

Investigation of the accidents recorded in units affiliated with Torbat Heydariyeh University of Medical Sciences, Iran

Najafi F, MSc¹, Beheshti MH, MSc², Teimori E, BSc³, Choupani A, MSc⁴, Teimori GH, MSc*⁵

1- MSc of Epidemiology, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran. 2- Faculty Member, Dept. of Occupational Health, School of Health, Gonabad University of Medical Sciences, Gonabad, Iran. 3- MSc Student in Health Education, Student Research Committee, Gonabad University of Medical Sciences, Gonabad, Iran. 4- MSc of Occupational Health Engineering, Dept. of Occupational Health, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran. 5- MSc of Occupational Health Engineering, School of Health, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran.

Abstract

Received: March 2017, Accepted: June 2017

Background: Accidents are a major cause of death, injury and disability. This study was conducted to examine the epidemiology of injuries due to accidents in units affiliated with Torbat Heydariyeh University of Medical Sciences, Iran.

Materials and Methods: In this cross-sectional study, all patients in units affiliated with Torbat Heydariyeh University of Medical Sciences were studied from March 2014 to March 2015. Information on accidents were classified according to the International Statistical Classification of Disease and Related Health Problems, 10th Revision (ICD-10). Data analysis was performed using SPSS software.

Results: In total, 8151 people were studied. The average age of injured was 26.5 ± 18.2 years. About 68% of the patients were male and others were female. Blows (34.8%) and traffic accidents (32.4%) were the most common causes of accidents. Most of the accidents occurred in the age group of 15 to 35 years. Statistical tests showed significant correlation between the type of accident and age, gender, location and time of the accident.

Conclusions: The majority of accidents occurred in young men and in urban areas. So planning and implementing policies for prevention of accidents and injuries in this age group as a health priority is a key instrument for promoting safety in the city.

Keywords: Accidents, Epidemiology, Iran

Introduction

The World Health Organization (WHO) defines accident as an event without precedent that causes recognizable damage (1). Today, accidents have highest socio-economic impact compared to other diseases and are the main cause of mortality, hospitalization and disability in the first three decades of life (2). Injuries caused by accidents will be the second leading cause of disability and the third leading cause of death in developing countries around the world by 2020 (3, 4). Injuries as predictable and preventable events, are one of the most important public health challenges that impose great economic and social burden

on society especially in developing countries (2, 5).

The majority of deaths in the 5th decade of life are due to injuries caused by accidents. Accidents are the second leading cause of disability and can cause physical and mental disorders, and in extreme cases can lead to death. They would impose heavy costs on society and family (6).

Mortality rates due to accidents are increasing since 1990 the majority of which are in developing countries (6). In Iran accidents in

* **Corresponding author:** Gholam Heidar Teimori, School of Health, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran.

E-mail: teimorigh1@gmail.com

different age groups are the main cause of hospitalization (7).

The first and most basic step in preventing and controlling accident is identification and assessment of problems and accurate depiction of the current status (8). Due to the differences in the rate and pattern of accidents in different regions and the necessity to identify and evaluate them, this study was done to investigate injuries caused by accidents from epidemiological aspect in units affiliated with Torbat Heydariyeh University of Medical Sciences, Iran.

Material and Methods

This cross-sectional study was conducted to evaluate the recorded injuries caused by accidents in patients referred to health centers, clinics and hospitals affiliated to Torbat Heydariyeh University of Medical Sciences. In this study, all patients who had referred to health centers and hospitals due to injuries caused by electric shock, road accidents, animal attacks, violence, falls, burns, trauma, scorpion and snake bites, drowning, poisoning and other reasons were enrolled from March 2014 to March 2015. Definitions and classification of the information about the type of accidents was based on the International Statistical Classification of Disease and Related Health Problems, 10th revision (ICD-10) (9). The purpose of International Classification of Diseases (ICD) is to systematically collect, compare and interpret the information of diseases and mortality collected in different countries and regions at different times. ICD-10 is contains 21 chapters and each chapter is shown with a Roman numeral (I, II, III, IV, and etc.). For coding injuries, poisoning, and other conditions resulted from external causes should separately codify both the nature of injuries and external causes of them.

Data regarding age, sex, type of accident, and location of accident was extracted from

accidents registration programs with the assistance of the Torbat Heydariyeh University of Medical Sciences from all cases that had been registered in the program from 2014 to 2015. Data were analyzed by SPSS software (version 15, SPSS Inc., Chicago, IL, USA) and descriptive statistical tests.

Results

From total of recorded accidents, Men and women were involved in 68% (5541 persons) and 32% (2610 cases) of accidents, respectively. The average age of injured people was 26.5 ± 18.2 years and the age range of injured was 0 to 99 years. The highest incidence of accidents was in the age range of 15-35 years and the lowest occurred after the age of 70. The most common type of accident was trauma (34.8%) followed by traffic accidents (32.4%), and the least common type of accident was drowning (0.1%) in both genders. The frequency and distribution of registered injuries caused by accidents according to gender is shown in table 1.

In traffic accidents, motorcyclist accident, was the most common cause of traffic accidents. The region of accident was known in 99.7% of accidents from which urban areas (65.1%) had the highest rate, rural areas (27.9%) and the lowest percentage was out-of-town and in rural areas (6.6%).

In terms of place of accident, streets had the highest percentage of accidents (36.7%), Home (33.8%), Highway and road (7.9%), Workplace (6.1%), Public places (3.9), Sports and recreation places (1.7%), school and educational facilities (1.4%) had the lowest rate and unknown and other items had (5.7% and 2.9%, respectively). Most accidents happened during the summer (28.3%) and lowest happened in spring (18%). The highest rate of accidents occurred in October (13.4%) and September (10.5%) and lowest occurred in May (2%).

Table 1: Frequency and distribution of registered injuries caused by accidents depending on the gender and type of accident

Type of accident	Gender				Total		
	Man		Woman		N	%	
	N	%	N	%			
Electrocution	20	0.4	9	0.3	29	0.4	
Traffic accidents	Motorcyclist	600	10.8	387	14.8	987	12.1
	Automobile ride	1149	20.7	217	8.3	1366	16.8
	Pedestrian	180	3.2	105	4.0	285	3.5
Animal attacks	29	0.5	12	0.5	41	0.5	
Violence	373	6.7	86	3.3	459	5.6	
Suicide	74	1.3	146	5.6	220	2.7	
Fall	516	9.3	335	12.8	851	10.4	
Burn	91	1.6	83	3.2	174	2.1	
Strike	1999	36.1	839	32.1	2838	34.8	
Scorpion and snake bites	33	0.6	21	0.8	54	0.7	
Drowning	2	0.0	1	0.0	3	0.0	
Poisoning	348	6.3	297	11.4	645	7.9	
Other cases	127	2.3	72	2.8	199	2.4	
Total	5541	100	2610	100	8151	100	

Figure 1 shows the number of accidents determined based on the months of the year. There was a significant correlation between

the type of accident and age, gender, location and time of the accident ($P < 0.05$).

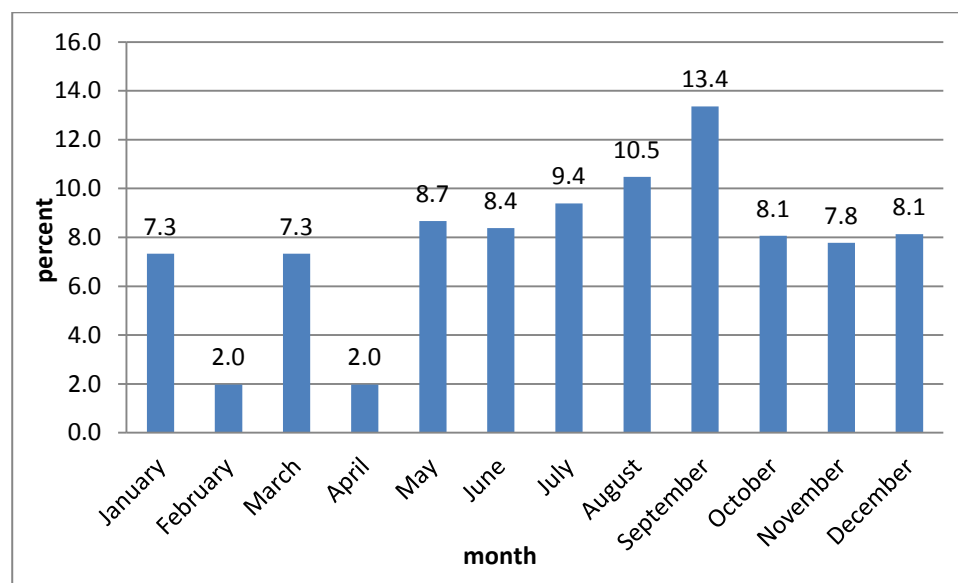


Figure 1: Frequency of accidents recorded in terms of the month of accident

Discussion

In this study, a total of 8151 accidents were investigated. Most of the accidents in this study were reported in men and the youth (15 to 35 years). Souri et al. reported the incidence of injuries and accidents in the age group of 20-25 years was higher than other age groups

in Iran (10). Also in studies conducted in other provinces and cities of the country, the age group of 15-25 years and 25-35 years were the most vulnerable groups in terms of the number of accidents (11, 12). In a study in Golestan province, 75.4% of accidents were in men (12). Men are more prone to accidents because they work in various jobs and have more

responsibilities in the family. Most of accidents in men occur especially in younger age groups that comprise a larger part of the society, causing huge economic burden (13). Most of the events in men, especially in the younger age group could be due to the working conditions and culture of society, since men are more engaged in dangerous jobs than women. Hence, it should be better to perform more activities in the field of providing and improving the safety of men's occupations by paying more attention to intersectoral collaboration and public and local authorities.

According to a recent report by WHO, disabilities in the age group of 10-24 years are more a result of injuries caused by road accidents. In all age groups under 25 years, men are exposed to road accidents more than women (14). The rate of road accident injuries has increased in the past two decades probably because of the mass production of automobiles in the community and the resulted imbalance in the environment. In the study of Abdolvand, strike, traffic accidents and falls were the most frequent causes of injuries. In our study, strike, traffic accidents, and falls were also reported as the most common causes in women and men. In studies conducted on the entire country, the most common type of accidents was road accidents and then falling (10). In a study conducted in China on brain injuries, 60% of injuries were due to traffic accidents (15). To prevent and reduce accidents, especially traffic accidents, cooperation between various organizations is required and forming committees of safe community, education and awareness, and designing and implementing interventions can be effective. The lowest accident rate in this study was drowning (3 cases). In the study by Rafiei et al. drowning accidents were lowest (12).

In the present study alley, street and home were the places with highest rates of accidents. According to the high percentage of traffic accidents, it is expected that more accidents occur outside the home. The results of a study in China showed that almost one-third of

traffic accidents were related to motorcycles (15). In this study, motorcycle accident was also the most common cause of road accidents which can be due to increased use of motorcycles in the city as well as very low compliance with traffic rules.

In this study, urban areas and areas outside the cities and villages had higher frequency of accidents. In the study of Rafeie et al., urban areas with 53% and also in study of Abdolvand et al. urban areas with 96.3% of accidents had the highest number of accidents compared to other regions (11, 12).

According to the report of Legal Medicine Organization, the highest number of accidents each year occurs in September. In the present study the highest number of accidents was recorded in October and then September. In the present and other studies summer was the most eventful season (2). Due to a high load of travel in the summer in Iran especially in September, this seems logical that the number of road accidents followed by the number of injuries increase.

In the past decades, High production of cars changing from traditional to modern lifestyle and lack of growth in other aspects such as creation of safe environments has caused the growing number of non-fatal accidents in the world (21). Granting of driving licenses can be done with new regulations. On the other hand, stricter regulations should be especially implemented for young people. According to result of this research and other studies, variable of Strike is the underlying cause of accidents. This is a very general word and defined by several factors which makes it difficult to analyze and intervene.

Conclusion

Results of this study showed that the majority of accidents in this city occurred in young men and half of the accidents are due to Strike and then traffic accidents. Over half of the accidents occurred in urban areas. Since accidents are preventable, it seems essential to increase awareness of people about safety in

high-risk locations, such as alley, street and home and increase road safety to reduce accidents. Therefore, it should be noted that reconsidering definitions of injuries on national instructions seems to be much necessary in order to recognize the cause of accidents and do preventive measures more precisely by specializing the types of accident.

Acknowledgment

The authors express their gratitude and appreciation to the experts in Torbat Heydariyeh University of Medical Sciences that helped us in providing the necessary information.

Conflict of interest: None declared.

References

1. Moosazadeh M, Nasehi MM, Mirzajani M, Bahrami MA. Epidemiological study of traumatic injuries in emergency departments of Mazandaran hospitals 2010. *Journal of Mazandaran University of Medical Sciences* 2013; 23(98):144-54.
2. Khatibi M, Bagheri H, Khakpash M, Movahed KZ. Prevalence and causes of hospitalization in victims admitted to emergency department of imam hossein hospital in Sharoud. *Knowledge and Health* 2007; 2(3):42-6.
3. Garg N, Hyder AA. Exploring the relationship between development and road traffic injuries: a case study from India. *Eur J Public Health* 2006; 16(5):487-91.
4. Taravatmanesh S, Hashemi-Nazari SS, Ghadirzadeh MR, Taravatmanesh L. Epidemiology of fatal traffic injuries in the Sistan and Baluchistan province in 2011. *Journal of Safety Promotion and Injury Prevention* 2015; 3(3):161-8.
5. Peden M, Scurfield R, Sleet D, Mohan D, Hyder AA, Jarawan E, et al. *World report on road traffic injury prevention*. 1st ed. Geneva: World Health Organization; 2004.
6. Soori H, Nasermodeli A, Eyni E, Movahedi M, Mehmandar MR, Masoudinezhad MR, et al. The effect of mandatory seat belt use legislations on mortalities from road traffic injuries in Iran. *Hakim Systems Research Journal* 2009; 12(1):48-54.
7. Patel A, Krebs E, Andrade L, Rulisa S, Vissoci JRN, Staton CA. The epidemiology of road traffic injury hotspots in Kigali, Rwanda from police data. *BMC Public Health* 2016; 16:697.
8. Davoodi F, Hashemi-Nazari SS, Ghadirzadeh MR. An epidemiology study of road traffic accidents resulting in death: in Lorestan province in 2012. *Journal of Safety Promotion and Injury Prevention* 2015; 3(4):257-62.
9. World Health Organization. *ICD-10: International statistical classification of diseases and related health problems*. 10th ed. Vol 2; Instruction manual. Geneva: World Health Organization; 2011.
10. Souri H, Akbari M, Eini E, Zali Ar, Naghavi M, Koedi Borujeni E. Epidemiology of nonfatal accidents in Iran. *Advances in Nursing & Midwifery* 2008; 18(60):45-50.
11. Abdolvand M, Bahadori A, Khodakarim S, Farsar AR, Golmohammadi A, Safaei A. Evaluation of accidents and incidents at injury registered in medical centers affiliated to Shahid Beheshti University of Medical Sciences (2012-2013). *Journal of Safety promotion and injury prevention* 2014; 2(5):309-16.
12. Rafiei N, Latifi M, Sensebli Gh, Mohammadi A. Epidemiology of injury in Aq-Qala city-Iran, 2007-2012. *Journal of Safety Promotion and Injury Prevention* 2014; 2(4):273-80.
13. Toroyan T, Peden M. *Youth and road safety*. 1st ed. Geneva: World Health Organization; 2007.
14. World Health Organization. Road traffic crashes leading cause of death among young people. Media centre, New WHO report marks First UN Global Road Safety Week. Geneva: World Health Organization; 2007.
15. Wu X, Hu J, Zhuo L, Fu C, Hui G, Wang Y, et al. Epidemiology of traumatic brain injury in eastern China, 2004: a prospective large case study. *J Trauma* 2008; 64(5):1313-9.
16. Leff M, Stallones L, Keefe TJ, Rosenblatt R, Reeds M. Comparison of urban and rural non-fatal injury: the results of a statewide survey. *Inj Prev* 2003; 9(4):332-7.