



Derleme

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TRIAGE IN THE WORLD AND IN TURKEY AND THE TRIAGE KNOWLEDGE LEVELS OF EMERGENCY WARD NURSES
DÜNYA VE TÜRKİYE'DE TRİYAJ SİSTEMLERİ VE ACİL SERVİS HEMŞİRELERİNİN TRİYAJ BİLGİ DÜZEYLERİ

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ABSTRACT

Triage is a dynamic and continuous process used to define the severity of illness or trauma and to identify those with the highest risk of life in individuals who apply to the emergency department. Nurses play the most active role in the process in which the most appropriate treatment and care interventions are initiated for the sick or wounded in the emergency unit in a short time, and therefore they constitute the main components of the process in this sense. The triage nurse should have appropriate training and experience in emergency nursing triage, decision making, and emergency nursing cares. Nurses who take responsibility for triage should have advanced diagnostic skills, good interviewing and organizational skills, comprehensive basic knowledge related to the diseases and the ability to identify the clues regarding the patient's urgency which are not seen obviously.

Keywords: Emergency unit, Knowledge level, Nursing, Triage.

ÖZ

Triyaj, acil birime başvuran bireylerde hastalık ya da travmanın şiddetini tanımlamak ve yaşamsal riski en fazla olanları belirlemek için kullanılan dinamik ve sürekli bir süreçtir. Acil birimdeki hasta ya da yaralılara kısa sürede en uygun tedavi ve bakım girişimlerinin başlatıldığı süreçte en etkin rolü oynayan ve bu anlamda sürecin ana bileşeni hemşirelerdir. Triyaj hemşiresi, acil hemşirelik triyajında, karar vermede ve acil hemşirelik bakımlarında uygun eğitim ve deneyime sahip olmalıdır. Triyajda sorumlu olan tüm hemşirelerin, yeterli tanıma beceri ve yeteneklerinin, sağlıklı bir görüşmecilik ve organizasyon yeteneğinin olması gerektiği gibi, hastalıklara ilişkili geniş kapsamlı temel bilgilerinin ve hastanın aciliyeti ile ilgili net bir şekilde görülmeyen noktaları belirleyebilme beceri ve yeteneğinde olması icap eder.

Anahtar kelimeler: Acil birim, Bilgi düzeyi, Hemşirelik, Triyaj.

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INTRODUCTION

Emergency units of hospitals are dynamic and intensive places that provide continuous or uninterrupted service to individuals whose lives are at risk or who need the urgent treatment and care. Depending on the local (geographical), social and economic (industrial and industrial) structure of the city in which they are located, the number of patients/individuals applying to these units varies and in addition to this their individual characteristics and social opportunities become effective in the applications (1). In other words, it is indicated that, the individuals apply to the emergency unit because of the fact that they perceive their own situation as an emergency and the emergency unit to be close to their home and they wait a shorter time for examination and they fail to examine in the relevant polyclinics due to business intensive and they want to get a prescription, request a report and to have par-enteral administration done and they fail to receive treatment and care from other units of the hospital or due to the similar reasons (2). The increase in the number of patients admitted to emergency units in recent years has led to excessive workload in the emergency services. In order to reduce the resulting excessive workload and to provide effective and active treatment and care services, triage system is applied in all public, university and private hospitals (3-5).

The word triage is derived from the word "trier" which means to classify or choose in French language. It was used for the first time in the French army to create an "open hospital" environment for wounded soldiers. It was used in the sense of "process" to define the center where the classification of wounded soldiers to be sent to hospitals far from their workplaces is made in the US Army and to determine the soldiers who are likely to return to the battlefield following the medical intervention after World War II. In 1963, it was used in the emergency department of Yale Newhaven Hospital in the United States (6-9). In the literature, there are different approaches to triage types. Triage continues to be used in hospital emergency services, disaster situations (mass accidents and bomb explosions), and the military (5,6,10,11). Different triage applications in cases where the resources provided are not sufficient due to various reasons in our country as well as all over the World, triage services for patients admitted to the service or intensive care unit and incidence triage (eg, natural disasters and accidents), military triage (war), telephone triage (referral services), ambulance triage and obstetric triage are performed (5,6,11,12).

Today, triage is most commonly used in emergency departments. The purpose of triage in emergency services is to prevent the worsening of the patients' situation by selecting the ones who require care and intervention, by excluding the less urgent or non-emergency cases. In order to direct them to the polyclinic and accordingly to allocate sufficient and efficient time to patients in need of emergency intervention and to prevent the formation of overcrowding (13,14). As stated in the regulation made on the procedures and principles of emergency services published in the Official Gazette of the Republic of Turkey on October 16, 2009, triage application can be performed by physicians or health personnel who have received training related to the triage (8,15). Today, the

necessity of an effective triage system for emergency patients who need to receive appropriate health care services in a short time is unquestionably accepted, and it is emphasized that nurses have an important role in performing triage on time and correctly (5).

According to the standards of the Emergency Nurses Association in 1999, it is foreseen that triage should be performed by nurses who have at least 6 months of emergency service experience, basic life and advanced life support, trauma nursing, pediatric courses and emergency nursing certificates. Nurses who perform duty to carry out triage should have advanced diagnostic skills, ability to make quick and accurate decisions, good interviewer and organizational skills and comprehensive knowledge about diseases and skills to recognize the level of urgency of the patient (5,8,16,17).

Nurses' triage knowledge and skills enable them to make the right decision, to determine the time to be allocated to patients, and to manage time by positively affecting the functional efficiency in the emergency services. Appropriate and correct triage practices increase survival rates and ensure to give effective and adequate care for all patients. In addition, ensuring the appropriate use and distribution of resources gains importance in times of crisis and in cases of large-scale referral to be made via emergency services (1,5). It is known that there are limited availability of studies on the education, experience and knowledge levels of nurses about triage practices in general. Although not formally a systematic review par excellence, this study compares the triage systems around the world, from diverse countries in different continents and the knowledge levels of nurses and other healthcare staff. Thus, it contributes to the knowledge gap within the field.

TRIAGE CLASSIFICATIONS USED IN EMERGENCY DEPARTMENTS

The triage system is a mandatory system which requires to be applied in emergency services. Every hospital emergency department, regardless of size, is obliged to practice emergency department triage. Although there are simple or two-unit, three-unit, four-unit and five-level triage classification systems currently used in hospitals, the Emergency Nurses Association (ENA) and the American College of Emergency Physicians (ACEP) have recommended the use of a five-point classification system, which is considered to have high validity and reliability (Table I).

The five-level triage system was first developed by a group of emergency service personnel in Australia in the 1970s to solve the problems arising from the unpredictable increase in the number of patients admitted to the emergency department (5).

TRIAGE CLASSIFICATION SYSTEMS IN EMERGENCY SERVICES

In many countries, various triage systems have been developed for use in emergency services. The first system used had three-level; It was "emergency, very emergency, not emergency". With the development of the insufficient triple system, a five-level system began to be used. In this system, emergency situations are defined for each level and the appropriate triage category is determined according to the patient's complaint (21).

Table I. Triage Classification Systems Used in Emergency Units Around the World (5,18,19,20).

2-unit Emergency Classifications	3-unit Emergency Classifications	4-unit Emergency Classifications	5-unit Emergency Classifications
Emergency	Very Emergency	Life-Threatening	Immediate Care
Not Emergency	Emergency	Very Emergency	Very Emergency
	Not Emergency	Emergency	Emergency
		Not Emergency	Not Emergency
			Referral

It is important to use a valid and reliable triage scale for taking a correct triage decision. According to the five-classification triage system, the class name, definition, sample cases that fall into this class, and how long the case should be re-evaluated – that is, the frequency of diagnosis – are given in Table II.

These five levels determine the maximum length of time the patient can wait before he or she is seen by a nurse or physician for treatment. It means that a patient who reports to the emergency department earlier than another with a more urgent triage category will be treated after the treatment of the late arrival (4, 22).

TRIAGE SYSTEM USED IN TURKEY

The physical conditions of the emergency service units in Turkey, triage practices and how the operation mode of emergency department are explained in the

"Communique on the application procedures and principles of emergency services in inpatient health facilities" published in the Official Gazette dated 16 October 2009 and numbered 27378 Ministry of Health in Republic of Turkey. In this communique, it is defined as "red (very emergency), yellow (emergency) and green (not emergency)". In addition to this, in this Communiqué, the "red area" and "yellow area" sections are divided into two different categories. As seen in Table III, the triage process is performed at the time of the patient's application, before the registration process. In the triage of patients; red, yellow and green colors are used to determine and apply their order of priority by means of considering their examinations, investigations, treatments, medical and surgical interventions (19,22,23).

While the 3-unit triage system is applied in state hospitals affiliated to the Ministry of Health in Turkey; the 5-

Table II: Differences Between Five Triage Classification Systems (4, 22).

Class	Canadian Triage Scale (CTAS)	Manchester Triage Scale (MTS)	Avustralian Triage Scale (ATS)	Emergency Severity Index (ESI)
1	Resuscitation (immediately)	Immediately (red) 0 minutes	Life threatening present (immediately)	Category-I (immediately)
2	Emergent (with in 15 minutes)	Very urgent (orange) in 10 minutes	Close to life threatening 10 minutes	Category-II High risk
3	Urgent (with in 30 minutes)	Urgent (yellow) within 60 minutes	Potentially life threatening within 30 minutes	Category-III Many different resources
4	Lessurgent (with in 60 minutes)	Standard (green) with in 120 minutes	Potentially serious condition with in 60 minutes	Category-IV One different resource
5	Non-urgent (with in 120 minutes)	Non-urgent (blue) With in 240 minutes	Less urgent with in 120 minutes	Category-V No other resources

Table III: Nurse's Roles, Responsibilities and Roles in Triage Practice (19,22,23).

COLOUR CODE	AREA AND CASE'S NATURE	EXAMPLE CASES
RED Category 1:	Category 1: "Life-threatening conditions that require rapid aggressive management and immediate simultaneous evaluation and treatment. In these cases, the patient is taken to the red area without waiting."	Cardiac and respiratory arrest, major multiple trauma, risk of airway obstruction, on going or prolonged seizure, etc.
	Category 2: "Conditions, the life-threatening probability of which is high, need to be evaluated and treated within 10 minutes."	Chest pain similar to cardiac pain, involvement of accessory respiratory muscles in respiration acute hemiparesis/dysphasia, lethargy with fever, and similar conditions which have a high probability of life-threatening.
YELLOW Category 1:	Category 1: "Conditions, the life-threatening probability of which is high and which have risk of limb loss, and significant morbidity of which is high."	High blood pressure corresponding to Diastolic >110 mmHg, Systolic >180 mmHg, moderate blood loss for any reason, moderate respiratory distress in which accessory respiratory muscles do not participate in breathing, history of seizure (awake), etc.
	Category 2: "Conditions which have moderate and prolonged period symptoms and serious results potentially."	Simple bleeding, chest pain and simple chest injuries without respiratory distress, difficulty in swallowing without respiratory distress, minor head traumas without loss of consciousness, vomiting and diarrhea without signs of dehydration, etc.
GREEN	Patients who apply for out patient treatment, whose general condition is stable, and who have simple health problems that can be treated on an out patient basis."	All kinds of mild pain without high risk, history of low-risk disease without active complaints, all kinds of simple symptoms and similar conditions in the patient whose general condition and vital signs are stable.

unit triage system is applied in some university hospitals as seen in Figure I (24).

NURSE'S ROLES AND RESPONSIBILITIES IN TRIAGE PRACTICE

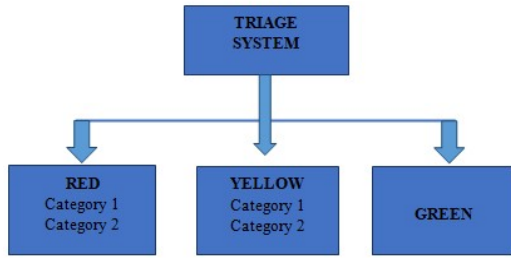


Figure I: TriageSystem of Turkish Republic Ministry of Health

In the regulation on the procedures and principles of emergency department services published in the Official Gazette on October 16, 2009; It is stated that triage can be performed by knowledgeable, experienced and trained healthcare professionals. Most of those who perform triage practice in our country are nurses who are assigned from among health workers (5,6,8). Emergency Nurses Association (ENA), in the standards of emergency nursing practices; It is said that " Licensed triage nurse of emergency service evaluates each patient by using triage standards and determines care priorities for the physical, developmental and psychosocial needs of patients as well as emergency care needs" (5,25).

Education, Research and Development Department of the Ministry of Health has organized an "Emergency Nursing Certificate Program" with the aim of improving the knowledge and skills of nurses working in emergency units, and this certificate has a validity for a period of five-year. In the seventh article of the Nursing Regulation published in the Official Gazette dated 08/03/2010 and numbered 27515, "the duties, authorities and responsibilities of the emergency nurse and in addition to these matters participation in nursing care, medical diagnosis and treatment practices" are explained (22,26).

The triage nurse has a great importance in the emergency units, which is one of the most important units of health institutions, and therefore their duties and responsibilities are as follows:

1. To meet all patients applied to the emergency unit in the "triage" area, where the first application is made. To evaluate the health status of the patients and to determine the area and physician to be directed within the unit.
2. To meet the patients who apply to the emergency unit by ambulance or other vehicles in front of the unit entrance and to transport them to the required unit in an appropriate way.
3. To make preliminary preparations by collecting sufficient information about the problem until the emergency physician comes to the patient.
4. To provide the stabilization of the patient during cardiopulmonary resuscitation and to assist other health professionals in this regard.
5. To conclude and follow-up the referral, registration,

official process and documentation. To initiate diagnostic procedures (ECG, taking and sending the radiological and laboratory tests) and to record them.

6. To assist in the control of medical devices in the emergency unit and to ensure that aseptic techniques are followed during applications.
7. To ensure that the patient is safely transported to other units (internal/surgical services, intensive care units, etc.) together with his/her colleague in the emergency unit and to create a safe environment in the emergency unit.
8. To carry out the necessary care and follow-up during the transfer of the patients who are found suitable to be transferred to another hospital by ambulance.
9. To fulfill predetermined tasks as it is part of the hospital disaster plan (18,26).

TRIAGE KNOWLEDGE AND SKILL LEVELS IN THE WORLD AND IN TURKEY

The triage system is essential for the initial clinical evaluation and categorization of all patients referred to the emergency room to provide the best treatment. The key factor to show successful performance in the emergency department is to provide accurate and rapid triage for patients (14, 27). In emergency triage, nurses play the most active role and in this sense they are the main components of the process. (13). The triage nurse must have appropriate training and experience in matters such as emergency nursing triage, decision making, and emergency nursing care. (13,28). According to the Emergency Nurses Association (ENA), the triage nurse must have had at least 6 months of emergency service experience, have completed training and course programs on triage, should have basic life and advanced life support, trauma nursing, pediatric courses and emergency nursing certification (11,13). Obviously, nurses' knowledge and skill about triage has a great impact on the functional efficiency of the emergency department. Because making the right decision can provide saving on valuable time allocated for each patient, and more importantly, many lives depend on the emergency response of the health personnel (nurse) (14). Surprisingly, many studies have revealed that nurses' knowledge about triage is insufficient and many nurses do not have the necessary skills as seen in Table IV (11,14,16,27-29).

In the literature, it has been stated that in Australia (30), Sweden (31) and China (32) nurses' triage knowledge was not sufficient and many nurses did not have the necessary skills. In the studies conducted in Iran it has been declared that many hospitals do not have well-trained triage nurses and that the triage knowledge and skills of nurses are insufficient. In the same studies, it has been expressed that the reason for this is that nurses do not have sufficient knowledge before and after graduation and that special courses and certificate programs are not provided after graduation (14).

In a study conducted in Australia, it has been stated that the majority of nurses did not receive triage training and 14% of them did not find themselves competent despite attending triage training (30).

Data collected from 76 nurses working in a training and research hospital in the Turkish Republic of Northern Cyprus (TRNC) showed that they have midlevel triage

Table IV: Studies on Insufficient Triage Knowledge and Skill (11,14,16,27-29).

Source	Title	Research findings	Location and the number of participants	Date
11	Evaluation of Triage Knowledge and Affecting Factors of Nurses Working At A University Hospital	The nurses' triage knowledge was moderate, vocational and postgraduate training affected their triage knowledge.	Nurses working in a Research Hospital in the Turkish Republic of Northern Cyprus (n=76).	2018
14	Evaluation of Emergency Nurses' Knowledge and Performance about Hospital Triage.	The level of knowledge of the nurses employed in the emergency departments was moderate.	All nurses in emergency departments of 8 educational hospitals of Yazd University of Medical Sciences in Iran (n=84).	2019
16	Effects of triage education on knowledge, practice and qualitative index of emergency room staff: a quasi-interventional study	Triage performance score of nurses increased from 48.9 ± 9.9 before training to 59.8 ± 7.6 , two days after training and to 59.7 ± 8.1 six weeks later.	Nurses in Vali Asr Hospital of Fasa University of Medical Sciences in Iran (n=100).	2013
27	Determination of start triage skill and knowledge levels of Prehospital Emergency Medical Staff: A cross sectional study	The triage skill score was 60% and the triage knowledge score was 72.5%. The triage knowledge level of the nurses lower than those from the other professions.	Command Control Center, Provincial Ambulance Service Headquarter (PASH) and Provincial Health Directorate (PHD) within the provincial borders of Gumushane in Turkey (n=127).	2017
28	The knowledge of triage system in disaster among emergency medical service personnel at Saudi Red Crescent Authority in Riyadh city stations	All medical emergency Services personnel did not reflect full knowledge of START triage tool.	All Emergency Medical Services personnel working in the Saudi Red Crescent Authority, in Riyadh, Saudi Arabia (n=235).	2019- 2020
29	Triage skill and associated factors among emergency nurses in Addis Ababa, Ethiopia 2017: a cross-sectional study	Above half of the participants (52.9%) had a moderate level of triage skill.	All nurses working in emergency department of public hospitals in Addis Ababa, Ethiopia (n=189).	2017

knowledge (11). A study has been conducted with the participation of 300 (97.2%) of 324 nurses by Almalahy et al. (2022) to evaluate the triage knowledge level of nurses working in the emergency services in Samsun public hospitals and as a result, it has been determined that 203 nurses (67.7%) had work experience in the triage system and that 111 nurses (37.0%) had insufficient knowledge and skills in the triage attempt during their clinical practice. Also it has been concluded that there were triage protocols and practices, but the nurses did not receive adequate training on this subject and their triage knowledge is at a moderate level (5). In a study conducted in Erzurum and Ağrı in 2014 (4), it has been found that most of the nurses working in the pediatric-general emergency services in five hospitals in this region did not receive training on triage and that they did not find themselves competent in triage, and that it would be beneficial to add triage-related topics to in-service training programs held after graduation. (8). Data collected from 96 nurses working in the Referral hospital emergency department in Rwanda has revealed that they had low (63.6%) triage knowledge and low (47.9%) triage skills. It has been determined that the irregular or one-time triage training provided to nurses did not significantly and positively affect their triage knowledge and skills (33).

Continuous training is provided by developing training programs for triage practices in the pre- and post-graduate training of all nurses working in primary, secondary and tertiary care. It has been reported that nurses, who work in the emergency department in Egypt: 84% of nurses had unsatisfactory level of triage

knowledge score before the program implementation (34), Iran: Triage performance score of nurses increased from 48.9 ± 9.9 before training to 59.8 ± 7.6 , two days after training and to 59.7 ± 8.1 six weeks later (16), in other side the nurses did not have an adequate level of triage knowledge for diagnostic and therapeutic interventions (35), Tanzania: 78% of the nurses working in the emergency center without formal training in either emergency, trauma, critical or intensive care had significant deficits in knowledge and skills regarding patients' triaging (3) and in Lahore, 69% of nurses had poor knowledge of triage (12). Comprehensive training programs and developmental research on triage is needed. It has been determined that nurses contributed positively to triage practice, in line with their knowledge and skill level.

According to the studies on the triage knowledge and practice levels of nurses working in the emergency services in recent years, the triage knowledge levels of the nurses working in the emergency services are at a moderate level (14,29,36). In addition, in a study conducted by Phukubye et al. (2021), it has been observed that the triage knowledge level of nurses working in the emergency services of rural hospitals is lower than that of nurses working in other hospitals (eg, medical faculty and training-research hospitals), and it has been stated that they need more triage training. (37).

There has been a significant increase in the knowledge level of nurses concerning triage within the Covid-19 pandemics. A study conducted just before the spread of Covid-19 in Ethiopia shows that more than half of the nurses had low triage knowledge (38). Three studies

conducted within or after the pandemics have shown a significant increase such that two studies in Saudi Arabia demonstrates a knowledge level above 70% (39,40) and one study in Jordan shows more than 88% (41). The increase might be explained by the fact that knowledge levels of nurses have been influenced by the intensive use of triage in the time of the pandemics and that many of the nurses who were responsible for triage were hired within the pandemics period.

CONCLUSION

Triage is essential for the effective functioning of emergency services. For this purpose, various triage classifications have been revealed in the world. In Turkey, three-unit triage system is used. Correct and effective implementation of triage is affected by the knowledge and skill levels of emergency nurses. The data collected in Turkey and various countries of the world has showed that the level of knowledge of emergency nurses is insufficient and their knowledge level can be increased by providing regular training. In addition to in-service training and courses that will improve triage practice knowledge and skills, it would be beneficial to train triage nurses with "emergency service license in Turkey, in accordance with the Emergency Nurses Association (ENA)'s suggestions.

Conflict of Interest

There is no conflict of interest.

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