

## Short Communication



# A survey on the knowledge of patients' companions about the concept and application of hospital triage

Mohammadreza Yasinzadeh<sup>1</sup>, Hila Shahriari<sup>2</sup>, Mahdi Rezaei<sup>1</sup>, Mohammad Eslami<sup>2</sup>, Mehdi Banijamal<sup>2</sup>, Hasan Amiri<sup>1</sup>

<sup>1</sup>Emergency Medicine Management Research Center, Iran University of Medical Sciences, Tehran, Iran

<sup>2</sup>Student Research Committee, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

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### Abstract

**Introduction:** Given the importance of the subject and the knowledge gap, we decided to perform this survey.

**Methods:** In this descriptive cross-sectional study, the knowledge levels of patients' companions about the concept and application of hospital triage were evaluated in 202 subjects. The research population included patient companions referred to the emergency department (ED). The exclusion criterion was the failure to complete the questionnaire. Convenience sampling was done. Questionnaires were delivered to the companions of the patients. In this study, the data gathering tool was a questionnaire consisting of two parts. The final questionnaire included 13 questions, 10 and 3 of which were closed (multiple choice) and open questions, respectively. Finally, the age, level of education, and gender were also asked from participants. The level of patient triage was also determined in this research.

**Results:** 202 questionnaires were completed by companions of patients admitted to the ED. The mean age of those who completed the questionnaire was  $39.95 \pm 17.92$  years, and 192 individuals expressed their gender, of which 123 (64.1%) and 69 (35.9%) persons were male and female, respectively. The level of education was also reported in 180 people. Moreover, diploma and postgraduate diplomas, bachelor's degrees, and postgraduate or doctoral degrees were observed in 59 (32.77%), 90 (50%), and 31 (17.22%) patients' companions respectively.

**Conclusion:** According to the results, it seems that the knowledge about the concept of triage among ordinary people of the society is lower than the desired level.

### Introduction

Emergencies are high-risk situations, in which the physical or mental state of people is suddenly damaged, and these people need quick, substantial, and appropriate measures.<sup>1,2</sup> Crowdedness has always been a serious and influential problem for patients' satisfaction in emergency departments (EDs).<sup>1</sup> World Health Organization's statistics show that one-third of hospital beds are occupied by trauma and accident patients. These patients are first brought to hospital EDs and the cost imposed by them in the world is more than 500 million dollars.<sup>3-5</sup>

Triage is a French word that means sorting according to the situation and the specific needs of each patient.<sup>5-7</sup> Various systems with relative advantages and disadvantages have so far been designed for the triage of emergency patients. Meanwhile, the five-tier triage system or Emergency Severity Index (ESI) is welcomed because of its simplicity, easy training, perceptual approach, and operation ability in most EDs in the world.<sup>8</sup> Different studies report various results in terms of the accuracy of nursing triage.<sup>9-11</sup>

Triage is a vital step in the course of the arrival of patients to the ED. This is a very tedious task that is very challenging when the ED is busy; at the same time, it is vital for the management of patients in the ED.<sup>8-12</sup> If patients need a life-saving action, they are at level 1 triage. In the event of decreased level of consciousness, severe pain, or severe distress, the patient is classified at level 2. If patients need two or more facilities (blood or urine test, ECG, radiography, etc) and no significant disturbance of vital signs, they are at level 3. If they require only one of the facilities, they are classified at level 4. Besides, if patients would need no facilities, they are classified at level 5.<sup>13-15</sup>

The fact the triage is that there are no guidelines for training it.<sup>16</sup> If nurses have proper knowledge of triage and use standard methods, the positive effects of this method will be shown in interventions done for patients.<sup>17,18</sup> In Iran, no national triage scale has been communicated to hospitals, which in turn are the reference point for determining the triage system.

To our knowledge, no study has been conducted in Iran about the awareness of patients' companions about

\*Corresponding Author: Hasan Amiri, Email: amiri.h@iums.ac.ir

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the concept of triage. This survey was conducted given the importance of the subject and the knowledge gap. If the knowledge of patients' companions is insufficient from the concept of triage, education should be used for patients and their companions.

**Methods**

This descriptive cross-sectional study was conducted on 202 subjects at Rasol Akram, Firoozgar, and Haft Tir hospitals, affiliated with the Iran University of Medical Sciences in Tehran. The levels knowledge about the concept and application of hospital triage were evaluated in the research population consisting of patients' companions referred to the ED. The inclusion criteria were ED admission and the ability of read and write, and the exclusion criterion was the failure to complete the questionnaire. Non-probability and convenience sampling was done in the presence of the research team. The questionnaires were delivered to the companions of the patients. The sample size was determined with a 95% confidence interval and a 40% predictive estimate with a relative accuracy of 7%.

In this study, the data gathering tool was a questionnaire consisting of two parts. The final questionnaire included 13 questions, 10 and 3 of which were closed (multiple choice) and open questions, respectively. Finally, the age, level of education, and gender were also asked from participants. The level of patient triage was also determined in this research. Due to the lack of a standard questionnaire, an awareness-raising questionnaire was designed according to recent studies.

In the present study, content validity was provided by a precise study of texts and consulting with emergency experts in the form of an expert panel. A team of five researchers was formed consisting of two emergency specialists, one emergency medicine resident, and two medical students. The questions in the joint discussions were finalized after the elimination of existing challenges. The task of the expert panel in the first place was to determine the relevance of the questions to achieve the research objectives. In the second place, the questions were assessed to determine whether or not they were really necessary. In a pilot study, 20 patients were selected using simple sampling, followed by asking questions. This pilot study aimed to investigate whether patients received awareness-raising questionnaires according to our purpose, and is there a single impression of it? The content validity of the questions was equal to 70%. The reliability of the questionnaire (75%) was also tested by a test-retest method within a week.

All stages of the study adhered to the principles of the Helsinki Declaration during the investigation. Data were analyzed using SPSS 25 software.

**Results**

Finally, 202 questionnaires were completed by patients'

companions admitted to the ED. The mean age of those who completed the questionnaire was  $39.95 \pm 17.92$  years (Figure 1). Regarding the gender distribution of participants, 192 individuals expressed their gender, 123 (64.1%) and 69 (35.9%) of which were male and female, respectively (Figure 2). The level of education was also declared in questionnaires. Besides,

diploma and postgraduate diplomas, bachelor's degrees, and postgraduate or doctoral degrees were observed in 59 (32.77%), 90 (50%), and 31 (17.22%) patients' companions, respectively (Figure 3).

The questions in the questionnaire resulted in the

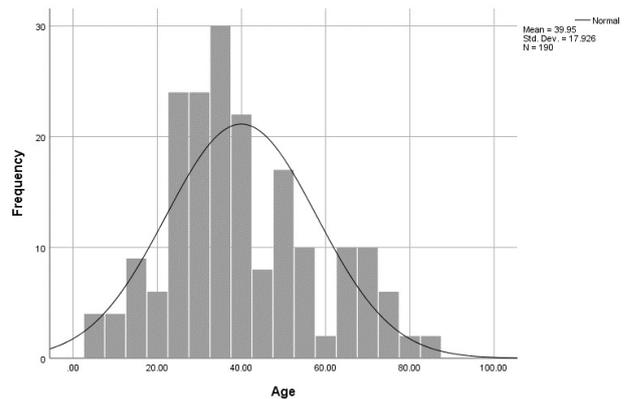


Figure 1. The average age of patients (n = 190) who completed the questionnaires.

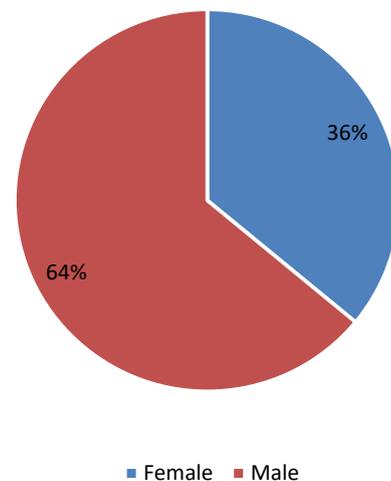


Figure 2. Gender distribution of the participants (n = 192).

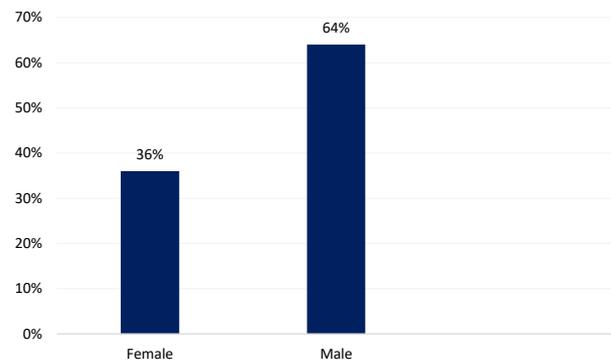


Figure 3. Education levels of patient companions.

following results:

*Question 1: Have you heard anything about the triage concept in an emergency?*

All 202 respondents answered this question, and 84 (41.6%) patient companions responded positively to this question. Of the 84 patient companions, 16 (8%) described their withdrawal from the triage. Two nurses correctly described the concept of triage, which is the category of patients. The rest of the participants were more concerned with triage as "initial examinations", "general assessment", and "initial actions".

*Question 2: Do you think all patients need to be visited by a doctor within the first 5 minutes?*

This question was answered by 201 subjects. Fully agree, partially agree, no opinion, partially disagree, and completely disagree answers were recorded in 115 (57.2%), 50 (24.9%), 16 (8%), 14 (7%), and 6 (3%) patient companions, respectively. In other words, about 82% of patients believed that all patients needed to be visited by a doctor within the first 5 minutes, and only about 10% believed that all patients should not be visited by a doctor in the first 5 minutes.

*Question 3: Do you agree with the classification of patients based on the deterioration?*

This question was answered by 199 people. Fully agree, partially agree, no opinion, partially disagree, and completely disagree answers were recorded in 116 (58.3%), 71 (35.7%), 4 (2%), 4 (2%), and 4 (2%) patient companions, respectively. In other words, about 94% of patients believed that patients should be classified according to their deterioration.

*Question 4: What is your expectation of the reasonable duration of waiting when visiting a doctor?*

This question was answered by 199 people. Moreover, 58 (29.1%), 91 (45.7%), 29 (14.6%), and 21 (10.6%) patient companions believed that the patient should be visited by a doctor in less than 5 minutes, between 5 and 10 minutes, within 10-20 minutes, and within 20-30 minutes, respectively. According to the above statistics, more patients (76% of the total) believed that patients should be visited by a doctor in less than 10 min. In question 2, which was implied in the same question, about 82% of patient companions believed that a doctor should visit patients in the first 5 min. Question 4 was somewhat corrected in comparison to question 2 by the comrades, which may be due to question 3 addressing the problem of patients' severity and classification among these two questions. In both questions, however, the expectation of patient fellows from the waiting time of patients visit is less than the internationally defined standards.

*Question 5: Are you satisfied with the waiting time of your patient when visiting a doctor?*

This question was answered by 201 people. Fully agree, partially agree, no opinion, partially disagree, and completely disagree answers were recorded in 36 (17.9%), 79 (39.3%), 33 (16.4%), 32 (15.9%), and 21 (10.4%) patient

companions, respectively.

In other words, about 57% of the patients were satisfied with their waiting time to visit a doctor, and only 26% were dissatisfied with the waiting time for the first visit by a doctor. About questions 2, 4, and 5, it can be concluded that more than 70% of patient companions believe that their patients need to be visited by a doctor in less than 5 minutes and 60% of them are satisfied with the time of their initial visit. Thus, the doctor was often initially visited within the first 10 minutes, leading to the satisfaction of the entourage.

*Question 6: Do you think your patient is referring to an appropriate place in the emergency room?*

This question was answered by 199 people. Fully agree, partially agree, no opinion, partially disagree, and completely disagree answers were recorded in 34 (17.1%), 67 (33.7%), 42 (21.1%), 35 (17.6%), and 21 (6.10%) patient companions, respectively. In other words, about 51% of patients in their referral centers recognized the patient in an emergency, and about 28% of their referral patients were dissatisfied in the ED. The purpose of triage referral is to divide the ED (FAST tract, subacute patients area, acute patients area, and CPR) and the nurse sends patients on triage to different parts based on pre-existing criteria.

*Question 7: If there is a need for waiting in the triage room, is there a suitable place for it in the emergency room?*

This question was answered by 198 people, and 124 (62.6%) patient companions stated that there was no suitable place for patients to wait in the emergency room. Given the data collected from the three hospitals of Rasoul, Firoozgar, and Haft Tir, the participants answered the question correctly and there is no suitable place to manage patients before and during triage in all these three hospitals. About 37.4% of patient companions believed that they were in a suitable place before classification. This is actually the place for the companions of patients admitted to the emergency room. This area is located at a distance from the triage, and there is no information about switching the patients to enter the emergency room.

*Question 8: If you have an adequate waiting room (reception, ventilation, and TV screen) in the emergency room, will you wait longer?*

Question 8 was answered by 195 people. Interestingly, 135 (69.2%) patient companions stated that they were not willing to wait even longer if there were proper waiting conditions (reception, ventilation, and a display). Answer rates to the above question suggest that the cultural situation in our country quickly prioritizes the physician's visit. The provision of the conditions for the patient to enter the emergency room as soon as possible to be visited by the doctor is more important for companions and patients from the comfort of the waiting room.

*Question 9: Does the presence of the triage system in the hospital improve patient care?*

This question was answered by 193 people. Fully

agree, partially agree, no opinion, partially disagree, and completely disagree answers were recorded in 57 (29.5%), 64 (33.2%), 64 (33.2%), 4 (1.2%), and 4 (1.2%) patient companions, respectively. The analysis of this question shows that about 60% of the attendees initially stated that they were unaware of the concept of triage, hence about 33% of the respondents did not comment on the patient's triage. There were no comments on this question in all questions. However, the reason for 40% of the respondents' answers regarding being aware of the concept of triage, but about 70% of the question about the hospital's triage system might be that they received information about triage in the previous eight questions.

Questions 10 and 11 were open:

*Question 10: Do you have any comments on the improvement of sorting patients' triage in hospitals?*

This question was answered positively by 56 patients (27.7%), who expressed their opinions on the improvement of triage. The rest of patient companions had no comments. Considering that about 60% of patients initially did not know the concept of triage, the 30% answer rate seems reasonable. Possibly, a number of people were not bored with an explanatory response. Companions' responses to dispersion were conceptual and could not be analyzed analytically. Some of the responses were as follows. Some of their discomfort from different parts of the ED are explained in this section. For example, people stated that the emergency was collapsed, probably meaning that they would be reduced by better categorization of the disruption of the ED. A large fraction of the patients complained that they were not related to the triage and were related to the placement of patients' bed in the ED; for example, the placement of patients' bed in the subacute ward (yellow, trauma) that occurs at different times. These displacements are primarily due to the lack of bed numbers for patients admitted to the emergency room. When patients return to the emergency room after CT imaging, their beds are not necessarily exactly the same. It is clear that this caused companions' dissatisfaction, but it is not relevant to the concept of triage. Some companions also commented that welfare measures, in particular adequate chairs, and measures to reduce the stress of patients, such as a triage display, would help patients and companions to stay in touch. Some of the companions also mentioned that patients should be better categorized on triage, but they did not explain the procedure of categorization.

*Question 11: Do you think happy patients are waiting for a few hours to have trouble?*

A total of 90 patient companions responded to this question. Many respondents replied with the same comments that they stated in the previous questions about the need for faster visits of patients by doctors. Some answers from patient companions are as follows:

- As long as patients can wait for their general consent.

- Most response was between 5 min and 30 min.
- Some fellows believed that all people who came to the ED were ill and needed to be seen by the emergency doctor more quickly.
- Some of the more general answers, such as "patients should not wait a lot", "depends on patient patience", "depends on the patient", "is very busy", or "depends on the doctor's opinion", were also among the responses
- In general, most of the responses indicated that the patient should be seen by a doctor as soon as possible.

*Question 12: If your patient is happy and after several hours of your turn, and how many sick people will be treated worse at the same time, what do you think should be done?*

The above question was answered by 196 patient companions. Besides, 23 (11.7%) patients believed that, despite the presence of more critical patients at the same time, their own patients who had already been waiting had to be visited earlier. Most of the participants (116 patients, 59.2%) believed that critical patients had to be visited before their patients, and 57 (29.1%) patients asked for increasing the number of doctors to visit critical patients and their own patients in the correct way. In other words, the third group believed that their patient visit should not be delayed in the presence of more critical patients, and supporting staff was needed in these circumstances. The analysis of the above question highlights that only 11.7% of the companions who considered the existence of a more critical patient to be a cause that could be considered for this. At the time of completing the questionnaire, they were dissatisfied with the situation, and as a result, they responded to a resonance. They thought that eventually someone came to the sick, and they considered their ill-treatment to be the worst.

*Question 13: Who should prioritize patients in a visit?*

This question was answered by 196 patient companions. Physicians and nurses were answered by 139 (70.9%) and a few (50 persons, 25.5%) patient companions. Only five participants stated that guardians were the most suitable persons for performing triage.

The patient triage level was also determined in this study. Of the 202 patients, 17 patients (8.41%) were at level one, 33 patients (16.3%) were at level 2, 112 patients (55.44%) and 3 had 40 patients (19.8%). The relationship between the level of triage and questions 2, 4, 5, 6, 8, and 12 was measured. The  $\chi^2$  test was used to measure communication. No significant correlation was found between patients' level of triage and their responses to questions 2 and 4 ( $P > 0.05$ ). In other words, the happiness and disorientation of the patient did not have a significant relationship with the patient's point of view about the faster visit of patients. Patients' triage levels and their satisfaction had a significant and inverse relationship with the waiting time and the visit of the physician (Question 5). In fact, it seems that patients with more critical conditions (levels

1-2 of triage) were more likely to be seen by a physician earlier. There was no significant relationship between the level of triage and the response of patients to questions 6, 8, and 12 ( $P > 0.05$ ).

### Discussion

About 60% of patient companions initially stated that they were unaware of the concept of triage, but only two (0.5%) nurses who were included among patients, correctly described the concept of triage. The rest of the participants were more concerned with the concept of triage as "initial examinations", "general assessment", and "initial measures." Many patients believed that all patients needed to be visited by a doctor within the first 5 minutes. Most patients believed that patients should be classified based on their severity. Patient companions' expectations vary from waiting time to patient visit to defined international standards. Most patient companions did not even expect to wait longer if there were proper waiting conditions (reception, ventilation, and display).

Cultural conditions in our country make it a priority for patients to be visited by physicians and to enter the emergency room soon, making it more important for companions and patients from the comfort of the waiting room. Most of the fellows believed that doctors should do triage. A few answered that nurses were considered to be the most suitable people for triage. There was no significant correlation between patients' discomfort and discomfort with their points of view about faster patient visits. Patient's triage level with satisfaction with the patient had a significant and inverse relationship between waiting time and visiting physicians. Because the patients who were found to be worse, they were more satisfied with the doctor earlier.

Seventy nurses from all hospitals in Sistan and Baluchestan province were previously evaluated in the study of Mirhaghi and Roudbari. In this study, 39.94% of nurses' responses to knowledge were correct and only 30% of hospitals had nurses with special triage.<sup>16</sup>

Tabatabai et al studied 124 students from seven and eight nursing schools and reported that their mean score of knowledge was low ( $9 \pm 2.7$ ).<sup>19</sup>

Given that these two studies were carried out 9 years ago, and the concept of triage has grown among nurses in recent years, it seems that the results of these studies cannot be generalized at the present time. Contrary to our study on ordinary people in the community, these two studies were limited to nurses in the ED. Haghdoost et al investigated a number of nurses who had little information about triage at the beginning of the study, but the study showed a significant increase in their knowledge through workshops and lectures.<sup>3</sup>

Mahmoodian et al examined the knowledge of the last-year medical students of Shiraz University of Medical Sciences about the concept of triage, with an average

knowledge score of  $10.6 \pm 5$ .<sup>20</sup> This study was limited to medical students, however, their level of information was not optimal for the triage concept.

### Conclusion

According to the results, it seems that knowledge about the concept of triage among ordinary people of the society is lower than the desired level. Considering the importance of this issue, it is suggested to raise the culture of the concept and application of hospital triage in society using available media. Furthermore, the installation of a banner in the triage room and the waiting room as well as other parts under the supervision of the ED and other departments, the provision of pamphlets about the concept and application of hospital triage, and the provision of patient placement can be effective strategies to improve the information of patients referred to EDs.

### Authors Contributions

**Conceptualization:** Mohammadreza Yasinzadeh.

**Data curation:** Hila Shahriari, Mohammad Eslami.

**Formal Analysis:** Mahdi Rezai.

**Funding acquisition:** Vice-Chancellor of Research at the IUMS.

**Investigation:** Mehdi Banijamal, Hila Shahriari.

**Methodology:** Mahdi Rezai.

**Project administration:** Hasan Amiri.

**Resources:** Hasan Amiri.

**Supervision:** Mohammadreza Yasinzadeh.

**Validation:** Mahdi Rezai.

**Visualization:** Mohammadreza Yasinzadeh, Hasan Amiri.

**Writing – original draft:** Hila Shahriari.

**Writing – review & editing:** Mahdi Rezai.

### Ethical Approval

This research was approved by the Iran University of medical sciences.

### Conflict of Interest

There is no conflict of interest.

### References

- Haghani F, Sadeghi N. Training in pre-hospital emergency: needs and truths. *Iran J Med Educ.* 2011;10(5):1273-80. [Persian].
- Davaty A. The survey of student's knowledge about triage. In: *Proceeding of the 3th International Congress of Cure and Health and Crisis Management in Disaster*; 2007; Tehran, Iran. p. 22-4. [Persian].
- Haghdoost Z, Safari M, Yahyavi H. Effect of triage education on knowledge, attitude and practice of nurses in Poursina educational and therapeutic emergency center in Rasht. *J Holist Nurs Midwifery.* 2010;20(64):14-21. [Persian].
- Kariman H, Joorabian J, Shahrami A, Alimohammadi H, Noori Z, Safari S. Accuracy of emergency severity index of triage in Imam Hossein hospital - Tehran, Iran (2011). *J Gorgan Univ Med Sci.* 2013;15(1):115-20. [Persian].
- Hedayati H, Mogharrab M, Moasheri N, Sharifzadeh GH. Studying of BUMS' students' knowledge about hospital triage in 2011. *Mod Care J.* 2013;9(3):237-44. [Persian].
- Göransson KE, von Rosen A. Interrater agreement: a comparison between two emergency department triage scales. *Eur J Emerg Med.* 2011;18(2):68-72. doi: [10.1097](https://doi.org/10.1097)

- MEJ.0b013e32833ce4eb.
7. Aronsky D, Jones I, Raines B, Hemphill R, Mayberry SR, Luther MA, et al. An integrated computerized triage system in the emergency department. *AMIA Annu Symp Proc.* 2008;2008:16-20.
  8. Parenti N, Manfredi R, Bacchi Reggiani ML, Sangiorgi D, Lenzi T. Reliability and validity of an Italian four-level emergency triage system. *Emerg Med J.* 2010;27(7):495-8. doi: [10.1136/emj.2008.070193](https://doi.org/10.1136/emj.2008.070193).
  9. Montán KL, Khorram-Manesh A, Ortenwall P, Lennquist S. Comparative study of physiological and anatomical triage in major incidents using a new simulation model. *Am J Disaster Med.* 2011;6(5):289-98. doi: [10.5055/ajdm.2011.0068](https://doi.org/10.5055/ajdm.2011.0068).
  10. Considine J, Botti M, Thomas S. Do knowledge and experience have specific roles in triage decision-making? *Acad Emerg Med.* 2007;14(8):722-6. doi: [10.1197/j.aem.2007.04.015](https://doi.org/10.1197/j.aem.2007.04.015).
  11. Chan JN, Chau J. Patient satisfaction with triage nursing care in Hong Kong. *J Adv Nurs.* 2005;50(5):498-507. doi: [10.1111/j.1365-2648.2005.03428.x](https://doi.org/10.1111/j.1365-2648.2005.03428.x).
  12. Frykberg ER. Triage: principles and practice. *Scand J Surg.* 2005;94(4):272-8. doi: [10.1177/145749690509400405](https://doi.org/10.1177/145749690509400405).
  13. Gilboy N, Tanabe P, Travers D, Rosenau AM. Emergency Severity Index (ESI): A Triage Tool for Emergency Department Care, Version 4. AHRQ Publication; 2012.
  14. Göransson KE, Ehrenberg A, Ehnfors M. Triage in emergency departments: national survey. *J Clin Nurs.* 2005;14(9):1067-74. doi: [10.1111/j.1365-2702.2005.01191.x](https://doi.org/10.1111/j.1365-2702.2005.01191.x).
  15. Shelton R. The emergency severity index 5-level triage system. *Dimens Crit Care Nurs.* 2009;28(1):9-12. doi: [10.1097/01.dcc.0000325106.28851.89](https://doi.org/10.1097/01.dcc.0000325106.28851.89).
  16. Mirhaghi AH, Roudbari M. A survey on knowledge level of the nurses about hospital triage. *Iran J Crit Care Nurs.* 2011;3(4):165-70. [Persian].
  17. Taheri N, Kohan S, Haghdoost AA, Foroogh Ameri G. Assessment of Knowledge and Activity of Nurses in Triage Field in Hospitals of Kerman University of Medical Sciences, 2005. Kerman: Kerman University of Medical Sciences; 2005. [Persian].
  18. Arslanian-Engoren C, Eagle KA, Hagerty B, Reits S. Emergency department triage nurses' self-reported adherence with American College of Cardiology/American Heart Association myocardial infarction guidelines. *J Cardiovasc Nurs.* 2011;26(5):408-13. doi: [10.1097/JCN.0b013e3182076a98](https://doi.org/10.1097/JCN.0b013e3182076a98).
  19. Tabatabai A, Mohammadnejad E, Salari A. Nursing students' awareness of triage in the emergency ward. *Jorjani Biomed J.* 2013;1(1):30-4. [Persian].
  20. Mahmoodian H, Eghtesadi R, Ghareghani A, Nabeiei P. Knowledge of triage in the senior medical students in Shiraz University of Medical Sciences. *J Adv Med Educ Prof.* 2016;4(3):141-4.