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ORIGINAL ARTICLE

Age-standardized incidence of accidents and injuries: Western Iran from 2013 to 2015

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Abstract

Introduction: Injuries are one of the most important causes of morbidity and mortality around the world. According to the World Health Organization, injuries from traffic accidents cause 5 million deaths and hurt millions of people across the world every year. In this study, we attempted to examine various injuries in different groups in Shahrekord city.

Methods: This is a retrospective descriptive study where data of accidents and injuries related to Shahrekord city during March 21, 2013, and March 20, 2015 (2 years in the Iranian calendar) were used. The obtained data were analyzed in SPSS software (version 16) using Fisher's exact test at the significant level was considered 0.0.5.

Results: The age-standardized incidence for all accidents and injuries showed that the highest incidence, after traffic accidents (468 cases per 100,000 people), are related to falls (51 cases per 100,000 people) and violence (48 cases per 100,000 people).

Conclusions: Accidents and injuries occur more among younger age groups and this increases the burden of disease as well as the economic and psychological damages to society.

Key Words: Accidents; Wounds; Injuries; Iran

Introduction

Injuries are one of the most important causes of morbidity and mortality around the world (1). According to the World Health Organization, injuries from traffic accidents, drowning, poisoning, falls, burns and violence cause 5 million deaths and hurt millions of people around the world every year where more than 9 percent of these deaths happen because of accidents and injuries. Most of these injuries occur at young ages and in men (3), which increases the burden of

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disease, especially in countries of low and middle income (4). Several studies conducted around the world show that injuries and most of all, traffic accidents cause physical, psychological, social and economic damages, forming an important share of public health (5-14).

In this study, we attempted to examine various injuries in different groups in Shahrekord city. Incidence index may indicate the importance of each event in different age and sex groups and to help health managers to do proper planning for prevention of such injuries.

Methods

This is a retrospective descriptive study where data of accidents and injuries related to Shahrekord city during March 21, 2013, and March 20, 2015 (2 years in the Iranian calendar) were used. Shahrekord is located 550 kilometers to the south of Tehran. The city has a mild climate and cold winters. The at-risk population was estimated 723,546 people during two years, of whom 374,696 were male and 348,852 were female.

Health centers and hospitals of Shahrekord provided the data of traffic accidents (including car drivers, bike riders, and pedestrians), violence, falls, poisoning, burns, animal bites, electrocution, and suicide to Shahrekord health network on a monthly basis where the data were registered in the accidents and injuries registry of CDC of Iran.

The standard population which is defined by WHO was used to calculate the standardized incidence of age groups. In the end, data were analyzed using Minitab and SPSS (version 16) software applications. The incidence of accidents and injuries was calculated per 100,000 at-risk population. The obtained data were analyzed by Fisher's exact test at the significant level was considered 0.0.5.

Results

During 2013 and 2014, a total of 4745 accidents happened in Shahrekord. In general, men were found to experience greater incidence of accidents and injuries than women (Table 1). After checking residence of injured people, it was found that accidents mostly happen in urban areas (Table 2).

The season was investigated as a major factor in accidents. The results showed that traffic accidents, as the most significant one, mostly happen in the summer. Other results are listed in Table 3. The mean and median age of victims of accidents and injuries were respectively 30.92 ± 17.04 and 27 years. Age-specific incidence of accidents and injuries is shown in Table 4. The results of this comparison indicate that the accidents and injuries happen more in the 15 to 25-year age group.

Table 1: Comparison of the incidence of accidents and injuries between men and women (per 100,000)

Type of injuries	Frequency		Incidence (per 100,000)		P value
	Male	Female	Male	Female	
Traffic Accident	2403	983	641	281	<0.001
Violence	299	45	79	12	<0.001
Falls	257	114	68	32	<0.001
Poisoning	88	105	23	30	0.097
Burn	81	70	21	20	0.648
Animal Bites	77	30	20	8	<0.001
Electrocution	20	7	5	2	0.021
Suicide	11	4	2	1	0.122
Strike	68	40	18	11	.021

Table 2: Comparison of accidents and injuries between urban and rural population (per 100,000)

Type of injuries	Residence		P value
	Urban	Rural	
Traffic accident	94	58	<0.001
Violence	54	16	<0.001
Falls	56	28	<0.001
Poisoning	15	29	0.005
Burn	25	5	<0.001
Animal Bites	15	13	0.536
Electrocution	0	5	<0.001
Suicide	0.7	2	0.33
Strike	14	18	0.215

The standard population as defined by the WHO was used to calculate the age-standardized incidence of accidents and injuries. The age-standardized incidence for all accidents and injuries showed that the highest incidence, after traffic accidents (468 cases per 100,000), are related to falls (51 cases in 100,000) and violence (48 cases per 100,000). See Table 5 for other results.

Table 3: The frequency of accidents and injuries in different seasons (%)

Type of injuries	Season				Total
	Spring	Summer	Autumn	Winter	
Traffic accident	996 (29.4)	1094 (32.3)	754 (22.3)	542 (16)	3386 (100)
Violence	87 (25.3)	124 (36)	64 (18.6)	69 (20.1)	344 (100)
Falls	96 (25.9)	86 (23.2)	88 (23.7)	101 (27.2)	371 (100)
Poisoning	32 (16.6)	14 (7.3)	44 (22.8)	103 (54.3)	193 (100)
Burn	22 (14.6)	40 (26.5)	37 (24.5)	52 (34.4)	151 (100)
Animal Bites	36 (36.6)	42 (39.3)	12 (11.2)	17 (15.9)	107 (100)
Electrocution	8 (29.6)	9 (33.3)	3 (11.1)	7 (25.9)	27 (100)
Suicide	4 (26.7)	3 (20)	5 (33.3)	3 (20)	15 (100)
Strike	4 (3.7)	4 (3.7)	11 (10.2)	89 (82.4)	108 (100)

Table 4: Age-specific incidence of accidents and injuries (per 100,000)

Type of injuries	Age Groups							Total
	<15	15-25	25-35	35-45	45-55	55-65	>65	
Traffic accident	76	129	73	54	43	32	35	443
Violence	6.	12	9	4	4	3	6	45
Falls	10	13	8	5	4	4	5	49
Poisoning	5	6	5	1	3	2	2	25
Burn	3	7	3	2	2	2	0.8	19
Animal Bites	2	4	3	0.8	2	1	1	13
Electrocution	0.2	0.8	0.6	0.3	0.7	0.6	0.4	4
Suicide	0.2	0.16	0.3	0.3	0.6	0.2	0.16	2
Strike	0.2	4	2	1	2	1	1	12

Table 5: The age-standardized incidence of accidents and injuries (per 100,000)

Type of Accident	Age Groups							Total
	<15	15-25	25-35	35-45	45-55	55-65	➢ 65	
Traffic	295	781	473	400	381	386	437	468
Violence	25	75	56	32	33	41	69	48
Falls	40	79	52	34	37	54	58	51
Poisoning	18	39	34	11	24	29	25	27
Burn	10	39	19	16	23	19	10	21
Animal Bites	7	23	17	6	18	12	17	15
Electrocution	0.7	5	4	3	2	7	5	4
Suicide	0.7	1	2	2	5	2	2	2
Strike	0.7	27	11	11	20	14	12	15

Discussion

The results of this study demonstrate that the incidence of accidents and injuries in men overrides the rate in women. Results of other studies show similarly that the incidence of accidents and injuries occur mostly for men (15-17). It seems that males are exposed to more risky behavior. It should also be considered that in Iran, more drivers are men which seems to have a more important role in determining the sex ratio of accidents where almost all types of accidents occurred significantly more in men than in women.

Although a large proportion of the injuries are road traffic injuries, and this may override other types of accidents and injuries, this study showed a relatively high incidence of other types of accidents and injuries as well. Other studies show that fall, strike, and burn have also relatively high incidence (5, 10, 16, 17, 19). Thus, they have a special impact on public health and should not be ignored.

Iran has changed from a traditional to a relatively modern country during recent decades, which has led to increased urbanization and apartment life. Following these changes, domestic accidents and injuries have increased, and they are mostly found among urban residents. Reports of studies conducted in Iran and other countries indicate that accidents happen in urban more than rural areas (5, 7, 16, 17).

Seasonal variations cause changes in entertainment, traveling, and use of facilities so that the results of this study showed that because of more traveling in the summer, which leads to more traffic on the road, traffic accidents increase during the summer. Moreover, in the winter, due to use of heating appliances and also slippery roads, burns, falls and the strike was observed more.

Age can be considered as a factor which affects the behavior of individuals to a great extent. In addition to its impact on personal health, age may lead tod decreased or increased psychological, the social or economic burden of society. This study, similar to most other studies, show that the average age is about 30 years and evidently, most of the accidents and injuries happen in the age group of 25-35 years (15, 17-19). The standardized incidence of accidents and injuries demonstrate that the highest proportion of them is related to the age group of 15-25 years.

Given the results of this study and the high incidence of accidents at young ages and based on the index of disability-adjusted life years (DALY), which is affected by years of life lost (YLL) and years lived with disability (YDL), it seems that the burden of diseases caused by accidents and injuries will increase in case such accidents are not prevented.

Conclusions

In summary, accidents and injuries occur more among younger age groups, and this would increase the burden of disease and economic and psychological harms on society.

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Authors' Contribution:

Moslem Taheri Soodejani: study design, interpretation, critical revision of the manuscript for important intellectual content and interpretation and statistical analysis. Azimeh Ghaderi: management & collection of data. Hossein Fallahzade: material support and study supervision. Mohammad Tabatabaei: drafting of the manuscript.

Conflict of interest: None

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