



Triage methods in children, a systematic review

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ABSTRACT

Aim and Objective: There are several methods for the triage of children, but the preference for using these methods in different conditions is unknown to many researchers. The purpose of this study is to investigate the most widely used pediatric triage in the 10 years ago published articles.

Method: All internal and external studies conducted in over the past 10 years have been used by the Iran country's databases such as Magiran, MEDLIB, SID, Iranmedex, using triage keywords, children's triage, children's trauma and children's emergencies, as well as Latin databases such as CINHAL, Pubmed, Scopus and Google scholar were reviewed and data were analyzed using meta-analysis (random effect model).

Finding: The main 65 articles from among the 165 articles studied in the children's triage were studied. The most important triage methods used include ESI, telephone triage, PCTAS, and MTS. ESI more and Jumpstart less than others being used.

Discussion: There are different methods for children's triage, but both ESI and telephony triage methods are more commonly used in children's triage.

Keywords: triage, children, systematic review

INTRODUCTION

In emergency situations and crises in children, triage is the primary method of prioritizing in children (1, 2). Triage will essentially determine which individuals need emergency care to save lives (3). Triage is one of the most important principles in children's emergency care and is one of the earliest operations in urgency and has a direct impact on other functional aspects (4, 5). Triage is one of the emergency management units that can realize the diagnosis of an emergency (6). In fact, the triage will create a kind of justice in the allocation of emergency facilities based on the patient's acuity and conditions (7) which can slow down the patient's illness and minimize the incidence of medical errors (8, 9). For this reason, the presence of new methods of triage has increased significantly over the past few years (10). However, the lack of recognition of individual differences in children due to the unique features of childhood has made more difficult the appropriate triage in children. Therefore, it is important to use suitable tools and methods for proper triage (11, 12). On the other hand, the proper methods in the children's triage provide more objective information and the accuracy index in this priority is maximized (13). However there are various methods for triage of children, but unfortunately, these methods are not used permanently in therapeutic environments and the recognition of the use of each methods is not always Obvious (14), Therefore the researchers concluded the present systematically review study to determine the most triage methods used in children.

METHOD

All internal and External studies conducted in over the past 10 years have been used by the Iran country's databases such as Magiran, MEDLIB, SID, Iranmedex, using triage keywords, children's triage, children's trauma and children's emergencies, as well as Latin databases such as CINHAL, Pubmed, Scopus and Google scholar were reviewed and data

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were analyzed using meta-analysis (random effect model) and data sources of selected articles were also collected. All articles were reviewed regardless of language, place of publication, and manner of doing the work. After reviewing and collecting all the articles being searched, duplicate articles were removed. In the next step, the articles were examined based on the criteria for entering the study, which included articles that worked on child triage, articles on the classification of children in crisis and poster conferences on medical emergencies for children. Exit criteria also included data from a case report and letter to the editor. All the ethical issues necessary for the correct use of the extracted articles and the standards for the publication of the work were observed.

FINDING

All 165 papers that were included in the study were initially reviewed, and were selected from the 65 articles that examined children's triage methods for the second phase. In the third stage, articles that specifically selected and reviewed the method for triage were separated. The most important triage methods used in the articles studied include The Emergency Severity Index (ESI), Telephone triage, The Canadian Triage and Acuity Scale (CTAS), The Manchester Triage System (MTS) and JumpSTART (Simple Triage and Rapid Treatment).

The ESI method was the most used among other methods, but JumpSTART was considered as one of the least methods used for triage of children in articles.

DISCUSSION

The 4 triage methods (ESI, telephone triage, PCTAS, MTS) used in most studies are common approaches among children, and the JumpSTART triage for children is the least used among the methods used for triage of children in the articles written, which may be the reason for this. It can be said that the authors and researchers are unaware of the particular methods of triage in children or use in the ages of 1 to 8 years and older than 8 years. However, each of the methods has properties that are referred to other. To better understand the researchers explain the most used methods.

- **The Emergency Severity Index (ESI)** is a five-level triage algorithm that categorizes emergency department patients by evaluating both patient acuity and resource needs. Initially, the triage nurse assesses only the acuity level. If a patient does not meet high acuity level criteria (ESI level 1 or 2), the triage nurse then evaluates expected resource needs to help determine a triage level (ESI level 3, 4, or 5). The ESI is intended for use by nurses with triage experience or those who have attended a separate, comprehensive triage educational program (1).
- **Telephone triage** in primary care comprises numerous components, behaviours, targets and outcomes, all potentially impacting on providing individualised patient care in diverse practice environments. Evaluating such interventions is acknowledged to be challenging but also necessary to identify and support best practice (12).
- **The Canadian Triage and Acuity Scale (CTAS)** is a five-level triage score that has been validated and widely implemented in EDs across Canada and internationally as a reliable and effective triage tool. CTAS scoring systems are available for both pediatric and adult populations. The CTAS consists of five triage levels combining severity of illness or risk with recommended fractile response times to medical assessment supported by a standardized patient presenting complaint list. Level 1 is considered most urgent and Level 5 least urgent. Traditionally CTAS has been applied by trained triage nurses in hospital EDs (1).
- **The Manchester Triage System (MTS)** is one of the most commonly used triage systems in Europe. It enables nurses to assign a clinical priority to patients, based on presenting signs and symptoms, without making any assumption about the underlying diagnosis. The MTS allocates patients to one out of five urgency categories, which determine the maximum time to first contact with a physician (15).
- **JumpSTART (Simple Triage and Rapid Treatment)** is the most widely pediatric-specific MCI triage tool. JumpSTART is based on the START triage tool, which is currently the gold standard for field adult MCI triage. JumpSTART takes into account the unique aspects of pediatric physiology that theoretically should result in more accurate triage assignments in children (4).

CONCLUSION

Unprofessional triage can have adverse effects, and children are at a higher risk for these adverse consequences because they cannot provide accurate information to caregivers for review. Therefore, timely application and proper selection of triage can prevent its subsequent serious complications. Despite recommending multiple sources for using the JumpSTART triage method as the preferred method in children's triage, the use of this method is associated with

less satisfaction among researchers, so the researcher suggests that more detailed research be done on the proper triage method in children.

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