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Factors affecting triage decision-making from the viewpoints of emergency department staff in Tabriz hospitals

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ABSTRACT

Aims: Triage is the most important measures in the emergency department. Accurate triage decision has a significant impact on patients' outcomes. The aim of the present study was to investigate the factors influencing triage decision making in the emergency departments.

Methods: All physicians (N=22) and nurses (N=135) in 18 emergency departments of Tabriz hospitals participated in this descriptive study. For data collection a questionnaire was used that assessed staff and non-staff related factors (including patients and emergency department related factors) that influencing triage decision making. Social-Demographic and professional information of staff was assessed by a checklist. Data analysis was performed by SPSS statistical software and descriptive statistics.

Results: The most important factors in staffrelated factors were experience and skill in non-staff factors related to patient vital signs and type of injury; and in non-staff factors related to ward were overcrowding andprobability of injury to the patient. Also, it was found that the basis of decision-taking regarding staff and non- staff factors related to patient was correct, but this basis regarding none-staff factors related to the ward was incorrect.

Conclusions: The results showed that the quality of triage decision-making among staff working in emergency departments can be improved by enhancing the quality of clinical wards' structure.

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1. Introduction

Triage is an essential aspect in taking care of the patients referring to emergency departments (EDs) and it is among the initial actions, which is done during the patient's entrance to the EDs [1,2]. Triage can be considered as the process of assessment, decision-making and giving priority to the patients' problems for providing treatment cares that thisprioritization is done based on patients' clinical situation [1,3,4].

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Actually correct decision-making of triage is the basis of prioritization and providing emergency cares and has an important effect on patients' treatment outcomes [5, 6]. It should be considered that totally, nowadays correct decision- making is counted as an important part of nursing cares, but considering the sensitivity and criticality of the patients' conditions the importance of this decision-making in emergency conditions is double [7].

So triage decision-making is a complex clinical decision-making because often this decision-making is done in unclear conditions and by having incomplete and ambiguous information and also is done with the limitation of time and place [5, 7, 8].

Triage decision-making is done based on the signs and symptoms of the patients and this decision-making is not equal to the medical diagnosis. Triage nurses are responsible for rapid diagnosis of threatening situations and potentially threatening of the life and doing rapid actions regarding resolving these conditions. Triage nurses in order to do correct triage should be able to diagnose useful clues among all theavailable information and they should be able to have correct triage decision-making based on these clues [5,9].

There were some studies in other countries about decision-making process and the factors effecting on triage decision-making. Results of these studies show that doing correct triage need to having a high level of cognitive and meta-cognitive processes knowledge and also having skill, expertise, competence, qualification and readiness for triage decision-making is very important [3,7,10]. Also other texts add it that having adequate work-experience, awareness of diseases signs and symptoms and adequate equipment and sources play and important role in triage correct decision-making. Also time is one of the most important effective factors on decision-making and for doing effective triage, necessary information should be collected rapidly and decision-making should be done in time [11-13].

Also other studies have reported thatseveral individual and contextual factors (related to the ward and patient) play a role in triage decision-making in EDs that it can be pointed to internal factors such as; fear of making mistake in dangerous situations, insight, clinical qualification and nurses' abilities and external factors such as; stress of work environment, high workload and the ward crowdedness [7, 11, 12, 14].

As a result, it can be said that triage correct decision-making depends on triage nurse's competence, experience and function and having thesequalities in composition with external appropriate conditions of the work environment can lead to triage correct decision-making and it can be effective on patients' treatment outcomes potentially [15,16].

In broad searching of the contexts there was no study, which assesses the situation of triage existence in Iran considering effective factors on triage decision-making by treatment staff. On the other side, such information for decision-making about doing intervention that promote triage quality is important and essential. So the aim of this study is assessing factors effecting triage decision-making in EDs.

2. Methods

This descriptive study had been done in 18 state and private hospitals of Tabriz. The study population included all the physicians responsible for emergency and nurses working in EDs of the mentioned hospitals. Inclusion criteria of these people were having at least one year experience of working in ED and having nursing bachelor and associate degree for all the nurses. Regarding doctors all of them were general practitioner. It should be mentioned that number of all the staff having the study criteria in all the state and private hospitals of Tabriz were 179 people (25 physicians and 154 nurses.

Due to the low number of the samples, all of these people participated in the study via convenient sampling method. It should be mentioned that at the end of the study 157 staffs' data (22 physicians and 135 nurses) were collected.

In this study, considering the aims of the study, questionnaire had been used for collecting data. This questionnaire included two parts. The first part studied staffs' social-demographic and professional features. The second part also studied effective factors on triage decision-making. It should be mentioned that two parts of this questionnaire that studied non-personnel factors related to the patients and clinical unit were extracted from the previous study [8].

Regarding personnel factors, considering lack of tools similar to this questionnaire, were designed according to the previous similar study by the researchers [13]. The designed questionnaire

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included; factors effecting on the triage decision-making in personnel factors dimensions (10 items), non-personnel factors related to the patients (10 items)and no-personnel factors related to emergency department (9 items).

Regarding personnel and non-personnel factors related to the patients participating in the study, decuple factors of triage decision-making were ranked according to one to ten. In these cases one was for the most important factor and 10 was for the least important factor. Regarding non-personnel factors related to the ward, participants could choose one or two cases and based on this, it is determine from every one of the multiple factors that how many of the personnel chose this factors as the factors affecting triage decision-making. Validity of the designed questionnaire was determined by ten nursing and emergency medicine academic staff and necessary changes had been done in the questionnaire according to their views. Then questionnaire reliability was determined through re-test method and by repeating questionnaire completion within a week distance by ten emergency nurses that correlation coefficient

was more than ($p<0.001$) 0.87 considering all three parts of the questionnaire. In order to study internal consistency of different parts of the questionnaire Chronbach's alpha method was used that alpha coefficient was more than 0.75.

In order to do the study at first research project was determined by regional research committee in the research center of Tabriz Medical Sciences University. Then sampling permission was taken from the hospitals related authorities. Then considering every ED researchers chose the personnel that had the necessary criteria of the study and they referred to these personnel in different shifts. After explaining the aims of the study and the method of the work, informed consent was taken from all the staff. Then it was asked from the staff to take the questionnaire to the house and after completing it, to give it to the researcher in the next shift. In the case of not completing the questionnaire, the staff were called again and it was asked them again to complete the questionnaire. Data of most of the staff, which had the study criteria, was collected through this method.

Data were analyzed by using SPSS software (version 13). In order to describe the staffs' social-demographic features and professional features, descriptive statistic including; number, percentage, mean and standard deviation were used. Also in order to study the percentage of choosing every one of the non-personnel factors choices related to the ward, descriptive statistic including number and percentage were used. In order to rank personnel and non-personnel factors related to the patients, descriptive statistic including mean of ranking and modewere used.

3. Results

Studying social-demographic features of the personnel, participating in the study showed that 56.7% of the participant was female; 76.5% had nursing BA. Degree, 73.4% had the experience of 1 to 5 years of working and 16.6% had the experience of 6 to 10 years of working in ED. 67 staffs of the study (42.6%) had the experience of working in triage role that 39 people (58.2%) of these personnel had experience of triage less than 2 years and 58 people (86.6%) of these personnel had the experience of triage less than 6 years. Also the mean age of the participants in the study was 32.7 years old (standard deviation=6.7 years) and 58.6% of them were 23 to 32 years old.

Ranking personnel factors effecting triage, from the personnel's view participating in the study is in table 1. As it can be seen in this table. Experience and skill of studying have been the most important factors affecting personnel decision-making and insight and flexibility had less role in personnel decision-making.

Studying frequency and percentage of non-personnel factors related to clinical wards also

Table1: Ranking personnel factors affecting triage decision-making according to personnel's' ideas of ED of Tabriz

Frequency of responders / Personnel factors	Rank mean	Mode
Experience	2.40	1
Assessment skill	4.13	4
Being an expert	4.26	2
Power of decision-making	4.32	1
Organizing skill	5.16	5
Passed educational courses	5.55	4
Acuity	5.79	6
Relationship method	7.13	9
Insight	7.42	10
flexibility	8.02	10

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showed that most of the treatment personnel considered ward's crowdedness and the possibility of injury to the patient as the most important factors affecting triage decision-making in this regard and the least of them considered criteria, rules and funding less affecting their triage decision-making [table 2].

Ranking non-personnel factors related to patients are in table 3. As it can be seen in this table, vital signs and the kind of injury have been the most important factors related to patients affecting triage decision-making and disease history and patients' gender have been the least important factors related to patients affecting triage decision-making.

Table 2: Non-Personnel factors affecting triage decision making according to the personnel view of ED of Tabriz

Inter-unit factors \ Frequency of the responders	Number	Percent
Unit crowdedness	93	59.2
The possibility of injury to the patient	89	56.7
Work volume	75	47.8
Medical team coverage	64	40.8
Nursing team coverage	63	40.1
The possibility of risk to the personnel	49	31.2
Personnel team coverage	39	24.8
Rules and criteria	34	21.7
Funding	31	19.7

Table 3: Ranking non-personnel factors affecting triage decision-making according to the personnel view of ED of Tabriz

Factors related to the patient \ Frequency of responders	Rank mean	Mode
Vital signs	2.01	1
Kind of injury	2.34	2
Pain	4.06	4
Duration of the event	4.48	5
Triage scale	5.64	4
Age	6.79	8
Patient's behavior	6.85	7
Patient's appearance	6.98	7
Patient's history	7.11	7
Gender	8.81	9

4. Discussion

This is the first study which assesses factors affecting triage decision-makingamong Iranian health-treatment personnel, working in EDs. One group of the factors affecting triage decision-making in the present study was personnel factors. Personnel of the study considered experience, skill of studying and being an expert as the most important personnel factors affecting their decision-making in emergency situations.

In this regard findings of the present study is in consistent with the existing texts regarding the important role of experience and skill in triage decision-making. Andersson et al. from Sweden showed in a research that having experience is one of the most important effective factors in triage decision-making among nurses [14]. In the study of Hicks et al. in America, it has been also reported that increase of experience increases decision-making stability in triage situation [17].

In the study of Cone and Murray from America experience and being an expert were reported as the most important factors affecting triage nurses' decision-making [13]. Several studies show that nurses use their insight and perception in their triage decision-making more that it is directly due to their clinical experiences [7, 13, 18, and 19]. Totally, findings of the present study were in consistent with the other similar studies and emphasizes on the role of experience, skill, insight andacuity in triage decision-making.

Other factors affecting triage decision-making that were studied in this research were non-personnel factors related to clinical unit. It should be attended that factors related to unit are among factors affecting personnel decision-making in ED and so studying and diagnosing these factors are very important [20]. Results of the present study showed that the most important non-personnel factors affecting triage decision-making included; unit crowdedness, the possibility of injury to the patient and the personnel's work volume, in this regard, results of the study of Fry and Burr from Australia confirmed findings of the present study and it has been reported that the possibility of injury to the patient, the possibility of injury to the personnel and the emergency unit crowdedness have been among the most important inter-unit factors affecting triage decision-making [8].

Similarly, findings of other study have shown that inter-unit factors such as; patients' overcrowding, physical structure of available environment and

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equipment affects triage decision-making [21, 22]. Of course, it should be considered that, although the basis of personnel decision-making in this area were similar to the foreign similar studies, but it should be considered that triage decision-making and allocating triage priorities to the patients should be only based on the patients' clinical need and work volume and ED crowdedness should not affect triage decision-making [5]. Therefore in this regard, triage decision-making basis among the personnel were not appropriate.

Another category of the factors in the study, affecting triage decision-making were factors related to the patients. Results of this study showed that; vital signs, kind of injury and pain were reported the most important factors and gender, experience of previous disease were reported the least important factors related to the patients in triage.

In this regard, Andersson et al. during a research reported that; patients' situation, their general conditions, the possibility of risk for the patient, patients'' pain, laboratory results and physical examinations have been among the important and effective factors in triage decision-making [14].

The study of Fry and burr had also reported that; patients' existent problems, mechanism of injury and vital signs are the most important factors and age and gender are the least important factors affecting triage decision-making [8]. Also in another study, factors such as; vital signs, the main complaint, disease history and clinical examinations were reported as the important factors affecting triage decision-making [23]. Also according to the results of other studies, clinical factors related to the patients specially the type of the disease or injury and the intensity of disease signs have been among the important factors affecting triage decision-making [2,18]. Therefore, considering this fact then patients' physical and mental situation is the basis of decision-making in ED, so it seems that personnel, participating this study do triage decision-making according to a correct basis.

Results of this study have shown it totally that personnel of the study in two personnel and non-personnel areas related to the patients do their decision-making according to a correct basis, but regarding non-personnel area related to the unit, their decision-making basis is not very correct. Correct decision-making is an important and essential component in clinical function in medical and nursing profession. Correct clinical judgment needs thinking and insight, which are achieved based on professional knowledge and skill. Relationship between experience and achieving skill has been explained in Benner's pattern of novice to expert in a more known form. Clinical nurse develops the process of his/her skill and education through achieving clinical experience and totally the power of their decision-making is going to be changed and corrected [25,26].

Results of this study can be guide for correcting factors affecting triage decision-making and triage decision-making can be conducted in correct line through educational programs and using personnel who are experienced in triage and correction management structures of EDs. This study had been done in Tabriz EDs and it is nor renewable to the EDs of the hospitals of all the country, so it is suggested that in addition to doing similar study in the country , there should be some studies regarding relationship of experience and the education level of the personnel who do triage with the level of triage decision-making correctness in the EDs, and resources, facilities and physical environment of the EDs should be organized and planned in such a way that inter-unit factors have less effect on triage decision-making.

5. Conclusions

Personnel working in EDs have correct decision-making regarding personnel and non-personnel areas related to the patients, but regarding non-personnel area related to the unit they haven't got any correct triage decision-making. It shows more attention to the equipment and human and material resources in EDs.

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