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Effect of the establishment of emergency medicine in emergency wards on quality of emergency services

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A B S T R A C T

A considerable number of trained physicians have been organized in emergency wards of Iranian hospitals, leading to high quality caring in these wards. However, a few reports are available in the effectiveness of the establishment of emergency medicine regarding quality of medical emergency cares in our country. The present study aimed to assess the effect of establishing emergency medicine in our country on improvement of medical care's quality in emergency wards. In a cohort study conducted in Besat hospital in Tehran, Iran, 400 consecutive patients referred to the emergency ward of hospital were evaluated. For providing required study samples, two time points of 2008 (without establishing emergency medicine in the hospital, $n = 272$) and 2010 (with establishing emergency medicine, $n = 128$) were considered. For assessment of the quality of emergency cares, two parameters were considered: a) the method of discharge from emergency ward (via patient's self satisfaction against medical advice, discharge on physician decision, or transfer to another ward of hospital); b) length of stay in emergency ward (less than 6 hours, from 6 to 24 hours, and more than 24 hours). In the receiving emergency medicine services, 96.1% were discharged on physician order and only 3.9% leaved the ward by self-satisfaction. Also, none of them needed to transfer to other hospital wards. Besides, in the group with the lack of these serves, 30.5% leaved the ward on their self-satisfaction, 40.8% were discharged on physician order and 28.7% were transferred to other wards ($p < 0.001$). Regarding length of hospitalization in emergency ward, in the former group, the length of stay was <6 hours in 87.5% and 6 to 24 hours in other patients, while in another group, the length of stay was <6 hours in 53.7%, 6 to 24 hours in 42.6%, and > 24 hours in 3.7% of them ($p < 0.001$). Multivariable regression model showed that the establishing emergency medicine could effectively reduce length of stay in emergency medicine adjusted for sex and age (OR = 5.593, 95% CI = 3.124 – 10.015, $P < 0.001$). Also, establishing emergency medicine led to reducing the rate of patients' self-satisfaction for leaving the emergency ward (OR = 0.095, 95% CI = 0.037 – 0.241, $P < 0.001$). Organizing and establishing emergency medicine in hospitals of Iran have led to considerable increase in quality of emergency services considering method of patients discharge from hospital, length of stay in emergency ward, and also patients satisfaction.

Introduction

Emergency medicine (EM) is a global discipline that functions as a cornerstone

for secondary disease prevention and is one of many tools for implementing primary

disease prevention.(1) Prior to the 1960s, emergency medical service has a little role care in the chain of global health care delivery (2-6) .prior this time, there aren't any integrated systems of EM care and physicians or nurses doesn't have any specific training programs in emergency care.(7-9) Also there were no organizations dedicated to providing high quality EM care and to advancing the science and art of its delivery. The responsibility for staffing hospital emergency departments was distributed among physicians regardless of their specialization or level of training(10).

During the 1960s efforts to organize and improve EM care delivery began with simultaneous grass-roots movements in developed countries, with traditionally trained internal medicine specialists, surgeons and family practitioners assuming leadership roles in developing systems to ensure optimal care for all patients with medical emergencies(11-14) . This came at a time when rapid advances in technology, diagnostics and therapeutics provided better opportunities for recognizing and treating medical emergencies (15, 16).

Despite organizing this field of medicine early in 1960 in developed countries, the necessity of establishing emergency medicine as a special medical field was felt in 1996 in Iran and structuring training courses of emergency medicine in the universities was performed in 2000. Finally, in 2001, the first educational team of emergency medicine was established in Iran and training of residents in this medical field was begun. Since that time, a considerable number of trained physicians were organized in emergency wards of Iranian hospitals, leading to high quality caring in these wards. However, a few reports are available in the effectiveness of the establishment of emergency medicine

regarding quality of medical emergency cares in our country.(17) In this regard, some applied criteria were produced to assess different aspects of the effectiveness of establishing emergency medicine including discharge from emergency ward based on patient's self satisfaction against medical advice as well as length of stay in emergency ward.(18, 19) The present study aimed to assess the effect of establishing emergency medicine in our country on improvement of medical care's quality in emergency wards aided by these two criteria.

Methods

In a cohort study conducted in Besat hospital in Tehran, Iran, 400 consecutive patients referred to the emergency ward of hospital were evaluated. For providing required study samples, two time points of 2008 (without establishing emergency medicine in the hospital) and 2010 (with establishing emergency medicine) were considered. Hence, we selected 272 patients in the first time point as the controls (before establishing services of emergency medicine) and 128 patients in the second considered time point (after establishing emergency medicine) in the hospital. The baseline study information including demographic characteristics, chief complaints and primary diagnosis in emergency ward was collected by interviewing with the patients or by reviewing medical records if required. For assessment of the quality of emergency cares, two parameters were considered: a) the method of discharge from emergency ward (via patient's self satisfaction against medical advice, discharge on physician decision, or transfer to another ward of hospital); b) length of stay in emergency ward (less than 6 hours, from 6 to 24 hours, and more than 24 hours). Results were

reported as mean \pm standard deviation (SD) for quantitative variables and percentages for categorical variables. The groups were compared using the t test or Mann-Whitney U test for continuous variables and the chi-square test or Fisher's exact test if required for categorical variables. The multivariate logistic regression analysis was used to assess the effect of the establishment of emergency medicine on quality of care with the presence of two gender and age variables. P values of 0.05 or less were considered statistically significant. All the statistical analyses were performed using SPSS version 19.0 (SPSS Inc., Chicago, IL, USA) for Windows.

Results

In the group receiving emergency medicine services, the average age was significantly lower than the mean age in the control group (30.32 ± 16.24 years versus 38.82 ± 21.36 years, $p = 0.010$). The frequency of male gender in the former group was 78.1% and in the latter group was 65.4% with a significant discrepancy ($p < 0.001$). The main chief complaints in the group receiving emergency medicine services were different types of trauma (63.3%), followed by flank pain (9.4%) and abdominal pain (7.0%); while the most common complaints in another group were traumas (21.4%), abdominal pain (18.4%) and chest pain (8.5%), respectively (table 1).

All patients in former group were first referred to emergency medicine specialist for further assessment, whereas the most frequent referred especial services in the control group included general surgery (21.7%) and orthopedic surgery (14.3%). With respect to the type of discharge from emergency ward, in the receiving emergency medicine services, 96.1% were discharged on physician order and only

3.9% leaved the ward by self-satisfaction. Also, none of them needed to transfer to other hospital wards. Besides, in the group with the lack of these serves, 30.5% leaved the ward on their self-satisfaction, 40.8% were discharged on physician order and 28.7% were transferred to other wards ($p < 0.001$).

Regarding length of hospitalization in emergency ward, in the former group, the length of stay was < 6 hours in 87.5% and 6 to 24 hours in other patients, while in another group, (chart 1) the length of stay was < 6 hours in 53.7%, 6 to 24 hours in 42.6%, and > 24 hours in 3.7% of them ($p < 0.001$).

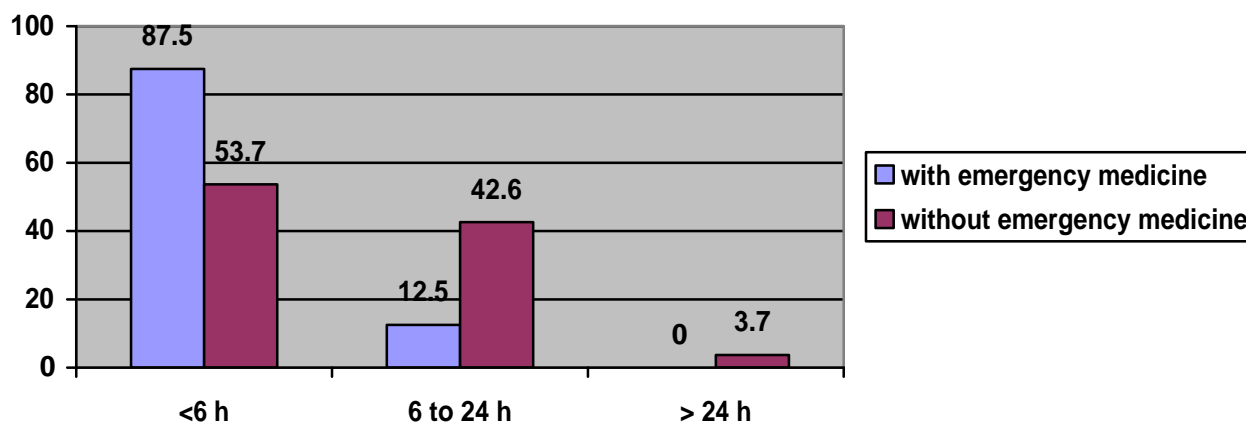
No significant difference was found between total men and women in term of the length of stay in emergency ward (stay < 6 hours in 66.9% of men and 59.0% of women, $p = 0.295$). Also, the rate of patients' self-satisfaction was similar in men and women (20.1% versus 26.2%, $p = 0.073$). But, length of stay in emergency ward was significantly longer in the elderly the younger (stay < 6 hours; 71.1% versus 54.4%, $p 0.001$). Also, the rate of self-satisfaction in patients older than 40 years was significantly higher than that observed in the younger (27.2% versus 18.6%, $p < 0.001$).

Multivariable regression model showed that the establishing emergency medicine could effectively reduce length of stay in emergency medicine adjusted for sex and age (OR = 5.593, 95% CI = 3.124 – 10.015, $P < 0.001$). Also, according to this regression model, establishing emergency medicine led to reducing the rate of patients' self-satisfaction for leaving the emergency ward (OR = 0.095, 95% CI = 0.037 – 0.241, $P < 0.001$).

Table.1 Comparison between patients main chief complaints with and without emergency medicine services

P value	Without emergency medicine services	With emergency medicine services	Complaint type
0.037	50(18.4)	9(7.0)	abdominal pain
0.002	23(8.5)	1(0.8)	Chest pain
0.033	14(5.1)	2(1.6)	vertigo
0.046	20(7.4)	3(2.3)	asthma
0.007	13(4.8)	1(0.8)	ague
0.029	8(2.9)	12(9.4)	flank pain
0.227	14(5.1)	6(4.7)	headache
0.237	5(1.8)	0(0.0)	Loss of consciousness
0.412	5(1.8)	1(0.8)	narcosis
0.775	3(1.1)	2(1.6)	Irregular heathbeat
0.456	7(2.6)	3(2.3)	Drug poisoning
0.121	6(2.2)	0(0.0)	paroxysm
0.011	58(21.4)	81(63.3)	Different type of trauma

Figure.1 Length of hospitalization in emergency ward with and without emergency medicine



First, we showed that in the group which receiving emergency medicine services, most of the patients were discharge based on the physician order and only 3.9% of them leaved ward against physician advices, whereas in the absence of emergency medicine, the notable number of patients leaved the emergency ward based on their own satisfaction and against medical advice. Besides, in the former group, none of the subjects were transferred to other hospital wards for further medical

services, while about one-third of the patients in another group were transferred to other special wards of hospital such as general surgery or orthopedic surgery wards. Our findings first indicate that the satisfaction from emergency services was considerably increased following establishing emergency medicine in line with reducing patient’s own satisfaction. In addition, according to the presentation of special medical services by emergency medicine specialist in emergency ward, the

need for patient's transferring to other special wards was significantly reduced. In total, establishment of emergency medicine in the hospital results in increasing patients' satisfaction and decreasing economic load of medical services on patients.

We also showed considerable decrease in the length of stay in emergency ward following establishing emergency medicine so that the length of stay less than 6 hours was revealed in 87.5% of patients receiving this service, while only in 53.7% of the patients no receiving it.

Therefore, establishment of emergency medicine led successfully to shortening length of stay in emergency ward, reduced emergency services expenditures, increased patients' turnover in emergency ward, and also decreased complications related to the prolonged stay in emergency ward. In two similar studies in Iran by Yousofzadeh et al., it was indicated that the establishing emergency medicine could effectively resulted in shorter stay in emergency ward and higher patients' satisfaction that were both similar to our findings (20).

Conclusion

In conclusion, organizing and establishing emergency medicine in the hospitals can effectively resulted in 1) reducing hospital discharge on patients self-satisfaction because of high patients satisfaction of emergency services, 2) shortening length of stay in hospital, and 3) no needing for patients' transfer to other special wards of hospital.

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