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A SURVEY ON KNOWLEDGE AND PRACTICE LEVEL OF THE NURSING STUDENT ABOUT EMERGENCY SEVERITY INDEX TRIAGE

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ABSTRACT

Introduction: Hospital Triage is a part of Emergency Department structure done by emergency nurses, where nurses, with their quick recognition, classify patients based on treatment priority. Therefore, it is necessary that nurses have sufficient knowledge of triage process. There is little information available of the knowledge and practice of students about ESIT. We have conducted this study to determine knowledge and practice level of the nursing student about (ESIT)
Materials and Methods: This study is descriptive conducted in 2016 in Nursing & Midwifery Faculty, Tabriz. In this study, we surveyed 100 nursing students through census. We used Emergency Severity Index (ESI) Triage questionnaire to collect data. Data were analyzed using SPSS statistical software and descriptive and inferential statistics.
Findings: The mean score of knowledge of students was 7.77 ± 5.36, and mean score of practice was 5.17 ± 2.82, which reflected low levels of knowledge and practice of students in ESIT. The highest score of knowledge was about time to deal with patients. Regarding practice, the highest score was in first level of triage.
Discussion and conclusion: Given the low scores of students in ESIT, emphasis on triage in syllabuses of university courses and holding specialized training courses on triage is recommended. Moreover, developing national scale of triage and establishing triage nursing, as a subfield can provide a fertile ground for knowledge-based performance of nurses.

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Introduction

Emergency departments are of the most important, sensitive, and hazardous hospital wards [1]. The primary role of emergency department is treating damaged and seriously injured patients [2]. The main mission of each emergency department is providing the most appropriate care in the shortest time possible. Overcrowding in emergency departments is a worrying issue in all parts of the country. Sometimes the crowd of clients is such that the patients wait more than 60 minutes [2, 3]. Statistics

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of World Health Organization (WHO) show that two-thirds of hospital beds are occupied due to accidents, and the first place for hospitalization of these patients is emergency departments of hospitals. Damage caused by it is more than 500 million dollars worldwide [4]. This is where triage will have a unique role in fulfilling the ultimate goal of this department as the first point of intersection of the emergency team of hospital with the patient and his entourage [2].

Triage is derived from the French word "Trier" meaning Sort (classification depending on the situation and the particular needs of each patient), which, for the first time, was used to categorize injured soldiers in the French army [5]. Triage is a crucial step in admission of patients to emergency and a high-volume and high-intensity matter due to the fact that, in very busy time, it is challenging but crucial for the emergency safety [6]. Access and use of an appropriate triage system are of the basic and primary needs of proper and efficient management in an emergency department. None of the aspects of emergency care is as important as the ability of emergency department in assessment, treatment, and disposition of patients within a reasonable and acceptable timeframe. Different triage systems are created to deal with this problem in emergency department of hospitals. One of these systems is ESI, which was coined in 1999 by two emergency professionals named Richard Wuerz and David Eitel, and so far, it has been modified four times. This system of triage is a five-level systems against three-level systems [7]. In this method, based on the severity of the disease and the facilities required, triage nurse classifies the patients in the five priorities ranging from life-threatening conditions to non-emergency cases. The first one is determined with the presence of life and limb threatening factors, danger signs, as well as vital signs, and the second criteria based on nurse's experience. Nurse's determining diagnostic and therapeutic resources needed by patients is what distinguishes this system from other triage systems [8, 9]. Application of ESI system in Australia has increased job satisfaction, improved organizing emergency department, and lowered patients' waiting [4]. In 2011, in the final instructions, Ministry of Health announced ESIT to hospitals in Iran [10].

Currently, in most emergency departments, patient triage is the responsibility of the nursing system. Different studies have had different results in the accuracy of nursing triage [11, 12].

With their professional activities, including triage, nurses play an important role in the duration of hospitalization of patients in the emergency department and can be effective in reducing its length [13]. Rapid diagnosis of ill patients and taking vital measures in the shortest possible time will be possible only in the light of appropriate patient triage and prioritization [4, 14]. Internal factors including nurses' skills (experience, knowledge), personal characteristics, work environment (work overload), and the evaluation of patients are all involved in patient triage [15]. Studies show that knowledge and awareness of nurses about triage are inadequate [16, 17]. If nurses have proper knowledge and awareness of triage and use standard methods, positive effects of this approach on interventions done for patients are reflected [18]

In Iran, no national scale triage has been communicated to hospitals and hospitals are the reference for determining triage system. About triage, the fact is that there is no syllabus at the University for teaching triage, so that the contribution of triage in the subjects of nursing in the department of emergency is a two-hour session. Therefore, the only solution ahead is holding training workshops and referring to few and scattered papers published on this subject [19].

Studies conducted in Iran and the world show unpreparedness of nurses and nursing students in the triage and consequently triage's being ineffective in emergency events [19, 20]. Considering the overcrowding and the limited resources available, proper triage of patients admitted to the emergency department is of the priorities [21]. It is therefore essential to deal with the ability of nurses and nursing students in triage of patients in the emergency department, reaction of nurses at crowded times, and the quality of the use of triage capacity.

Given low knowledge and practice of nurses and students in triage [7, 19, 22], the importance of the issue, the gap in knowledge, theory, and bedside in nursing that is increasing, and on the other hand, nursing students of today who are the nurses of tomorrow, the aim of this study is to determine knowledge and practice of nursing students of hospital triage. This is to use its results and better plan about shortcomings and problems.

Methodology:

This study is descriptive, and was conducted in 2016 in Nursing & Midwifery Faculty of Tabriz. Participants in the study were senior undergraduate nursing students, first and second terms 2015-2016, who participated in the study from March 2016 to August 2016. In this study, after approval of Research and Ethics Committee of the Regional Council of Tabriz University of Medical Sciences, we selected all nursing students who had studied crisis nursing in term 6 and did not have the experiene of working in hospital and pre-hospital emergency departments. The total number of students eligible for the study was 100 people. First, we collected the list and average of students from nursing school department. While visiting the class and explaining the objectives of the study to the students eligible to participate in the study, we obtained their consent to participate in the study. Then we gave an exam to the students at the end of the sixth semester before entering the field. ESI triage questionnaire was designed based on the latest edition of ESI in line with the purpose of the study [23].

Due to the context-dependent implementation of triage, we gave the questionnaire to 15 members of the faculty of nursing, emergency medicine, and 5 experienced personnel in main emergency department of trauma center of Tabriz to determine the face and content validity of the tool. The reliability of the study was determiend after conducting the study on 10 nursing students using Cronbach's alpha coefficient, which ranged from 86% to 95% for sub-groups of the questionnaire. After the final modification of the questionnaire in 3 parts: Demographic, questions on knowledge, and scenarios to determine the performance. knowledge contained 46 questions with 5 sub-categories that included: 1) Vital signs, 2) time, 3) Basic

information on triage each with 5 questions, 4) facilitaties required 11 questions, and 5) the severity of the disease with 20 questions and minimum score of 0 and maximum of 46. Pratice included 30 scenarios and the options were as true, false, and I do not know designed based on five-level system of ESI triage [23]. Participants in the study selected one of the priorities out of the five priorities in the scenario, which they thought was correct. Participants chose "I do not know" in case of no knowledge of the correct answer. The correct answer recieved one and the wrong answer was given a zero. Thus, in this questionnaire, the minimum score is zero and the maximum score is 30. In this study, gain a score less than 50% percent was considered poor, 50-75% average, and higher than 75% was considered good. After collecting data using descriptive and inferential statistics such as ANOVA, Spearman correlation coefficient and pairwise t-test were analyzed. We used SPSS22 to analyze the data. $P<0.05$) was considered as significance. The participants were ensured that there is no need to write specifications in the questionnaire.

Findings:

In this study, a majority of 88% of the participants were single, 51% female, 49% male, and all students were in semester six or seven before entering the field at the undergraduate level, and none of the students had work experience in the emergency department (Table 1).

Table 2 shows the average scores of sub-categories of knowledge (vital signs, facilities required, time of dealing with patient, general information, and severity of illness).

In this study, given the students' answers to the questions, the highest correct for answers is related to the time of dealing with the patient, indicating the high level of student knowledge in this field (Table 2).

Regarding practice, Table 3 shows the correct answer, higher, lower, and I do not know of the students. In this regard, the most correct answers students was in triage (Table 3).

Regarding knowledge, mean score of correct answers of students was 7.77 ± 5.36, and mean score of practice was 5.17 ± 2.82, which reflected low levels of knowledge and practice of students in ESIT.

Discussion and conclusion:

Since five-level triage has high accuracy and precision in determining the priorities of patients admitted to the emergency, according to its main users, nurses, this system has more acceptance and easier application and highly plausible in many countries [4].

Regarding knowledge, mean score of correct answers of students was 7.77 ± 5.36, and mean score of practice was 5.17 ± 2.82, which reflected low levels of knowledge and practice of students in ESIT. These findings are consistent with other research done in Iran. Knowledge of nurses about hospital triage in the emergency department in 2010 was low in the study by Mirhaghi et al. [19], and Tabatabai et al. (2012) announced students' knowledge about triage 9 ± 7.2, suggesting low knowledge about triage among students [17]. However, these findings are not consistent with the studies by Malekshahi and Mohammadzadeh (2003) reporting general triage knowledge of nurses' as average (53.9 percent) [24], and the study about triage in nursing students in Ahvaz showing that 57.1% percent of nurses had good knowledge and 12.3% of them had low knowledge [25]. Moreover, these findings are inconsistent with research by Goranson et al. who reported their knowledge equal to 57.7 [26]. The reason for this difference may lie in the fact that the research by Malekshahi, general aspects of triage of patients have been studied and specialized hospital triage is not addressed. In research by Goranson, as the research has been done in Sweden, it is possible that the results are affected by location. However, these results show an average knowledge of triage that raises the issue of training staff more. Regarding the challenges and problems of triage in nurses, the research conducted by Moadab and Bahrami shows that 86% of the subjects had not followed triage-training courses, and 98.2% of them do not know their primary responsibility as the necessary acculturation is not done in universities. Among them, 61.8% believed that a unit triage system is not provided in health care system and multiplicity in implementing triage confusion weakens performance, 93.6% believed that at times wrong culture interferes with proper performance of triage [27].

Knowledge and practice scores of nursing students in hospital triage are low and trainers should exercise more monitoring over the performance of students. Given the importance of triage, to increase nursing students' knowledge in this regard, changes in the teaching process of theory and the proportion of students to teachers in the clinical setting are recommended. Developing national scale of triage and establishing triage nursing as an academic sub-field can provide a fertile ground for knowledge-based performance of nurses. In addition to nurses' becoming familiar with triage and its roles, general education about general emergencies should also be done because the reduction in triage system increases patient satisfaction by reducing waiting time [4].

One of the strengths of this study has been that the highest level of knowledge is about level one and the time to deal with patients: level one at triage is related to the most severe and sickest patients, to save whom, cardiopulmonary resuscitation should be done immediately. This indicates that with proper diagnosis at the first level of triage, one can prevent waste of resources and adverse outcomes and bring about fast treatment of patients and improvement of their status.

Limitations:

Since our paper is limited to senior nursing students admitted at the same year to the School of Nursing, Midwifery of Tabriz University of Medical Sciences, it is recommended that the knowledge and practice of students in other schools of Nursing, Midwifery entering the university at different years be investigated. It also recommended that intervention studies be conducted

to teach triage for nursing students and nurses working in the emergency department to enhance the knowledge and practice of nurses.

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Table 1: Demographics of **s**amples

Variable		Frequency	Percent
Age	20-25	96	96%
	26-29	3	3%
	30-333	1	1%
Sex	Man	49	49%
	Female	51	51%
Marital status	Single	88	88%
	Married	12	12%
Number of children	Zero	96	96%
	One	3	3%
	Two	1	1%
Emergency work history	Yes	Zero	Zero
	Good	100	100%
Semester	Six	50	50%
	Seven	50	50%
Diploma average	14-17	32	32%
	18-20	68	68%
The average of the past six semesters	13-17	87	87%
	18-20	13	13%

Table 2: Scores of subsets of knowledge questions

Investigated variable	**The correct answers in percent**	**The wrong answers to the questions in percent**	**"I do not know" answers to the questions in percent**	**Mean ± SD**
Vital signs	16	34.4	49.6	0.89 ± 0.80
Time to patient care	25.6	74.4	-	1.58 ± 1.28
Facilities required	12.27	16.63	71.10	1.74 ± 1.26
General questions of triage	3.8	67.2	20	0.50 ± 0.19
Illness severity	21.5	58.55	19.95	± 2.58 4.30

Table 3: Nursing students' scores in practice based on five-level hospital triage

Triage level	**The correct answers in percent**	**Higher answers to the questions in percent**	**Lower answers to the questions in percent**	**"I do not know" answers to the questions in percent**
Level 1	25.71	65.43	Zero	8.86
Level 2	8.57	61.58	9.85	20
Level 3	15.77	42.78	17.89	23.56
Level 4	15.66	38.33	35.34	10.67
Level 5	22	Zero	64.5	13.5

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