by the Ethics Committee of Medical Sciences University.

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Authors contributions

The authors contributions is as follows: Heshmatolah Asgari: Data collection and analysis; Mohammad Reza Omid: Writing text and doing calculations; and Nabi Omid: Interviewing and distributing questionnaires.

Conflict of interest

The authors declare no conflict of interest.

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