

STUDY OF THE CAUSES OF MORE THAN 6-HOUR STAY IN PATIENTS REFERRED TO EMERGENCY HOSPITAL OF IMAM HOSSEIN, SHAHROOD

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Abstract

Introduction: The increase in the duration of patients stay and failure to determine their timely assignment in the emergency department has a negative impact on the quality-of-service provision and increases dissatisfaction. The purpose of this study was to investigate the causes of long-term residence of patients referred to an emergency department.

Materials and Methods: This cross-sectional study was performed on 400 emergency attendants from Imam Hossein Shahrood Hospital in 2018 so as to investigate the causes of emergency survival. The collected data were analyzed by frequency distribution, percentage and mean using SPSS software.

Results: 51.2% of the subjects were male and 48.8% were female. The mean age was 55.38 ± 20.68 years. The mean of patient stay in the emergency department was 10.44 ± 4.52 hours. The highest time of night shifts (67.5%) and the most prevalent cause of emergency stay was the absence of an empty bed (36%).

Conclusion: The present study shows that the length of stay in emergency departments is high. Significant causes are the patient's survival and prolonged stay in the emergency department which can be attributed to reasons such as population crowding exceeding hospital reception capacity, inappropriateness of beds with clients, delay in counseling and test reports, and lack of timely access to Ancal Medical Center. By eliminating these factors, the duration of service with regards to patients referred to emergency departments can be reduced.

Keywords: Emergency department, Hospital, Causes of residence, Shahrood.

INTRODUCTION

The provision of medical services in patients referred to the emergency department of a hospital is important in the health system (1.2.3). Although medical science has made many advances over the recent years, the quality of the services provided in the emergency department is yet to be significantly enhanced. (4)

With the establishment of emergency medical services in hospitals, the significant reduction in discharge with personal satisfaction and the reduction in the length of stay in the emergency department have led to a significant

improvement in the quality of services provided in the emergency department. (5)

The main objective of an emergency department is to provide the most appropriate care in the shortest time possible. (6)

Therefore, the length of stay in patients referring to an emergency department is a key factor in assessing the quality of care. (7)

Hospital accommodation is one of the most important and simplest indicators of hospital activity, which is used for various purposes such as hospital care management, quality control and hospital planning. (4.5)

The timely treatment of patients by emergency medical professionals reduces the waiting time and hospitalization, improves the degree of satisfaction, and decreases deaths and disabilities. (8)

The main reason for the increase in the length of stay in emergency department is the absence of an ancillary emergency medical specialist on the patient's bedside (9)

Various studies have shown the negative impact of hospital and emergency department traffic on different parts of the patient care standards in the emergency department, which includes late care and an increase in the number of patients who leave the entire emergency department without a complete assessment. (10,12)

According to the instructions of the Ministry of Health and Medical Education, the length of stay in patients of an emergency department is set at a maximum of 6 hours; However, a significant number of long-term patients remain in the emergency department. (13)

Cardin et al. stated that increasing the number of emergency physicians, assigning a coordinating physician and changing hospital policies could reduce the average length of stay in the emergency department from 13.8 hours to 5.9 hours. (14)

Radlo et al. calculated the average length of stay with the presence of emergency medical specialist to be 241 minutes (range of 120-570 minutes). (15)

In addition, Neoprachas et al. showed that by employing experienced and specialized physicians in the emergency department, it would be possible to treat patients over a shorter period of time. (16)

In another study, the average waiting time of admitted patients was reported to be 4 hours before the presence of a specialist and 3 hours after the arrival of the specialist. (17)

A research in the Emergency Department of the University of California assessed the waiting time of patients in these sections, showing that patients expected an average of 56 minutes for a visit by a doctor, and 42 % of the people waited for more than 60 minutes. (18)

Studies in Canada, The United States and The United Kingdom also found that the length of stay in emergency patients for less than 4 hours

during their stay was 76, 72, and 96 hours, respectively. (19)

In order to improve the quality of health care services, it is necessary to consider the waiting time and the length of stay of patients, currently considered as a major issue in hospitals, entailing dissatisfaction with the quality of the services offered. Long waiting time in the outpatient and inpatient departments prevents the provision of desirable services, wastes the time of patients and results in dissatisfaction. Therefore, the aim of this study was to determine the causes of long-term stay and its possible contributing factors in the emergency department of Imam Hossein Hospital in Shahrood.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted in Imam Hossein Hospital affiliated to Shahrood University of Medical Sciences in 2018. The statistical population of the study included people over 12 years of age who were admitted to the emergency department except for pregnant women who experienced more than 6 hours of emergency stay in the emergency department.

Using a check list, a researcher obtained the required data such as duration of hospital stay in terms of hours and demographic data such as age, sex, history of underlying illness and the manner of their transfer to the emergency department, visit time, cause of referral, previous hospitalization and the way out of the patient from the emergency. In a history of underlying diseases, atherosclerotic risk factors, such as diabetes, hypertension and ischemic heart diseases.

The time of referral was considered in hospital shifts in the morning (11-17), evening (17-23) and night (20-8 AM tomorrow). Causes of referral were of cardiac, neurological, gastrointestinal, surgical, and infectious natures, or stemmed from weakness and lethargy, reduced consciousness, and trauma .

The status of the appointment of the patient and the way out of the emergency department were considered as admitted in the sections, without assignment or still observe in the emergency department. Data were analyzed by SPSS version 23 software. Data analysis was performed using descriptive statistics such as mean and standard deviation.

FINDINGS

Findings showed that out of a total of 400 people, 195 (48.8%) were women and 205 (51.2%) were men. The mean age of the subjects was 55.38 ± 20.68 years, and the mean age of women and men was 59.41 ± 18.43 and 51.56 ± 21.99 years, respectively. The highest and lowest number of visits to the emergency department was 270 (67.5%) in the night shift and 38 (9.5%) in the morning shift

Among the subjects, 158 patients had a history of hospitalization. The most common cause of emergency attendance was heart disease (29%) and the least common was infectious diseases (4%). In males and females, heart disease emergency was reported to comprise 26.83% and 31.28% of referrals.

Among those who referred, 19.25% had a history of diabetes, 43.75% had a history of hypertension and 25.25% had a history of ischemic heart disease (Table 1). Of the individuals surveyed, 212 patients (53%) were in personal care and 188 (47%) were transferred to the emergency department by EMS. The

highest rate of transmission by medical emergency and on one's own was 69.15% and 66.04%, respectively, in the night shift (Table 2). The mean length of stay in the emergency department was 10.44 ± 4.52 hours.

The highest and lowest length of stay in the night and morning shifts was 21.65 and 12.86 hours, respectively (Table 3). Moreover, the results of a study on the causes of emergency stay showed that the main reason for staying in emergency departments was the absence of an empty bed (36%), and delay in test report (5.75%), respectively.

Among the women and men referred, the most common cause of emergency stay was 39.49% and 32.68% due to the absence of an empty bed. In women, the lowest cause was delayed test reports (3.08%), and in men, it was related to ultrasound delays and multiple counseling requests were reported with 6.83% (Table 4).

TABLE 1 : Frequency distribution of causes for referral to the emergency department in terms of gender

All		Female		Male		Variable	
Per cent age	Abu ndan ce	Per cent age	Abu nda nce	Per cent age	Abu nda nce		
9.5	38	9.74	19	9.26	19	Mo rni ng	Time of visit
23	92	20.51	40	25.36	52	Ev eni ng	
67.5	270	69.75	136	65.38	134	Nig ht	
39.5	158	42	82	37	76	pos itiv e	History of admission
60.5	242	58	113	63	129	neg ativ e	
29	116	31.28	61	26.83	55	He art	Cause of referral
10.75	43	10.77	21	10.73	22	Ne uro log y	

5	20	3.59	7	6.34	13	Digestive		
10.75	43	10.25	20	11.22	23	Surgery		
16	64	13.34	26	18.54	38	Weakeness and lethargy		
5.25	21	6.15	12	40.4	9	Altered Mental Status		
4	16	4.61	9	3.41	7	Infectious		
14.5	58	14.36	28	14.63	30	trauma		
4.75	19	5.64	11	3.9	8	Others		
19.25	77	22.06	43	16.58	34	positive	D M	Sc ler oti c fa ct or s
80.75	323	77.94	152	83.42	171	negative		
43.75	175	47.69	93	40	82	positive	H T N	
56.25	225	52.31	102	60	123	negative		
25.25	101	27.69	54	22.93	47	positive	I H D	
74/75	299	72.31	141	77.07	158	negative		

Table 2. Frequency distribution of patients according to the time of visit and how to transfer to the emergency department

The patient himself		EMS		Variable	
Percentage	Abundance	Percentage	Abundance		
8.49	18	10.64	20	Morning	Time of visit
25.47	54	20.21	38	Evening	
66.04	140	69.15	130	Night	
100	212	100	188	Total	

Table 3. Average patient stay in the emergency department in terms of grade

SD ± M	Variable	
86/12 ± 7/04	Morning	Time of visit
46/13 ± 5/19	Evening	
21/65 ± 14/65	Night	
10/44 ± 4/52	Total	

Table 4. Reason for long-term residence by gender

Percentage	Abundance	Causes of delay	Gender
17.4	34	delay in counseling	Female
8.2	16	ultrasound delays	
3.1	6	delay in test report	
5.1	10	and multiple counseling requests	
39.5	77	absence of an empty bed	
22.9	47	delay in counseling	Male
6.8	14	ultrasound delays	
8.3	17	delay in test report	
6.8	14	and multiple counseling requests	
32.7	67	absence of an empty bed	

DISCUSS

In the present study, the mean duration of admission to the emergency department was 10.44 ± 4.52 hours. The maximum time of stay was night shift with an average of 21.65 hours, which is due to more people coming to night and evening shifts. Caraca et al. reported that the duration of stay from admission to emergency discharge was about 3 hours, which increased from morning to noon, and declined in the night shift (20). A study, conducted in Pennsylvania by Berthory et al., reported a waiting time of 210 minutes (21).

In the study of Hosseini et al. on Shohada Hospital, the waiting time was reported to be 210 minutes (3.20 hours) (22). A survey carried out at Firoozgar Hospital in Tehran indicated that the average length of stay in emergency patients was about 5 hours and 5 minutes (23)

Our results also showed that the average stay of patients in the night shift was higher than other shifts. The high number of patients in these periods and the evening shift, and the fewer nurses and physicians present at night, results in emergency congestion and the inability to respond.

This study reported a higher length of stay due to the high number of clients, hospitalization congestion, non-emergency visits, delays in access to specialists and delays in counseling for the appointment of clients. Certain studies have also shown that the increase in the occupancy rate of hospital beds is strongly linked to the length of stay in patients of the emergency department (24).

In the present study, most people referred to the emergency department on their own (53%) The study by Jabari et al. (25) in Isfahan showed that a greater proportion of people were transferred by EMS, which is not in line with our study. In the study of Jabari et al. (25), the highest number of emergency visits belonged to the night shift, which is consistent with the present. In the current study, the most common causes of length of stay were absence of an empty bed, delay in counseling, and delay in ultrasound. In all three shifts, the absence of an empty bed has been reported as the main reason for the stay in the emergency department.

A study associated with the University of California showed that the cause of the stay in the emergency department for more than 12

hours was the limitation in hospital beds, delays in radiological and laboratory reports, and delayed counseling, which is in line with the present study (16) A study conducted in Tehran showed that the most common cause of stay in the emergency department was the absence of an empty bed and delay in the report of the tests and radiological findings (26).

CONCLUSION

The present study shows that the length of stay in the emergency department is high, which can be associated with factors such as population congestion exceeding hospital reception capacity, inappropriate number of beds with clients, delay in counseling and test reports, and lack of timely access to Ancal Medical Center. By eliminating these factors, the duration of the service to patients referred to the emergency department can be reduced.

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REFERENCE

1. Ramezanli S, Jahani Z, Poorgholami F, Jahromi FF. The relationship between spiritual intelligence and happiness in cancer patients referring to selected hospitals of Tehran university of medical sciences. *Journal of Advanced Pharmacy Education & Research*. 2020;10(3):57-61.
2. Ren-Zhang L, Chee-Lan L, Hui-Yin Y. The awareness and perception on Antimicrobial Stewardship among healthcare professionals in a tertiary teaching hospital Malaysia. *Archives of Pharmacy Practice*. 2020;11(2):50-2
3. Toor MN, Baig MT, Shaikh S, Shahid U, Huma A, Ibrahim S, Jabeen A, Syed N, Ali I, Sheikh S, Soomro H. Pharmacovigilance as an Essential Component of Pharmacotherapy at Tertiary Hospitals in Rural Areas of Pakistan. *Pharmacophore*. 2020;11(4):71-5.
4. Lee G, Endacott R, Flett K, Bushnell R. Characteristics of patients who did not wait for treatment in the emergency department: a follow up survey. *Accident and emergency nursing*. 2006;14(1):56-62.
5. Horwitz LI, Green J, Bradley EH. US emergency department performance on wait time and length of visit. *Ann Emerg Med*. 2010;55(2):133-41.
6. Zare M, Saeedi H, Abbasi S, Fathi M, Farsi D. Triage in Emergency Department, Manchester The Triage System. Tehran: Teimourzade-Tabib Publication. 2008.
7. Sedaghat M, Dahmardeh H. The Effect of Presence of Emergency Medicine Specialists on DTN Mean Time Patients with ST-Segment Elevation. *EXECUTIVE EDITOR*. 2017;8(2):2342.
8. Asadi P, Kasmaie VM, Zohrevandi B, Ziabari SMZ, Marzbani BBMB. Disposition of Patients Before and After Establishment of Emergency Medicine Specialists. *Iranian Journal of Emergency Medicine*. 2014;1(1):28-33.
9. Langan TS. Do elective surgical and medical admissions impact emergency

- department length of stay measurements? *Clinical & Investigative Medicine*. 2007;30(5):177-82.
10. Hooker RS, Klocko DJ, Luke Larkin G. Physician assistants in emergency medicine: the impact of their role. *Academic Emergency Medicine*. 2011;18(1):72-7.
 11. Carr BG, Kaye AJ, Wiebe DJ, Gracias VH, Schwab CW, Reilly PM. Emergency department length of stay: a major risk factor for pneumonia in intubated blunt trauma patients. *J Trauma*. 2007;63(1):9-12.
 12. Frank M. Emergency Department Length of Stay: A Major Risk Factor for Pneumonia in Intubated Trauma Patients: Carr BG, Kaye AJ, Wiebe DJ, et al. *J Trauma* 2007; 63: 9–12. *Journal of Emergency Medicine*. 2008;34(3):352.
 13. Bidari A, Hatamabadi H, editors. The causes of hospitalization in patients over 24 hours in the Emergency Department of Hazrat Rasoul Akram. Abstracts and presentations promoting quality in the first congress of Emergency Management Tehran, Iran Medical University; 2001.
 14. Cardin S, Afilalo M, Lang E, Collet J-P, Colacone A, Tselios C, et al. Intervention to decrease emergency department crowding: does it have an effect on return visits and hospital readmissions? *Annals of emergency medicine*. 2003;41(2):173-85.
 15. Rathlev NK, Chessare J, Olshaker J, Obendorfer D, Mehta SD, Rothenhaus T, et al. Time series analysis of variables associated with daily mean emergency department length of stay. *Ann Emerg Med*. 2007;49(3):265-71.
 16. Jayaprakash N, O'Sullivan R, Bey T, Ahmed SS, Lotfipour S. Crowding and delivery of healthcare in emergency departments: the European perspective. *West J Emerg Med*. 2009;10(4):233-9.
 17. Mohtasham Amiri Z, Haghdoost Z, Mohseni M, Asadi P, Kazemnezhad Leili E. Patients discharged before and after presence of medical emergency specialists. *Journal of Holistic Nursing And Midwifery*. 2014;24(1):64-70.
 18. Lambe S, Washington DL, Fink A, Laouri M, Liu H, Scura Fosse J, et al. Waiting times in California's emergency departments. *Ann Emerg Med*. 2003;41(1):35-44.
 19. Chan TC, Killeen JP, Kelly D, Guss DA. Impact of rapid entry and accelerated care at triage on reducing emergency department patient wait times, lengths of stay, and rate of left without being seen. *Annals of emergency medicine*. 2005;46(6):491-7.
 20. Karaca Z, Wong HS, Mutter RL. Duration of patients' visits to the hospital emergency department. *BMC emergency medicine*. 2012;12(1):15.
 21. Bertoty DA, Kuszajewski ML, Marsh EE. Direct-to-department: one department's approach to improving ED

- throughput. *J Emerg Nurs.* 2007;33(1):26-30; quiz 93.
22. Hossein M, Shaker H, Ghafouri H, Shokraneh F. Chronometric study of patient Workflow and effective factors on it in Emergency Department of 7 th tir Hospital of Tehran Iran *Journal of Health Administration.* 2010;13:22-13.
23. Movahednia S, Partovishayan Z, Bastanitehrani M. A survey of timing indicators of emergency department at Firoozgar hospital: 2012. *Journal of Health Administration (JHA).* 2013;16(51):95-102.
24. Forster AJ, Stiell I, Wells G, Lee AJ, van Walraven C. The effect of hospital occupancy on emergency department length of stay and patient disposition. *Acad Emerg Med.* 2003;10(2):127-33.
25. Jabbari A, Jafarian M, Khorasani E, Ghaffari M, Majlesi M. Emergency Department waiting time at Alzahra Hospital *Health. Information Mangement.* 2011;8:517-1.
26. Hatam Abadi H, Mohammadi A. Access to acute care in the setting of Emergency Department overcrowding at Emam Hossein Hospital. *Tehran university of Medical Science.* 2005;16