

Journal of Surgery and Trauma

Original Article

A descriptive study of the admitted patients for injuries in a large teaching hospital in 2016

Elham Nazari¹, Mehran Aghemiri², Zahra Ebnehoseini³, Reza Akhavan⁴, Azam Kheirdoust⁵, Mehri Momeni⁵, Hamed Tabesh⁶

- ¹ Ph.D. Candidate of Medical Informatics, Department of Medical Informatics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
- ² MSc Student of Medical Informatics, Department of Medical Informatics, Tarbiat Modares University of Medical Science, Tehran, Iran
- ³ Ph.D. in Medical Informatics, Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
- ⁴ Assistant Professor of Emergency Medicine, Department of Emergency Medicine, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
- ⁵ MSc Student of Medical Informatics, Department of Medical Informatics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
- ⁶ Associate Professor of Biostatistics, Department of Medical Informatics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Corresponding Author:

Tel: +989166118368

Email: TabeshH@mums.ac.ir

Abstract

Introduction: Injuries are the causes of irreparable damages and costs in urban and rural settings. Preventive procedures are effective if correct related information is gathered and provided. Therefore, this study aimed to investigate the injury patterns and related factors in a large teaching hospital.

Methods: The current cross-sectional study was conducted at Edalatian Emergency Center, Mashhad, Iran, in 2016. All study subjects were extracted from the Hospital Information System (HIS). The demographic characteristics and injuries-related factors of 6,350 patients were extracted from the HIS. The extracted variables were emergency severity index (ESI), type of referral, referral reason, insurance organizations, age, anatomic site of injuries, and month of referral. The data were analyzed in SPSS software (version-21) using the descriptive statistics method (frequency and percentage).

Results: The majority of the study population was composed of males (%76.4). In total, 98.3% of the patients were classified into the semi-urgent and non-urgent levels, and 75.6% of the cases were affected in the right upper extremity. The most common age group was between 10-20 (69.4%) years, and the majority of the cases were admitted in June, July, and August.

Conclusion: The current study determined the pattern and most important reasons for injuries' referral to an emergency department. Accordingly, the injuries were more frequent in the young people and active human force in our community. Furthermore, there was a significant difference among the frequencies of injury incidence in the summer holidays. It seems necessary to develop preventive procedures for injuries.

Keywords: Emergency Treatment, Hemorrhage, Wounds and Injuries

Citation: Nazari E, Aghemiri M, Ebnehoseini Z, Akhavan R, Kheirdoust A, Momeni M, Tabesh H. A descriptive study of the admitted patients for injuries in a large teaching hospital in 2016. J Surg Trauma. 2021; 9(4):151-157.

Received: April 21, 2021 Revised: September 18, 2021 Accepted: October 23, 2021

Introduction

Accidents, shocks, choking, poisoning, falling, burning, attack, and violence may be the causes of injuries that can be intentional or accidental(1). The intentional injuries usually targeted adults, and accidental injuries are the results of child negligence. The rate of injury is growing increasingly and commonly occurs at the age of 1-40 years (2-3). More than 5 million people are damaged around the world that accounts for 9% of the death rate per year. It can be considered a big threat to the health of any country. Some injuries have temporary complications; however, a number of severe injuries can lead to disability. In addition, children are more vulnerable to injuries. As a result of injury and violence, 950,000 children under the age of 18 years die annually, and 90% of their injuries are accidental (4-5). Injuries and accidents are responsible for 40% of deaths in children aged 1-14 years (6). Moreover, they are more critical in developing countries and account for 98% of all incidents (7). Millions of injured people require intensive care, and the injuries sometimes cause disability (1-4). Therefore, it is important to manage and prevent injuries, especially in developing countries, because it is targeting young people and imposing costs on them, their families, and the healthcare system of their country (8). It can be helpful to identify and recognize injury patterns and their target population to properly plan, manage, and prevent the occurrence. The present study aimed to investigate the injured patients referred to Imam Reza Hospital, Mashhad, Iran; moreover, it was attempted to examine the epidemiology of injuries.

Methods

This descriptive and cross-sectional study included all injured patients who were referred to a large teaching emergency center (Edalatian Emergency Department affiliated to Imam Reza Hospital, Mashhad, Iran). This hospital is located in Mashhad and is the largest hospital in eastern Iran; in addition, with a capacity of 70 and 82 intensive care unit and inpatient beds, respectively,

and approximately 12,000 square meters, it was built in four floors on the latest international construction standards. It is worth mentioning that all clinical and para-clinical units are embedded at the emergency department.

The patient's information has been extracted from the hospital information system (HIS). Information that violated patient privacy and confidentiality was not included in this study. Moreover, the authors did not apply any age and gender filtering. This study was extracted from a research project approved by the Deputy of Research in Mashhad University of Medical Sciences, Mashhad, Iran (99/270431).

Noisy and missing data were excluded from the study. The extracted variables from the HIS included the emergency severity index (ESI), type of referral, referral reason, insurance organizations, age, anatomic site of injuries, and month of referral. Triage is the foundation of primary care determining the patients' treatment priority process based on the severity of their health level conditions as soon as possible. According to ESI, the triage scale consists of five levels, including resuscitation, emergent, urgent, less urgent, and non-urgent. In this study, resuscitation and emergent levels were marked as 0 (urgent), and the rest of them were marked as 1 (non-urgent) (9). The data were analyzed in SPSS software (version 21) using descriptive statistics. A p-value less than 0.05 were considered statistically significant.

Results

The most common age group was between 10-20 years, and the majority of the patients were referred by companions. Most of the referral causes were right upper limb injuries, and most referrals had no insurance coverage. Furthermore, the majority of the patients had non-immediate triage levels that were referred to the emergency center in August. Table 1 tabulates the patients 'demographic characteristics. The results showed that the most commonly referred cases were males who had upper right extremity-related injuries at a non-urgent level. According to Table 2, the most

frequent injury is observed at the right upper limb in both male and female groups. Regarding the age groups, the most frequency of injuries is found in the right upper extremity (Table 3). The majority of the patients were admitted in June, July, and August (Table 4).

Figure 1 illustrates the frequency of injuries according to anatomic sites.

Table 1: Patients' demographic characteristics

Variables	Levels	N (%)			
Emergency Severity	Urgent	105 (1.6)			
Index	Non-urgent	6,245 (98.3)			
Gandar	Male	4,852 (76.4)			
Gender	Female	1,498 (23.6)			
Type of referral	Companion	6,055 (95.4)			
Type of felefial	Pre-hospital emergency	295 (4.6)			
	Right upper limb injury	4,802 (75.6)			
	Right lower limb injury	941 (14.8)			
Referral causes	Left upper limb injury	378 (6.0)			
Neterral causes	Left lower limb injury	97 (1.5)			
	Other injuries, including facial, abdomen, and chest	132 (2.1)			
	Voluntary	4,316 (68.0)			
Insurance	Health services	896 (14.1)			
	Armed forces	127 (2.0)			
organizations	Social security	936 (14.7)			
	Others	75 (1.2)			
	0-10	864 (13.61)			
-	10-20	403 (6.35)			
Age (year)	20-30	4407 (69.40)			
	30-40	674 (10.61)			
	>40	2 (0.03)			
	April	474 (7.5)			
	May	565 (8.9)			
	June	604 (9.5)			
	July	611 (9.6)			
	August	667 (10.5)			
Month of referral	September	665 (10.5)			
ivionin of referral	October	545 (8.6)			
	November	484 (7.6)			
	December	449 (7.1)			
	January	445 (7.0)			
	February	376 (5.9)			
	March	465 (7.3)			

Table 2: Frequency of injuries by gender

	Ge			
Anatomic sites of injuries	Male	Female	Total	
	N (%)	N (%)		
Right upper limb injury	3,716 (76.6)	1,086 (72.5)	4,802 (75.6)	
Right lower limb injury	659 (13.6)	282 (18.8)	941 (14.8)	
Left upper limb injury	308 (6.3)	70 (4.7)	378 (6.0)	
Left lower limb injury	59 (1.2)	38 (2.5)	97 (1.5)	
Facial, abdomen, and chest	110 (2.3)	22 (1.5)	132 (2.1)	
Total	4,852 (100.0)	4,852 (100.0)	1,498 (100.0)	

Table 3: Frequency of injuries by age

Referral cause		Total					
	0-10	10-20	20-30	30-40	>40		
Dight was a limb in item.	676	295	3347	482	2	4,802	
Right upper limb injury	(78.2)	(73.2)	(75.9)	(71.5)	(100.0)	(75.6)	
D: 1/1 1: 1 : :	95	70	648	128	0	941	
Right lower limb injury	(11.0)	(11.0) (17.4) (14.7)		(19.0) (0.0)		(14.8)	
1.0.1.1	31	17	290	40	0	378	
Left upper limb injury	(3.6)	(4.2)	(6.6)	(5.9)	(0.0)	(6.0)	
Laft lawar limb in issue	17	6	61	13	0	97	
Left lower limb injury	(2.0)	(1.5)	(1.4)	(1.9)	(.0)	(1.5)	
Facial abdaman and about	45	15	61	11	0	132	
Facial, abdomen, and chest	(5.2)	(3.7)	(1.4)	(1.6)	(0.0)	(2.1)	
T-4-1	864	403 4407 674		2	6,350		
Total	(13.61)	(6.35)	(69.40)	(10.61)	(0.03)	(100.0)	

Table 4: Frequency of injuries by month

Months of referral	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Referral reason	N (%)	N (%)	N (%)	N (%)	N (%)								
Right upper	420	481	493	509	559	537	452	215	131	286	315	404	4802
limb injury	(88.6)	(85.1)	(81.6)	(83.3)	(83.8)	(80.8)	(82.9)	(44.4)	(29.2)	(64.3)	(83.8)	(86.9)	(75.6)
Right lower	54	84	111	102	108	128	93	53	37	49	61	61	941
limb injury	(11.4)	(14.9)	(18.4)	(16.7)	(16.2)	(19.2)	(17.1)	(11.0)	(8.2)	(11.0)	(16.2)	(13.1)	(14.8)
Left upper limb	0	0	0	0	0	0	0	160	162	56	0	0	378
injury								(33.1)	(36.1)	(12.6)			(6.0)
Left lower	0	0	0	0	0	0	0	56	25	16	0	0	97
injury	O				V			(11.6)	(5.6)	(3.6)			(1.5)
Facial,	0				0				94	38			132
abdomen, and chest	0	0	0	0	0	0	0	0	(20.9)	(8.5)	0	0	(2.1)
Total	474	565	604	611	667	665	545	484	449	445	376	465	6350
Total	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100)	(100.0)	(100.0)	(100.0)

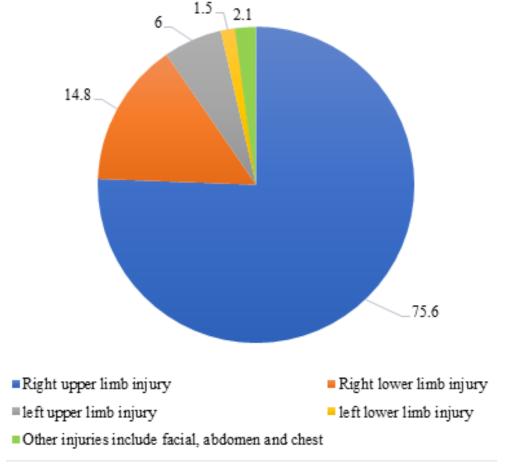


Figure 1. Frequency of injuries according to anatomic sites

Discussion

This study investigated the pattern of injuries and related factors in the emergency department of a large teaching hospital. In line with our findings, the results of a study by Prosser et al. showed a positive significant relationship between injuries and age groups (9). In our study; the most frequent injuries belonged to the age group of 20-30 years. The most commonly referred cases were injured at the upper right extremity. It seems that the right side has more possibility to be affected since most people are right-handed. Furthermore, people's culture can affect the type of injury (10). It seems that the majority of the injured population includes men since they do more outdoor activities in Iranian culture, and basically, the injury incidence on driving and occupational accidents, street strife, and sports are more common among males in Iran. There is a significant relationship between gender and accidental injuries. In addition, there is a significant relationship between age groups and injuries (at the age of 19-24) according to (11). On the other hand, a significant difference was observed between the four months in the spring and summer (i.e., June, July, August, and September) and the rest of the months regarding the frequency of injury incidence due to the summer school holidays (12). Young people are the largest victim of injuries, and given the fact that young people are much more active and effective than others and the possibility of disability, infection, and beauty complications, correct injury treatment is of utmost importance. Due to having too much culturerelated and education-related injury incidence, the revision and improvement of the cultural level of the people to decrease occupational accidents and street strife should be considered. Registration of traumatized people is another important step in this regard.

Regarding the limitations of this study, one can refer to the lack of possibility to interview patients due to the research environment and patients' conditions in this study. The results can be more valuable if the causes of injuries and the patient situations are examined at the point of incidence. Patients with head and facial injuries are not admitted at Imam Reza Hospital because of lacking neurosurgery specialists. To apply an accurate plan, it is recommended to use a multi-center study.

Acknowledgements

The current study was extracted from a research project approved by the Deputy of Research in Mashhad University of Medical Sciences, Mashhad, Iran.

Funding

The present study did not receive any funding support.

Conflict of interest

There is no conflict of interest.

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