

# Epidemiology of Trauma in Patients Admitted to an Emergency Ward in Yasuj

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## Abstract

**Background:** Accidents are the most frequent reason for admission to hospitals and the second most common cause of mortality. Accident-related injuries can cause severe financial loss in communities. Understanding the causes and prevalence of accidents is necessary to prevent such losses.

**Objectives:** The objective of the present study was to reveal the causes of accidents leading to admission to the emergency ward of Shahid Beheshti hospital, the referral and educational hospital of the Kohkilooyeh and Boyerahmad provinces in Yasuj.

**Methods:** The present research was a cross-sectional study of the information of 583 patients who were admitted to the emergency ward of Shahid Beheshti hospital due to accidents. Data were extracted from the medical records of patients admitted to the emergency ward of the hospital during the calendar year March, 2011 to March, 2012. The data were then analyzed using SPSS 19.

**Results:** Among the 583 patients admitted to the emergency ward due to accidents, 396 (68%) were male and 187 (32%) were female, with a mean age of 28 years (25-55 years). 257 patients (44.1%) were admitted to the emergency ward from 6 pm to 12 pm and Wednesday with 97 cases (17.7%). Only 176 patients (31.2%) used insurance services during hospitalization. The most common causes of accidents leading to admission were traffic accidents (66.4%), falls and collisions (29.06%), and fights (2.17%). The average hospital fee was 630,253 rials.

**Conclusions:** The findings of the present study show that patients 24-44 years of age were the most likely to experience accidents such as traffic accidents, falls, and fights which inflict irreversible damage on communities and families and cause financial and mental suffering due to the loss of man power. Most of these accidents could be prevented by improvements in public training, driver's education, modification of areas where accidents frequently occur, and enforcement of safety measures.

**Keywords:** Accident, Trauma, Epidemiology

## 1. Background

Due to industrialization, urbanization, and technological development, accidents are currently a major public health threat contributing a large burden of mortality and morbidity (1-3). In addition, in the past few decades, technology, industrialization, rapid motorization, and unsafe driving have increased the risk of accidents and significant financial loss, especially in developing countries. It is estimated that accidents will be the third leading global cause of death by the year 2020 (4-8). People are exposed to different types of accidents at every age, but deaths due to accidents are more common during reproductive ages. Previous studies have shown that 50% of all trauma-related deaths occur in the age group of 15-45 years (9-11).

Every day, nearly 16,000 deaths occur due to various injuries around the world, 22% of which are related to road traffic accidents (12). Of the 600 million accidents that occur annually, more than five million cause death each year,

and even more cause disabilities (5, 13). Accidents are the fourth leading cause of death, after cardiovascular disease, cancer, and stroke (14). It is estimated that one person loses his or her life every three minutes due to an accident. In the United States, the number of deaths due to accidents such as traffic accidents, falls, and murder is greater than the number of deaths due to cancer, AIDS, and influenza among individuals one to 44 years of age. In addition, among the 129 million annual referrals to emergency centers in the United States, more than 22 million (17%) were related to accidents (15).

According to the world health organization (WHO) and the results of previous studies, middle and low-income countries represent more than 90% of global injury cases, and accidents are one of the most important problems in these countries, especially in the Middle East; one in three deaths in this region occur due to accidents (11).

Iran is a large country in the Middle East with a high rate of accidents especially road traffic accidents fatalities

and injuries (16, 17). In Iran, accidents are the second leading cause of death after cardiovascular disease, and the incidence of accidents has increased dramatically, with a currently high rate of road traffic accident fatality and injury (three people per hour). In addition, nearly 3% of all referrals to medical centers are reportedly related to injuries, and accidents are the leading cause of years of life lost (YLL) in Iran (14, 18-20). In previous national studies, traffic accidents were reported to be the leading cause of injury, followed by falls and fights (21, 22). Accidents cause financial damage, some of which is irreversible, and they often impose the expense of lifelong care for mentally or physically disabled victims, as well as the costs related to permanent or temporary loss of man power, including economic and social loss to the community (23, 24). In addition, emergency rooms are stressful working environments for both injured patients and healthcare professionals (25), there is a need to improve the quality of care for accident victims in our country (26), and it is also important to determine the causes and rate of accidents in order to inform social and health care policy making to reduce and prevent financial damages. For this reason, reliable epidemiological studies are vital to guide health policy makers (27).

## 2. Objectives

This study was carried out to determine the causes of accidents leading to admission of patients to the emergency ward of Shahid Beheshti hospital in Yasuj from March, 2011 to March, 2012.

## 3. Methods

The present cross-sectional study collected the information of 583 injured patients who were admitted to the emergency ward of Shahid Beheshti hospital in Yasuj. In this study, the security of patient data was ensured, and ethical committee approval was obtained from the Yasuj University of Medical Sciences (28).

Data was collected by extracting information from the case sheets and medical records of the patients. The data included age, sex, marriage status, date and hour of referral to the emergency ward, location of injuries, and hospital expenses. The data was analyzed using SPSS version 19. Frequency analysis was conducted with respect to sex and age, as well as the time and date of admission to the hospital. Age groups were defined to represent the frequency of accidents in the most important age groups, including children and the elderly. Because no comparison was to be made, only descriptive statistical methods were applied. To present as much information as possible, the tables and

graphs in the results section are produced with no combination or regrouping. As a result, some cells or categories are represented with relatively low frequency.

## 4. Results

The medical records of 583 patients who were admitted to the emergency ward were analyzed. The most common causes of accidents leading to admission to the hospital were traffic accidents, with 387 cases (66.4%), followed by falls (29.06%) (Table 1). The sex proportion of the patients showed that most of the cases (68%) were male, and 53.7% were single. The average age of cases was 28 years (SD = 18.8). Most patients were in the age range of 25 - 44 years (32.1%), followed by the age range of 15 - 24 years (29.5%). The least represented age group was those aged 65 years and older (4.2%) (Figures 1 and 2). Most cases (44.1%) were admitted to the medical ward from 6 pm to 12 pm (Figure 3), (and the most and least number of accidents occurred on Wednesdays and Thursdays, respectively, with respective rates of 17.7% and 10.5%. Only 176 patients (31.2%) used insurance services during hospitalization. The average hospital cost was 630,253 rials.

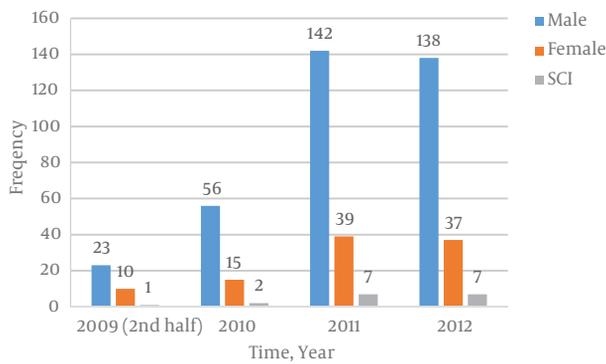
**Table 1.** Causes of Injuries Leading to Admission to the Emergency Department of Beheshti Hospital

Causes of Injuries	No. (%)
Traffic accident	368 (66.43)
Falling or bumping	161 (29.06)
Fighting	12 (2.17)
Poisoning	5 (0.90)
Cutting and burning	4 (0.72)
Shooting	2 (0.36)
Suicide	2 (0.36)
All	554 (100)
Other	29 (4.97)

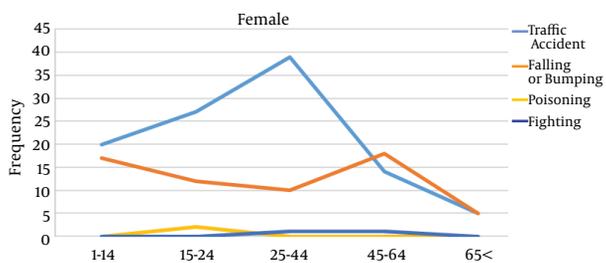
## 5. Discussion

Accidents are the cause of 12% of all morbidities and the third leading cause of mortality, making them a major global public health issue (29).

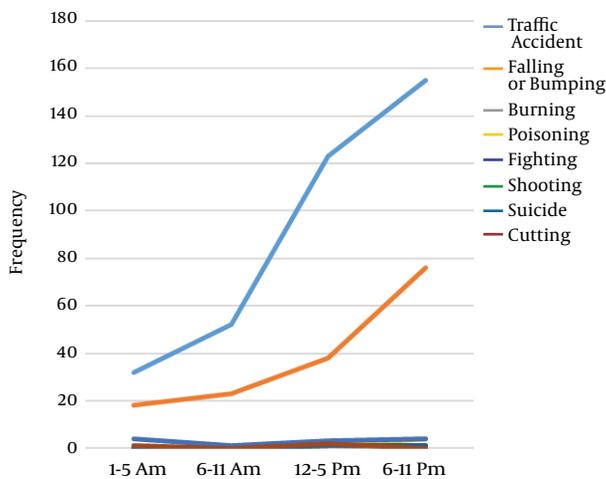
The results of this research show that 68% of accident-related injuries occurred among males. In other words, males were 2.1 times more likely to suffer accident-related injuries. A higher rate of accidents in men has also been reported by other studies from several countries and several cities in Iran (30-32). Tang et al. (33) reported similar



**Figure 1.** Frequency Distribution of the Most Common Causes of Accidents in Men Who Were Admitted to the Emergency Ward of Shahid Beheshti Hospital



**Figure 2.** Frequency Distribution of the Most Common Causes of Accidents in Women Who Were Admitted to the Emergency Ward of Shahid Beheshti Hospital



**Figure 3.** Frequency Distribution of Time of Admission to the Emergency Ward of Shahid Beheshti Hospital

results in their study, and Kahramansoy et al. (34) reported that men were at an increased risk for trauma. Other studies have reported that men are 2.45 times more likely to suf-

fer accident-related injuries in Kenya (35), two times more likely in Keneyas Niasa (36), 2.3 times more likely in Tanzania (37), 7.1 times more likely in Nigeria (38), and 3.6 times more likely in Iran (Rasht) (21). The cause of this difference may be because women are often housewives and more likely than men to be recruited for low-risk jobs, whereas men are more often involved in high-risk jobs.

In the present study among patients who were admitted to the emergency ward, most cases were injured due to traffic accidents or falls. The results show that falling was more common among patients aged 1 - 14 years. As age increases, fall rates seems to decline. In a study in the United States, it was reported that falling (35.7%), fighting (18.3%), and athletic injuries (10.3%) are among the most prevalent causes of accidents, and that patients aged 65 years and older and those aged 18 - 44 had the highest accident rates. In addition, some studies have shown that 10% - 15% of all emergency department visits are due to falling, which primarily occurs in children aged one to four years, who are usually injured at home (39-41). These results are not in accordance with those of the present study. However, the results of the present study were supported to some extent by other studies, such as a study that was carried out in Tanzania that showed that most injuries were caused by traffic accidents (43.7%), attacks and home invasions (23.5%), falls (13.8%), and burns (6.5%). In addition, a study carried out in Qom, Iran showed that most traumas occurred among younger age-groups (37, 42). Ugare et al. (38) also reported that the most common cause of accidents was road traffic accidents, followed by assaults, falls, and gunshot injuries. Rorat et al. (43) reported that the most common cause of death was traffic accidents, followed by fights and being crushed or burned by materials and falling objects. Similar to the present study, the results of a study in Kermanshah showed that the most frequent causes of injury were traffic accidents (53.5%) and falls (28.8%) (44). In reference to a UNICEF report, Fazel et al. (24) suggested that road traffic accidents kill about 28,000 people and injure or disable more than 300,000 people each year in Iran. The driving culture and type of vehicle affect the risk of accidents. According to a report by WHO, the mortality rate of traffic accidents is higher than the global average (90%) in low and middle-income countries, whereas it is lower than the global average (10%) in industrial countries (11, 40). In addition, a study by Yousefzadeh Chabok et al. (45) also showed that the incidence of traffic accidents is high (81% of pediatric trauma cases) in childhood. Among 448 injured patients in Auckland, most cases were males in the age range of 15 - 29 years, and the fewest number of patients were in the age range of 1 - 14 years, with the leading cause of accidents being traffic accidents (50%), followed by falls (19%), hanging (15%), and home invasion (11%) (46). These results

are similar to the findings of the present study regarding the incidence of common accidents.

In this study, most accidents occurred in the age groups of 15 - 24 years and 25 - 44 years. The average age at admission was 28 years, and the data indicates that accidents affecting active and productive members of the community cause serious problems for the injured person, his or her family, and family income. In a study by Shojae Baghini and Nakhaee (22) in Kerman, Iran, 61% of injured patients were 15 - 39 years old, and the most common causes of injury were traffic accidents (36.6%) and falls (9.8%). These results are similar to those of the present study. A study by Karbakhsh et al. (44) showed that the median age of patients presenting with accident-related injuries was 28 years.

In any community, the causes of accidents vary with geographical, cultural, social, and economic factors. The findings of the present study show that patients in the age range of 25 - 44 years, who are in the active stratum of the community, and those in the age group of 15 - 24 years, who are the future active and productive members of the community, are more frequently exposed to accidents. Accidents can cause irreversible injury, loss, or disability of the individuals who produce income or act as family guardians, causing emotional distress to family members and leading to high expenses for treatment and rehabilitation. Most of these accidents could be prevented by public training, improvement of driving culture, and modification of areas where accidents are likely to occur.

More analytic studies are needed on accidents and on the medical care and expenses of accident victims during hospitalization, as well as on rehabilitation after discharge, in order to identify effective preventive actions. It is also necessary to study the effects of accidents on families and communities.

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## Footnote

**Authors' Contribution:** Mohammad Fararoei and Seyed Javad Sadat participated in the research design, data collection, interpretation of results, and writing the first draft of the manuscript. Mohammad Zoladl participated in the analysis and interpretation of the data and in revising

the manuscript. All authors read and approved the final manuscript.

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