

La Prensa MedicaArgentina

Research Article

Investigating the Effect of Using a Workshop Based On Emergency Deterioration Index Instrument on the Status of Indicators of Emergency Department

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Abstract

Introduction: The main task of the emergency department is to handle bad patients. The factors that indicate the effectiveness of emergency services are its performance measurement by the performance indicators of this section. From the point of view of quality and resources, the triage is considered as a critical step in the work of emergency patients and their satisfaction. The aim of this study was to determine the effect of applying emergency deterioration index instrument on the indicators of emergency department.

Method and materials: This research is a quasi-experimental study before and after an intervention. Samples were performed in a complete way. Finally, data analysis was done by using SPSS software version 16 and also using descriptive and inferential statistics.

Results: The results showed in the section of the indicators of the emergency department the assignment Patients before using this tool (63.15%) that is changed in the first month to (69.15%), in the second month to (64%) and in the third month after the intervention to (75%). The percentage of unsuccessful CPR before the intervention was (83.3%) which was changed in the first month after the intervention to (83.8%), in the second month after the intervention changed to (36%), and in the third month after the intervention reached to (55%). The percentage of discharge with personal responsibility before the intervention was (12.13%), in the first month after the intervention changed to (11.98), in the second month after the intervention changed to (13%).

Conclusion: results show training of triage by emergency deterioration profile and using this tool could significantly improve the indicators of the emergency department but these results are affected by variables such as, emergency room, departmental standards, available equipment, Human resources, and even the status of the clients who come to this section.

Keywords

Emergency department; Emergency ward profile; Emergency department indicators

Introduction

Emergency department because of reception of the most voluminous, diverse, and most sensitive group of patients is very important [1]. The crowds in the emergency departments are a matter of serious concern in all parts of the country [2]. Sometimes a large crowd of outpatient patients leads to a lack of consideration or delay in the treatment of ill patients [3]. Delay in the treatment of patients in the emergency department can lead to the death of patients [4]. As well as delays in admitting patients from the emergency department to hospital beds, will increase the length of hospitalization and increase hospitalization costs [5]. In 2002, the Joint Commission for the approval and evaluation of health care systems published a text, it was concluded that in half of the reports of emergencies, deaths of patients and their permanent disabilities were caused by delayed treatment, and in 31% of cases, emergency congestion was the main cause [6]. These have led the emergency department officials to look for an appropriate executive solution to speed up the identification and differentiation of the wounded and ill patients with non-urgent and chronic complaints. It is here that the triage as the first point of the intersection of the hospital emergency team with the patient and his fellows will play a unique role in fulfilling the final mission of the department [7]. Triage in the emergency department means a quick categorization of patients referring to the emergency department so that patients who need more attention and care are recognized and preventing the delayed delivery of services and the elimination or disability of these patients. In fact, triage means identifying the right patient, using the right sources in the right place at the right time [8]. In the last two decades, standard triage measures have been provided in countries such as Australia, New Zealand (ATS) in which the patient is graded to five levels from resuscitation to non-urgent. In Canada (CTAS), the patient is graded to five levels from resuscitation to non-urgent [9]. In England with the Manchester system, visitors rank as 52 flowcharts [10]. In the United States, the system is developed in such a way as to determine the degree of deterioration in the patient [11]. Among the five-level tools available in the triage, the five-level instrument for emergency deterioration profile (Emergency Severity Index ESI) is welcomed and is currently the most commonly used tool for emergency care in many countries around the world. The purpose of this triage device in the emergency department is a rapid classification of patients based on their deterioration and prediction of required resource allocation [12]. By using this tool, patients are divided into five levels based on the severity of the illness and the amount of need for the facility. The level one containing the maximum damage and the level of five includes the least damage [13]. Emergency deterioration profile is superior in this regard because it requires a triage nurse who, in addition to determining the severity of the patient's condition, also determining requirements of other resources. In this system, patients in the emergency department are categorized by deterioration evaluation and resources. Compared to other triage detection systems which have not been dealt with other

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Received: January 02, 2018 Accepted: January 09, 2018 Published: January 19, 2018

Citation: Yekta ZP, Poyesh V, Abdollahimohammad A, Khankeh H, Hesaraki M (2018) Investigating the Effect of Using a Workshop Based On Emergency Deterioration Index Instrument on the Status of Indicators of Emergency Department. Prensa Med Argent 104:1.

triage systems the inclusion of the required resources in the triage classification is a unique feature of the emergency deterioration. Correct use of the emergency deterioration profile depends on the ability to predict resources which is also best done by an experienced nurse. The purpose is to predict resources, put individuals in specific groups, and help to send the right patient to the correct area of the emergency department. There is also a definite definition of the patient's arrival to the doctor's visit, which is an essential part of both the Canadian and Australian triangulation models. The most fundamental difference between the severities of the emergency with these two models is that the deterioration profile does not determine the time factor to visit the physician. In spite of the fact that the advantage of this tool is the Deterioration of the patient, not the time, but according to the policy of the Ministry of Health, Medical Treatment and Education of Iran, the time is also important and evaluates it according to the determined indicators. The use of this system in Australia has increased job satisfaction, improved organization of the emergency department, and reduce the wait time of the client [14]. In the study by Wuerz et al. [15]. The Emergency severity index Profile (ESI) was a valid and consistent approach and leads to better allocation of resources and manpower and a better segmentation of patients to receive appropriate treatment. In another study by Kariman and colleagues, it was found that the Persian version of the triage system of the emergency deterioration profile has a high degree of accuracy in the triage and can be used as an efficient Hospital Triage system. One of the factors that indicate the effectiveness of emergency services is its performance measurement [16]. Performance evaluation is expressed in terms of performance indicators, and this compares the existing situation with the ideal state. In fact, hospital indicators are the most important Hospital Functional Indicators in various fields. Therefore, it is obligatory to pay attention to these markers. The status of hospital indicators clarifies the hospital performance and with further reflection on these indicators, the strengths and weakness of it can be apparent [17]. The indicators for the emergency department also show the performance of this section in different areas. The main task of the emergency department is to deal with ill patients who are in an emergency condition. From the point of view of quality and resource utilization, the triage is a vital step in the development of the patient's work in the emergency department and it is an important point in satisfying patients [18]. In addition, triage is one of the key elements in the quality management of the emergency department. Because of the geographical extent of the hospital covered area, the number of patients referred to the emergency room, the lack of beds in general and trolleys for the transfer of patients, high mortality rates, High traffic accidents, high Shotgun injuries, high Knives injuries, high Fighting injuries all of them reflect the need for more organization in this section. With regard to the content presentation on the importance of the emergency department and the provision of quality services through a standard triage device to the patient also, due to limited studies on emergency department indicators in the emergency department. The researcher aimed to investigate the indicators of the emergency department of Khatam-al-Anbia hospital in Iranshahr by using this tool.

Method

Design and Participants

The present study is a semi-experimental single-group study before and after an intervention. The community of this study is

the information contained in the case of all patients within three months from the beginning of the profile after the intervention (which is the same as the workshop on how to use the emergency deterioration profile) and also one month before the intervention, they were referred to the Emergency Department of Khatam-al-Anbia Hospital in Iranshahr, and their case was registered in the HIS system. Files with triage form and files whose information is fully documented in the HIS system are the criteria for file entry were studied, and cases that only had a triage form but whose data had not been recorded in the HIS computer system were excluded from the study.

Collecting data

Samples of this study were all client documents from one month before the intervention to three months after the intervention (within 4 months, the total number of clients was 48086). The files of these patients had a triage form for admission to the emergency department and recorded in the HIS system. The computer system with regard to the formula defined by the Ministry of Health, Medical Treatment and Education and Medical Emergency Department Indicators were computed 48086 registered document in the computer system (assigned patients within 6 hours, discharge percentage with personal responsibility and unsuccessful CPR percentage). The sampling was conducted in an accessible and continuous manner. The researcher before performing the triage of the emergency department, one month before the intervention (training workshop on how to use the emergency deterioration profile) Calculated the emergency department indicators by using patient records whose details were fully documented in the HIS computer system. This computer system examines emergency indicators according to the formulas set by the Ministry of Health. It should be noted that simultaneously nurses' performance was monitored by using the DOPS checklist. Also after the intervention (training workshop on how to use the emergency deterioration profile) at the end of the first month, the second month and also the third month During 3 months, the indicators of the emergency department were evaluated in the HIS computer system (end of month 1, second month and third month). The tools used in this study to collect data are Knowledge Survey Questionnaire consists of two parts: the first part is demographic data, including the following: gender, degree, work experience in the emergency department, work experience in the special department and work shift in the emergency department. The second part of the questionnaire contained 10 questions in a scenario from patients referred to the emergency department which was assigned to nursing staff triage emergency deterioration profile method. And timed forms available in the HIS computer system designed by the Ministry of Health, Medical Treatment and Education, were used in order to measure and calculate the indicators of the emergency department (discharge Percentage with personal responsibility, unsuccessful CPR percentage, the percentage of assigned patients within 6 hours). Content validity was used to determine the scientific validity. The data gathering tool which researcher used are library studies and available resources including books, journals valid websites and research on research topics and the checklist in order to determining the credibility was prepared under the supervision of the supervisors and advisors and from the corrective comments of 10 people from the members of the Emergency and Crisis Center of the Ministry of Health and Medical Education of the country and the and Emergencies of Tehran. In order to determine the reliability of the

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instrument, a pilot study conducted on ten nurses, the result of the Cronbach's alpha coefficient was 0/896.

Data analysis

Statistical analyzes were used to analyze the data which, so the type of data were: descriptive statistics as demographic information in the demographic table and analytical statistics were used in Frequency distribution table, relative distribution table and paired t-test. In all data calculations, version 16 of SPSS software was used (Table 1).

Results

Demographic characteristics of study participants

The nurses participating in the study were 4 male and with nursing bachelor degrees. They also participated in the triage workshop using the Emergency Card Profile. All participants had at least 6 months of work experience in the emergency department (one of them had a job in the special department). The performance of all triage nurses in morning shift (24 views), evening (24 views) and night shift (24 views) were investigated.

Effect of using a workshop based on emergency deterioration profile on the status of emergency department indicators

With regard to the analysis of statistical data based on the specified formulas, Indicator of the percentage of assigned patients within 6 hours in all months after the intervention increased compared to the month before the intervention (The implementation of triage using the emergency deterioration profile). The percentage of unsuccessful CPR increased in the first month after the intervention compared to the month before the intervention but in the second and third months after the intervention, it has dropped dramatically. As well as the percentage of discharge with personal responsibility decreased in the first month after the intervention compared to the month before the intervention. But in the second and third methods after the intervention, it increased again. The increase in the number of visits to the hospital, the limited physical and non-standard physical environment, and the status of patients referring to the emergency department in relation to the results of these two indicators (unsuccessful CPR and discharge with personal responsibility) can be cited (Table 2).

Table 1:	Demographic characteristics of the tripartite nurses participating in the
research.	

Variable	Number	
Degree (Bachelor's Degree)	4	
Experience in the emergency department for more than 6 month	3	
Hours of work in the special section	1	
Number of observations in working shift (morning, evening, night)	Morning Evening night	32 32 32

Discussion

The present study was conducted with the general purpose of "determining the effect of using emergency deterioration tool on the indicators of the emergency department". From age-old point view, they were in all age groups. Regarding the "comparison of the frequency of patients assigned to the appointment within 6 hours, before and after the implementation of the emergency deterioration profile", the comparative study results showed The patients were assigned after the application of the emergency deterioration index in the first month after the intervention was (69.15%), in the second month after the intervention was (64%) and in the third month after the intervention was (75%) and Compared to before using this tool (63.15%), it has increased The result of this study is consistent with the study of Movahednia et al. [19] in Iran, based on the increase in the percentage of timekeeping indexes. A comparison of the results of "comparing the frequency of unsuccessful CPR before and after the implementation of the emergency deterioration profile" was also showed the percentage of unsuccessful CPR was (83.3%) before the implementation of the emergency deterioration index was (83.8%) and in the first and second month after the intervention was (36%), and in the third month after the intervention was (55%) and unsuccessful CPR after profile application was reduced. The result is consistent only with the results of the Grossmann studies in Germany [20] and with Hentzen in the United States [21]. However, after the application of the emergency triage profile, the rate of unsuccessful CPR has decreased but it still remains high. This is due to the patient's own situation and the management of recovery operations, which is consistent with the 2010 study in Iran [22]. Also, "in comparing the frequency of clearance with personal responsibility before and after the implementation of the emergency deterioration profile", the comparative study results showed the percentage of discharge with personal responsibility before using the emergency deterioration index was (12.13%). In the first month after the implementation of the emergency deterioration profile, it reached to (98/11), which decreased in comparison with the previous month. These results are in line with the Hentzen study in the United States [21]. But in the second month after the intervention was (19%) and in the third month after the intervention was (13%) which is increased in comparison with the pre-intervention period. The reason for these results is the state of human resources structure, limited space and inadequate equipment of the emergency department. Expressions are consistent with the results of the global study, 2008 [22].

Limitations

Due to the lack of automation in the clinical and emergency departments, it is not possible to track patients on a widespread scale, limiting the possibility to search for various outcomes.

Conclusion

The results of the analysis of the findings show that triage training by emergency deterioration profile has led to an increase

Table 2: Distribution of absolute and relative frequency of emergency department indicators before and after intervention.

Index name Time of intervention	The percentage of assigned patients within 6 hours	unsuccessful CPR emergency	Percentage of emergency discharge with personal responsibility
Month before the intervention	15/63	3/83	13/12
The first month later	15/69	8/83	98/11
The second month later	64	36	19
The third month later	75	55	13

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in the percentage of emergency department indicators determined by the Ministry of Health and Medical Education. Although the nursing function and the indicators of the emergency department are upgraded and the hypothesis is confirmed, the percentage is still high. It can be concluded that upgrading the indicators of the emergency department is not only affected by the emergency deterioration index tool but also depend on many factors, including the Emergency Department's emergency room, emergency room standards, equipment in the emergency department, the emergency department staff, and even the status of the clients referred to in this section.

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Top