Research Paper
Trauma Epidemiology Among Rescued Elderly Clients in Pre-Hospital Emergency Department of Mazandaran

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ABSTRACT

Objectives The aging population is increasing worldwide, and Iran is not an exception. Trauma is the fifth leading cause of death in patients over 65 years, and 28% of these people die as a result of trauma. Therefore, this study aimed to determine the incidence pattern of trauma in 60 years old and older cases divided by age and gender in order to develop strategies to prevent injuries in this high-risk age group.

Methods & Materials In this cross-sectional retrospective study, the data of all the 60 years old and older cases admitted in the pre-hospital emergency system of Mazandaran were extracted during the five years (2010-2014). The data included age, sex, pre-hospital diagnosis, date, type of trauma, mechanism of trauma, location of accident, the victim's status (driver, passenger, pedestrian or other), severity of injury, and season and time of the incident. The obtained data were analyzed using SPSS software version 19, chi-square and Fisher's exact tests.

Results The incidence of trauma in 2014 had a 1.7% increase compared to that in 2010. A total of 6844 cases (62.8%) surveyed were male, and 4054 cases (37.2%) were female. Most of the trauma cases occurred in the age group of 60-64 years with 3680 cases (33.8%). Most trauma cases in the elderly were related to traffic accidents with 6521 cases (59.8%), followed by falls, injuries and assaults with 3494(32%), 517(4.7%). and 257(4.2%) cases, respectively. Most trauma cases occurred in summer with 2982 cases (27.4%), and trauma was most likely to occur between 8 am to 12 pm with 3119(28.6%) cases. According to the Pearson's chi-square test, there was a statistically significant relationship between the time of accident and the final status (P<0.05). The highest incidence of death was in the age group 60 to 64 years. Chance of survival was lower in men than in women.

Conclusion The elderly are more prone to accidents due to physical changes caused by aging and inappropriate environmental conditions. According to the findings of the present study, accidents and falls are the most common cases of incidents in the elderly people. The risk of injury and disability in this age group can be prevented by comprehensive preventive and controlling programs.

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Extended Abstract

1. Objectives

All health care services including pre-hospital emergency services aim to prevent people from getting sick [1]. Since the use of pre-hospital emergency services rises with age [1-3], care for the elderly patients will be one of the main priorities of health care services [4]. Moreover, among the vital components of health care services, ambulance plays an important role in the healthcare chain through providing care and transferring the patients to the pre-hospital setting in emergencies [5]. This study aims to find out the causes of the problems of this age group in the pre-hospital emergency care system in Mazandaran University of Medical Sciences during 2010-2014. The study also designs and implements effective applied studies and practices to prevent and treat this patient group through epidemiological recognition of traumatic missions in the elderly.

2. Methods & Materials

In this retrospective cross-sectional descriptive study, among the information contained in the national standard form related to sending missions to incident centers and national emergency medical information were registered and reported by statistics unit using Access 2007 software. This information included age, gender, the cause of mission, history, type of injury, location, the origin and destination of the mission, result of the mission, and the time profile of mission related to the start of the mission, reaching the location of the incident, end of mission, and returning to extraction site and database. Then, among the recorded data, the required information about people aged 60 years or older who were admitted with trauma at the Center for Emergency Medicine Management in Mazandaran University of Medical Sciences during 2010-2014 were selected and studied.

Ethical considerations in this study were observed taking into account 31 codes of ethics approved by the Ethics Committee for Research of Mazandaran University of Medical Sciences with code of IR.MAZUMS. REC.95.S-143. These codes include coordination for conducting the research, confidentiality of information obtained, non-contradiction of research method with social, religious and cultural values of the community, observing the dignity and rights of the participants, and honest, exact and complete statement of results of the study.

Mechanism of trauma incidence, type of injury, accident location, the origin and destination of the mission, accidental condition of the injured (car driver, passenger, pedestrian), severity of injury resulting from an accident (surface injury, multiple trauma, head trauma, limb fracture, amputation and others), mission outcome and time profile related to the mission including incident time and emergency call were extracted from the forms completed by elderly people. Data were statistically analyzed after entering and registering in the statistical software database of SPSS19. Fisher's exact test and Pearson's Chi-square were also used for data analysis.

3. Results

During the five years of investigation, 77576 elderly people under the mission were registered in pre-hospital emergency care system of Mazandaran University of Medical Sciences. Of them, 10899 cases were of trauma, which included 6521(59.8%) cases caused by traffic accidents. From 2010 to 2014, the growth rate of traumatic missions in the elderly was 73.9% from the first year of investigation to the fifth year. The gender ratio of male to female injuries was 1.7 to 1.

The mean age of the elderly was 70±9 years. Of the total trauma cases, 6844(62.8%) of the elderly were male, and the rest were female. The average age of the affected women was 64.5 years and that of the men was 58.3 years; thus, the average age of elderly women was significantly lower than that of men ($P<0.05$). The number of injured people suffering from trauma on random missions and also by traumas created on non-recurrent missions in the age group of 60-64 years was 3684(33.8%). 54.9% of the trauma cases occurred in urban areas, and the remaining cases occurred on roads.

Of the total traffic incidents, 4493 cases (68.9%) were related to men, and the rest were related to women. The
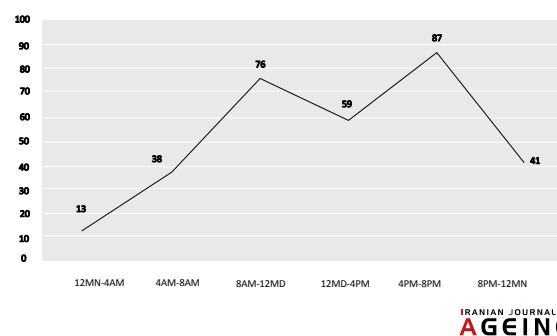

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Figure 1. Number of deaths recorded after trauma during the years 2010-2014 in terms of time intervals in 24 hours

age group of 60-64 years was the most affected group with a frequency of 2590 people (39.7%), followed by the age group of 65-69 years with 1405 people (21.5%). A total of 3314(50.8%) traffic accidents were registered in cities, and the rest were recorded on the road. A total of 1789 accidents (27.4%) were recorded in the summer season, and 1660 cases (25.4%) were recorded in the spring season; these two seasons accounted for most of the accidents. 83.8% of the missions following the accident resulted in the sending of injured to a health center.

34.4% of the injured were occupants, 33.1% were drivers, and 32.5% were the elderly pedestrians. In the men group, most of the injured were drivers (31%) while in the female group, occupants (18.3%) were the most injured. Of the 255 deaths in the accidents, most cases occurred in the age group of 60-64 years, and 133 cases (52.1%) of deaths occurred in road areas. Autumn and summer seasons registered 71(27.8%) deaths in the pre-hospital emergency system (Figure 1). Among these 5 years, 2013 had the most cases of death with 58 cases. The timings 4:00 pm to 8:00 pm and 8 am to 12 noon were registered as the deadliest hours with 76 and 60 cases of accidents deaths, respectively.

4. Conclusion

According to the results of this research, accidents and falls are the most common events in the aging period. Lack of motion and decreased reaction towards risk factors due to old age put the elderly at a greater risk. The highest incidence rate of death in the elderly is after a trauma between 4 pm and 8 pm, and the most common place of incidence of trauma in the event of an accident was on the street following the collision with the elderly pedestrian. These findings can be due to the lack of adequate light on the streets and roads and the lack of pedestrian bridges for the elderly. By implementing an emergency plan, providing public education to drivers of public vehicles and inland vehicles in places where most incidents have been reported, and with the help of first aid at the site of the accident, mortality rate and traumatic impairment in the elderly can be effectively reduced.

Acknowledgments

Conflict of Interest

The authors declared no conflicts of interest.

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