

# Evaluating Healthcare Teams' Knowledge about Hospital Triage: A Review of Studies Conducted in Iran

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## ABSTRACT—

**Background and aim:** As a part of the emergency department structure, hospital triage performs by the emergency healthcare team. Scant information exists on healthcare teams' knowledge about triage. Therefore, this study aimed to review the studies conducted on the healthcare teams' knowledge about hospital triage in Iran.

**Materials and methods:** This systematic review searched the databases of Sid, Google Scholar, Magiran and Iran Medex to find Farsi articles published on this topic using the keywords of triage and hospital triage. Overall, nine papers were evaluated after the search.

**Results:** The articles assessed in this study were conducted during 2010-2017. Seven papers were of descriptive type while the other two were quasi-experimental. In addition, the studies were performed on nurses, emergency medical personnel, as well as nursing, medical, and emergency medical students. The knowledge level of healthcare teams was unfavorable in five studies, whereas it was favorable and moderate in three and one research, respectively.

**Conclusion:** According to the results of the study, the healthcare teams' knowledge about triage was unfavorable in most studies. However, triage training increased knowledge about hospital triage in healthcare teams. As such, it is recommended that workshops and retraining courses be held to increase healthcare teams' knowledge about hospital triage.

**KEY WORDS—**Triage, Hospital Triage, Knowledge, Healthcare Team

## I. INTRODUCTION

Triage is the process of prioritizing patients based on the severity of their condition to provide necessary treatments at maximum efficiency in the shortest possible time. In fact, triage is the basis of care delivery procedures in emergency departments (1, 2). The purpose of triage in the emergency department is reducing the patient waiting time, speeding up care for patients with more severe clinical symptoms, reducing the negative

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consequences of prolonged waiting time, decreasing medical staff's stress and ward overcrowding, allocating the patient to a more appropriate area and managing the resources. Generally, triage is putting the patient in the right place at the right time to receive the right level of care (3-7). Today, the nursing system is responsible for the triage of typical patients in most hospitals. However, given the fact that the crisis management system of hospitals, encompassing managers, physicians, nurses, administrative, service and Para clinical staff, and all members in hospital triage, are involved in critical situations, all members of the crisis management team must have adequate training in this regard (8). Factors affecting patient triage include nursing skills (knowledge and experience), individual characteristics, workplace condition (work overload) and patient assessment and referral (9). The positive effects of triage on the interventions designed for patients will be revealed if nurses adopt standard methods and proper knowledge regarding triage (10, 11). The literature review unveiled serious concerns regarding nurses and medical emergency personnel's knowledge about triage. In fact, various studies assessing the knowledge level of medical emergency personnel, nursing students, and nurses working in emergency departments about triage have reported poor and below moderate scores in this regard (12-15). Such research suggests that emergency nurses and staff receive inadequate knowledge about hospital triage, thereby conducting it in medical emergencies and for patients deliberately or unintentionally (16). To date, several studies have been conducted in different areas including various models, implementation quality, performance impact, ethical issues, performance and attitude and many other areas related to triage. Nonetheless, there are many "unknowns" about the concept that must be addressed in future studies. With this background in mind, this research aimed to review the current studies and research topics on healthcare teams' knowledge about triage in the emergency department so that the path to conducting more research in this field could be paved through the provision of general schematic representation.

## **II. Materials and Methods**

This study searched the databases of Magiran, Google scholar, Sid, and Iran Medex online without time limitation to find all Iranian articles published in Farsi. In addition, the keywords used included triage and hospital triage. Inclusion criteria were being written in Farsi, being conducted in Iran, and including the term "knowledge about hospital triage" in the title. On the other hand, exclusion criteria included lack of access to full texts, being written in English, theses, review articles, case reports, short articles, and letters to the editor. Afterwards, articles that contained our keywords in their title or keywords were evaluated, 52 of which were selected. In the next stage, the articles were classified into three favorable, moderate, and unfavorable classes. It is notable that several other keywords were searched based on previous results to find other related articles. Ultimately, 20 articles were selected and assessed (Figure 1).

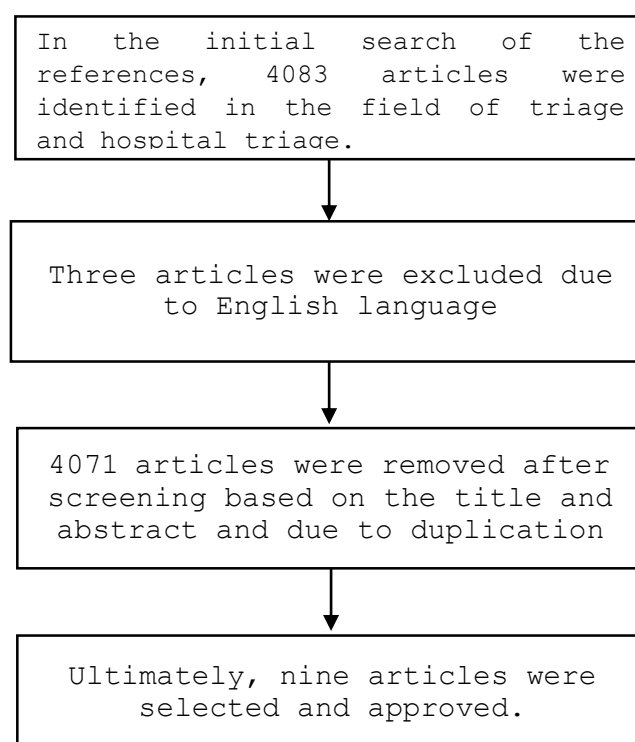


Figure 1. Flowchart of article assessment stages

### III. Results

In this study, we reviewed nine articles performed during 2010-2017. In terms of methodology, seven articles were descriptive while the other two were quasi-experimental. The research population of these studies included nurses, medical emergency nurses, nursing students, and medical emergency students. The results were indicative of unfavorable knowledge in five studies, favorable knowledge in three studies and moderate knowledge in one research. Table 1 shows the results of studies performed in Iran.

Table 1. Review of studies conducted on knowledge of hospital staff about triage

First author/year of research implementation	Research title	Research type	Sampling	Research population	Level of knowledge	Conclusion
Aghababaeian/2017	Evaluation of the level of knowledge and performance of emergency medical staff about pre-hospital triage	Descriptive, cross-sectional	Census	Emergency medicine personnel	Moderate	The emergency personnel in the north of Khuzestan province had moderate knowledge and performance regarding pre-hospital triage (16).

Rahmani/2016	Knowledge and skills of the critical management team members of hospital about triage in critical situations; a cross-sectional research	Descriptive, cross-sectional	Census	All members of the critical management team	Unfavorable	The members of the Crisis Management Team of Shahid Rajaei Hospital in Gachsaranhad poor knowledge about triage in critical conditions. In this context, there was no significant relationship between the two factors and demographic characteristics such as age, gender, work experience, history of triage, level of education and organizational position (8).
Rostampoor/2016	Evaluation of the effect of triage training by pre-organizational model on the knowledge of nursing staff of crisis teams of selected hospitals of AJA	Quasi-experimental	Simple and convenience	Nursing staff of crisis teams of selected hospitals of AJA	Favorable	With regard to the positive results of the pre-organizing model on raising the knowledge level of nurses in crisis teams, it is recommended to use this training method in presenting the topic of crisis triage in nursing schools and retraining workshops (17).
Haghighi/2015	Evaluation of the knowledge level of nurses working in the emergency department of hospitals affiliated to Ahvaz University of Medical Sciences about hospital triage in 2015	Descriptive-analytical	Census	Emergency department nurses	Unfavorable	The emergency department nurses who are mostly involved in patient triage was undesirable. Therefore, emergency departments should use valid and consistent scales to increase agreement on decisions that need to be followed up. It is also recommended

						the emergency departments be equipped with trained manpower and the necessary equipment for triage (18).
Kalantari Meybodi/2014	Effect of education on knowledge and performance of emergency department nurses regarding triage	Interventional	Census	Emergency department nurses	Favorable	Education had a positive effect on increasing the knowledge level and performance of nurses in the field of ESI triage of patients. Therefore, it is necessary to expand the theory and practical training courses of triage for nurses working in the emergency department, in order to heighten awareness and, consequently, increase the quality of service delivery (15).
Tabatabaei/2013	Nursing students' knowledge about hospital triage in the emergency department	Descriptive, cross-sectional	Census	Nursing students	Unfavorable	Given the low scores of students in hospital triage, more supervision of instructors during the internship, emphasis on triage in the curriculum of students and specialized triage training courses are recommended for educators and students (13).
Hedayati/2012	Senior students' knowledge about hospital triage in Birjand University of Medical Sciences	Descriptive, analytical and cross-sectional	Census	Senior students in disciplines of medicine, nursing and emergency medicine	Unfavorable	Lack of knowledge of medical students about hospital triage can be due to the lack of specialized training courses in triage, the lack of a brief covering of the

						topic in the curriculum of students, and the lack of obligation of evidence-based decision-making in emergency departments and lack of standards for this purpose (19).
Haghdooost/2010	Evaluation of the effect of triage training on the knowledge, attitude and performance of nurses working in the emergency department of Poursina Training and Medical Center in Rasht, Iran	Quasi-experimental	Census	Emergency department nurses	Favorable	Triage training was effective in improvement of the knowledge, attitude and performance of nurses working in the emergency department. Considering the results of this research and the importance of triage, it is suggested that theory and practical training courses be developed for nursing staff in this field (20).
Mirhaghi/2010	Evaluation of knowledge level of emergency department nurses about hospital triage	Survey and descriptive	Simple random	Emergency department nurses	Unfavorable	The low knowledge level of nurses about hospital triage can be due to the lack of specialized training courses in triage and the lack of obligation of emergency departments to make evidence-based decisions. It is recommended that a university course in nursing triage be established and a national triage scale be developed in this regard (21).

## IV. Discussion

The triage system has been adopted as a high-risk process in emergency departments to identify and analyze errors and evaluate strength points of the process (22). A triage nurse can assess patient complaints in a concentrated and comprehensive manner (23). Triage is used to classify patients into five classes of priorities based on the severity of the disease (24). Emergency department achievements can be affected by the accuracy and precision of triage decision-making (25, 26). Therefore, attention has been paid to triage training in parallel with its implementation in the emergency department of hospitals (18). Studies suggest that triage is performed in hospitals while nurses have inadequate knowledge about the process. Therefore, this study aimed to review the articles conducted in Iran during 2010-2017 to evaluate the medical teams' knowledge about hospital triage.

Most studies reported an unfavorable level of knowledge in healthcare teams. In the research by Rahmani et al. (2016), which was performed to assess the knowledge and skills of the members of hospital critical management team about triage in critical situations, the results were indicative of unfavorable knowledge and skills of these individuals in Shahid Rajaei Hospital in Gachsaran, Iran (8). Haghighi et al. assessed the knowledge level of nurses working in the emergency department of hospitals affiliated to Ahvaz University of Medical Sciences about hospital triage in 2015. According to the results, the subjects had unfavorable knowledge about hospital triage (18). The poor knowledge of medical staff about hospital triage was also reported by Haghighi et al. (2015), Tabatabaei et al. (2013), Hedayati et al. (2012), and Mirhaghi et al. (2000) (13, 18, 19, 21).

The low knowledge level of nurses about hospital triage might be due to the lack of specialized educational courses on the topic and lack of obligation of emergency departments to make evidence-based decisions. Therefore, it is recommended that university courses be created on nursing triage and the development of the national scale of triage. It is also suggested that theory and practical training courses be expanded in this area for nursing personnel. Generally, nurses are the largest and most important professional group of healthcare staff, playing an apparent role in this regard (27). Therefore, the nursing personnel should attain adequate knowledge, skills, and attitude in all nursing fields (20). The main criterion for a nurse (especially for effective triage) is nursing experience and skills in the emergency unit, especially for rapid assessment and recognition of patients' needs. Given the significant role of nurses in the decrease of mortality and disease symptoms, their ability to identify and control the physiological abnormalities of nurses is of utmost importance (28).

On the other hand, the low knowledge of medical students about hospital triage might be due to lack of specialized educational courses on triage, briefly covering the topic in the curriculum of students, not obligating the emergency departments to make evidence-based decisions, and lack of standards in this area. Therefore, it is necessary to pay attention to the unfavorable knowledge level of students about hospital triage, increase monitoring by instructors during internships, emphasize the topic of triage in the curriculum of students, and carry out educational courses on triage for instructors and students. Given the considerable importance of scientific and practical improvement of students in terms of hospital triage, lack of proper assessment of patients upon arriving in the hospital might lead to failure to help patients further on. In other words, the prioritization of patients is presented as information-dependent expertise. Having adequate knowledge about timely and proper patient prioritization will lead to the appropriate provision of services to these individuals. Therefore, as future service

providers in hospitals and healthcare centers, students' weakness in this field will negatively affect the quality of health services (19). In a research, the team members assessed had moderate knowledge about triage. Aghababaeian et al. (2017) conducted a research to evaluate the knowledge and performance of medical emergency staff regarding pre-hospital triage, reporting moderate knowledge of the staff working in the north of Khuzestan province in this regard (16). Therefore, it is recommended that these centers be equipped with a trained workforce and necessary equipment for triage.

In three studies reviewed, the staff had proper and favorable knowledge about hospital triage. Rostampoor et al. (2016) evaluated the effect of triage training by a pre-organizational model on the knowledge of the nursing staff in crisis teams of selected hospitals of AJA. These scholars concluded that since the mentioned type of education improved knowledge level in the critical team nurses, it is suggested that the training technique be applied in nursing schools and re-training workshops to present the topic of triage in crisis (17). Assessing the effect of education on the knowledge and performance of emergency department nurses regarding hospital triage, Kalantari Meybodi (2013) concluded that education had a positive effect on heightening nurses' knowledge about triage with ESI method (15). Furthermore, Haghdooost et al. (2010) evaluated the effect of triage training on the knowledge, attitude, and performance of nurses working in the emergency department of Poursina Training and Medical Center in Rasht. In the end, it was concluded that triage training improved the knowledge, attitude, and performance of nurses working in the emergency department (20). Moreover, results obtained by Rostampour, Kalantari Meybodi, and Haghdooost were indicative of the effectiveness of education on heightening nurses' knowledge about triage (15, 17, 20). As such, with regard to the results of these studies and the importance of triage, it seems crucial to develop theory and practical training courses for nurses working in the emergency department to improve their knowledge about triage, thereby enhancing service provision quality in medical centers.

## **V. Conclusion**

According to the results of the present study, medical team members' knowledge about triage was unfavorable in most studies. However, some studies showed that training heightened the knowledge of these individuals about hospital triage. Therefore, it is suggested that re-training courses and workshops be held to improve the healthcare team members' knowledge about hospital triage.

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