

## Epidmiology of trauma due to driving accidents in patients referring to Shahid Mohammadi hospital of Bandar Abbas (2011)

Najmeh Niroomand Moradinejad <sup>1</sup>, Mahshid Sarafraz <sup>2,\*</sup>, Majid Sarneizadeh <sup>2</sup>, Asiye Pormehr Tabandeh <sup>4</sup>, Soosan Hamedi <sup>5</sup>

<sup>1</sup>Mother and Child Care Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

<sup>2</sup>Student research Committee, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

<sup>3</sup>Mother and Child Care Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

<sup>4</sup>Lecturer at Midwifery Department, Mother and Child Care Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

<sup>5</sup>Mother and Child Care Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

\*Corresponding author: Mahshid Sarafraz, Medical student, Student research Committee, Hormozgan University of Medical Sciences, Bandar Abbas, Iran, Email: Mahshid.sarafraz@gmail.com.

### Abstract

**Background:** As a medical term, trauma is defined as a (non)penetrating injury caused by external factors either deliberately or not. Some types are traffic-related trauma, poisoning, fall, drowning and so on. A big threat to social health and development is the rising rate of car accidents. The present paper was performed with the objective of investigation the epidemiologic status of accident-related trauma among patients taken to Shahid Mohammadi hospital in Bandar Abbas in 2011.

**Method:** The present descriptive research gathered its data through a census from 2008 patients suffering from trauma caused by car accidents in Shahid Mohammadi hospital of Bandar Abbas. The study was conducted in 2011. A checklist was used to collect the required data. Then the data were analyzed using SPSS-16. Descriptive statistics were used to analyze the data.

**Findings:** From among the 2008 patients, 85% (1714 individuals) were male and 15% (294) were female. Their age ranged from 1 to 87 years. The neurology section of the hospital had the highest number of visitors (421 patients, 25%). The orthopedic section had the highest number of hospitalized patients (48%).

**Conclusion:** The findings of this research attest to the presence of risks threatening a number of subjects who were in the low age group. We concluded in the present research that the highest amount of injury was caused to the lower body limbs.

**Keywords:** Epidemiology, Bandar Abbas, trauma

### Introduction

In medical terms, trauma is defined as any type of injury caused by penetrating or non-penetrating external factors either deliberately or not. It included such types as those induced by traffic, poisoning, falls, drowning, etc (1). Trauma is considered as the most prevalent cause of mortality in one's first three decades of life. Reports published by the East Mediterranean Zone Bureau of WHO indicate that despite the prevalence of such problems as infectious diseases and malnutrition, currently accidents stand as the major problem in this region. In recent years, accidents have been among the main three causes of mortality (2). Mortality caused by car accidents accounts for the highest rate of mortality caused by non-deliberate injuries in the world (3). It accounts for 1.2 million

deaths annually and injures over 50 million people (4). As for road accidents, Iran with 30% of such kind of mortality and hundreds of accident-related deaths ranks first in the world (3). Unfortunately, 70% of injuries caused by car accidents occur to the young population (5). According to the estimations of the causes of mortality in the world, car accidents ranking the ninth in 2011 will reach the sixth rank in 2020. In case no serious action is taken, the global rate of mortality will be raised for 65% and in low-income countries it will be increased for 80% (6). Rarely have the preventive ways of these accidents been assessed in developing countries. Therefore, any attempt to investigate the epidemiologic status of trauma in each region is of a great significance in order to know the depth of the issue, its deficiencies and the ways to control it. The findings can help to plan and suggest proper strategies such as

preventive actions and the organization of service provision to reduce the rate of accidents and improve the quality of healthcare provided to these patients (5, 7, 8).

In the present community, a key threat to social health and development is the rising rate of accidents. Accidents, trauma and its consequences take many lives annually throughout the world. Since epidemiologic status of accident-related trauma plays a vital role in the hospital's policies, the present research was conducted with the objective of evaluation of the epidemiologic status of accident-related trauma in patients referring to Shahid Mohammadi hospital of Bandar Abbas in 2011.

## Method

The present descriptive research was conducted as a census on 2008 patients suffering from accident-induced traumas in Shahid Mohammadi hospital of Bandar Abbas in 2011. The data were extracted from HIS (Hospital Information System). They were gathered in a checklist: demographic information (age and gender), type of trauma, mortality cases, final status of patients (discharged, relatively improved, followed up, deceased, and so on), surgery cases, the month the accident occurred and hospitalization section. The diagnostic criteria of trauma were based on the International Classification of Disease (ICD 10). Then the data were analyzed using SPSS-16. Descriptive statistics were used to analyze the data.

## Results

From among the 2008 patients in this study, 85% (1714 subjects) were male and 15% (294 subjects) were female. The average age was  $29.9 \pm 2.7$  years. The visitors aged between 1 to 87 years.

In terms of the highest rate of hospitalization among the hospital sections, the orthopedic sections 1 and 2 had 48% hospitalizations and the neurologic surgery section had 25% of patients hospitalized. The highest rate of visits was in May (12%, 237 patients) while the lowest rate was in April (2%, 41 patients). On the other side, surgery section 2 was the mostly visited section in spring (24%) (table 1). Upon discharge, their status was as the following: 10% were discharged voluntarily, 22% recovered relatively (discharged but on medication), 62% were followed up (required revisits), 4.4% deceased, 1.6% other cases.

According to the findings, the most frequent injury was multiple trauma (57%). Others were head injury (11.1%), injured knee or foreleg (9%), abdominal, waist or pelvic injury (4.9%), injured pelvis or thighs (3.7%) and thoracic injuries (3.5%), respectively (table 2). In the other words, lower limb injuries were more prevalent than upper limb injuries.

The majority of administered patients were between 11 to 30 years (young age range). Table 3 shows the complete characteristics of patients in various departments in relation to gender and outcomes.

In terms of the surgical condition, 153 patients (30%) had only one surgery, 151 had two surgeries (30%), 106 had three (21%), 48 had four surgeries (10%), 23 had none (5%), 10 cases had five surgeries (2%), 10 patients had six surgeries (2%) and 3 had seven surgeries ( $\leq 1\%$ ). Further information including accident-related injuries based on patient's age and number of surgeries and mortalities per hospital section are illustrated in tables 4 and 5, respectively.

## Discussion

Epidemiologically, the findings of the present research are similar to international body of research. The majority of patients suffering from trauma in the target population were the youth. They were physically active and included more men than women, which is in line with the findings of such other researchers as Farzandipour et al. (2004) in Kashan, Davoudabadi et al. (2007) in Kashan and Salimi (2001) in Ahwaz. The majority of the injured were below 30 years of age in this study (9-11). In a similar study conducted in Taiwan, the same age range was found. In the present study the number of injured men was 5.8 times as high as women.

However, in the research conducted by Naghavi et al. in 12 provinces of Iran in 1999, the occurrence rate of non-deliberate events leading to hospitalization among men was 7.3 times as high as women. This could indicate the increasing trend of this problem in societies today (3).

In the present research, it was concluded that the highest rate of injuries were caused to lower limbs as also observed by another research conducted in 2005 by Araghi and Vahedian (5).

**Table 1.** Patients visiting each hospital section per season

Section	Month	Winter	Autumn	Summer	Spring
Neurology	n.	145	132	146	71
	%	29	27	29	14
Ophtalmology	n.	34	53	54	20
	%	22	32	33	12
General surgery	n.	21	31	32	10
	%	22	33	35	10
Emergency Surgery	n.	25	30	60	35
	%	17	21	40	23
Surgery 2	n.	1	3	9	4
	%	6	18	53	23
ICU	n.	10	12	29	6
	%	18	21	51	10
Orthopedic 1	n.	148	152	139	64
	%	29	31	27	13
Orthopedic 2	n.	132	136	127	60
	%	29	30	28	13
Total	n.	516	549	596	270

**Table 2.** Frequency of types of injuries

Type of injury	Total	female	male
Head	11.1	1.5	9.6
Neck	0.7	0.2	0.5
Thorax	3.5	3	0.5
Abdomen, waist and pelvis	4.9	3	1.9
Upper limbs (shoulders and arms)	2.5	1	1.5
Forearm	2.9	0.6	2.3
Wrists	1.7	0.5	1.2
Pelvis and thighs	3.7	1	2.7
Knees and forelegs	9	1.1	7.9
Ankles and feet	3	0.5	2.5
Multiple trauma	57	8.2	48.8
Total	100	20.6	79.4

**Table 3.** The complete characteristics of patients in various departments in relation to gender and outcomes

Section	Variables	Number (%)
<b>Neurology</b>	Gender	
	Male	421 (85%)
	Female	73 (15%)
	Outcome	
	Follow up	253 (51%)
	Recovered	165 (18%)
	Voluntary discharge	72 (10%)
Death	2 (0.4%)	
Surgery	176 (21%)	
<b>Ophthalmology</b>	Gender	
	Male	138 (86%)
	Female	23 (14%)
	Outcome	
	Follow up	49 (32%)
	Recovered	47 (19%)
	Voluntary discharge	11 (7%)
Death	0 (0%)	
Surgery	51 (42%)	
<b>General Surgery</b>	Gender	
	Male	79 (84%)
	Female	15 (16%)
	Outcome	
	Follow up	42 (27%)
	Recovered	45 (29%)
	Voluntary discharge	7 (5%)
Death	0 (0%)	
Surgery	61 (39%)	
<b>Surgery Emergency</b>	Gender	
	Male	129 (86%)
	Female	21 (14%)
	Outcome	
	Follow up	44 (39%)
	Recovered	13 (9%)
	Voluntary discharge	17 (11%)
Death	19 (13%)	
Surgery	31 (28%)	
<b>Surgery 2</b>	Gender	
	Male	6 (35%)
	Female	11 (65%)
	Outcome	
	Follow up	7 (43%)
	Recovered	8 (45%)
	Voluntary discharge	2 (12%)
Death	0 (0%)	
Surgery	0 (0%)	
<b>ICU</b>	Gender	
	Male	49 (86%)
	Female	8 (14%)
	Outcome	
	Follow up	10 (17%)
	Recovered	22 (36%)
	Voluntary discharge	4 (11%)
Death	5 (12%)	
Surgery	16 (23%)	
<b>Orthopedic 1</b>	Gender	
	Male	246 (85%)
	Female	77 (15%)
	Outcome	
	Follow up	43 (31%)
	Recovered	26 (21%)
	Voluntary discharge	32 (25%)
Death	2 (1%)	
Surgery	38 (28%)	

Orthopedic 2	Gender	
	Male	304 (88%)
Female	53 (12%)	
Outcome	Follow up	23 (18%)
	Recovered	27 (24%)
	Voluntary discharge	35 (28%)
	Death	3 (3%)
	Surgery	34 (26%)

**Table 4:** Percentage of accident-related injuries and patient's age

Type of injury	9 <sup>th</sup> decade	8 <sup>th</sup> decade	7 <sup>th</sup> decade	6 <sup>th</sup> decade	5 <sup>th</sup> decade	4 <sup>th</sup> decade	3 <sup>rd</sup> decade	2 <sup>nd</sup> decade	1 <sup>st</sup> decade
Head	0.1	0.2	0.3	0.3	0.6	1.6	3.3	3	1.5
Neck	0	0	0	0	0.1	0.1	0.3	0	0
Thorax	0	0	0	0	0.2	0	0.3	0.1	0
Abdomen, waist, pelvis	0	0	0	0.1	0.3	0.3	0.8	0.5	0
Upper limbs (shoulders and arms)	0	0	0	0.1	0.3	0.3	0.4	0.6	0.1
forearm	0	0.1	0.1	0.2	0.1	0.3	0.8	1	0.1
Wrists and hands	0	0	0	0.1	0.1	0.3	0.4	0.4	0
Pelvis and thighs	0	0	0.1	0	0.3	0.6	1.2	0.6	0.2
Knees and forelegs	0	0	0.1	0.5	0.7	1.4	2.9	2.2	0.7
Ankles and feet	0	0	0	0	0.1	0.3	1	0.8	0.1
Multiple trauma	0	0.4	1.5	3	6.5	10	17.4	13.4	4.5
Total	0.2	0.9	2.3	4.7	9.5	15.2	29.0	22.8	7.4

## Conclusion

Due to the high rate of mortalities induced by accidents among lower age groups, holding preventive instructional courses continuously is recommended in different educational levels and general education. The focus can be the prevention of accidents and their consequences. Moreover, the findings of this research show the susceptibility of a number of research units in lower age groups. Raising social awareness of the epidemiology of car accidents and their consequent injuries can contribute to the initial preventive acts and can therefore help to protect public health.

According to the findings of this research, it is recommended to take into account in prospective research the detailed risk factors as well as physical and contextual conditions. Discovery of these factors can help to devise new interventions to prevent injuries and to lower the costs as well as mortalities mainly induced by traumas and accidents.

**Table 5:** Number of surgeries and mortalities per hospital section

Section	n. of mortalities	n. of surgeries
Neurology	2	369
Ophthalmology	0	307
General surgery	0	182
General surgery	19	46
Section 2	0	7
ICU	52	141
orthopedics	1	2096
others	13	0
Total	87	3148

### Acknowledgement

We should like to thank the esteemed personnel of Shahid mohammadi Hospital in Bandar Abbas. A special thank goes to Ms. Razieh Beigi, the faculty member of Nursing and Midwifery Faculty at Bandar Abbas University. Gratitude is extended to Mr. Iman Tahamtan who greatly helped us to conduct this research.

### Conflict of Interest

The authors declare that they have no conflict of interests.

### References

1. Bledson E, Roberts R, Bruce R. Brady paramedic emergency care. USA, Boston; 1997.
2. Zargar M, Modagheh H. Causes of death in traumatic patients. Tehran University Medical Journal (TUMJ). 1997;55(3):72-5.
3. Akbari M, Naghavi M, Soori H. Epidemiology of deaths from injuries in the Islamic Republic of Iran. 2006.
4. Wang CH, Tsay SL, Elaine Bond A. Post-traumatic stress disorder, depression, anxiety and quality of life in patients with traffic-related injuries. Journal of advanced nursing. 2005;52(1):22-30.
5. Araqi E, Vahedian M. Study on susceptible and damages from motorcycle accidents in Mashhad in 2005. Ofogh-E-Danesh. 2007;13(1):34-9.
6. Kopits E, Cropper M. Traffic fatalities and economic growth. World Bank Policy Research Working Paper. 2003(3035).
7. Otieno T, Woodfield JC, Bird P, Hill AG. Trauma in rural Kenya. Injury. 2004;35(12):1228-33.
8. Parvar N, Moayedi AR, Rasekhi S. An infant Presenting with Cerebrovascular Accident was Diagnosed as a Sick Cell Disease Patient: a Case Report. International Electronic Journal of Medicine. 2016;5(1):23-4.
9. Davoodabadi A, Yazdani A, Sayyah M, Javaheri MM. Trauma epidemiology and its consequences in victims referred to Kashan Trauma Center during 2007-8. Feyz Journals of Kashan University of Medical Sciences. 2011;14(5).
10. Farzandipour M, Ghattan H, Mazrouei L, Nejati M, Aghabagheri T. Epidemiological study of traumatic patients referred to neghavi hospital of kashan. Journal of Kermanshah University of Medical Sciences (J Kermanshah Univ Med Sci). 2007;11(1).
11. Salimi J, Zareei M. The Epidemiologic survey of trauma-patients of the Golestan hospital of Ahvaz. Payesh. 2008;7(2):115-20.