

## Characteristics of Motor Cycle Accidents in the City of Kashan in Year 2004

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One of the major traumas referring to the treatment centers are motor cycle riders. The purpose of this research was to describe characteristics of motor cycle traumas in the city of Kashan in year 2004. This descriptive retrospective research was conducted by referring to the data bank of Trauma Research Center of Kashan University of Medical Sciences and Health and Treatment Services. Statistical analysis was performed on data to extract the motor cycle accidents cases from the other existing records and analyzed by using SPSS:PC 16.0. The result of analysis indicated that there was a significant difference between the proportions of injuries for the age groups ( $p=0.000$ ). In addition, a significantly higher proportion of the injured cases had elementary education level. It was concluded that motor cycle accidents are more apprehensive than other types of traffic accidents so further studies are needed to identify different aspects of the event and overcome its mortality and morbidity.

**Key words:** Motor cycle, Trauma, Frequency.

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Motor cycle as an attractive vehicle of transportation has resulted in increase in use of this mean of travelling. Associated with this increase in use is the increase in the number of accidents that range from mild to fatal. There are numerous reports regarding motor cycle injuries worldwide<sup>1-8</sup>. Recent statistics by the U.S. National Highway Traffic Safety Administration (NHTSA) revealed that in 2006, 13.10 out of 100,000 cars ended up in fatal crashes in comparison to 72.34 per 100,000 registered motorcycles. Motor cycle accident is more fatal than the other motor vehicles since the rider has limited physical protection during the accident. Approximately 80 percent of reported motorcycle crashes result in injury or death; a comparable figure for automobiles is about

20 percent<sup>9</sup>. In 2004, figures from the UK indicated that motorcycles have 16 times the rate of serious injuries compared to cars, and double the rate of bicycles. The motorcycle riders aged below 40 are 36 times more likely to be killed than other vehicle operators of the same age<sup>10</sup>. A study in Malaysia showed that motorcycle crashes constitute approximately 60 percent of all road accidents and a substantial proportion of the victims were children 16 years and younger<sup>11</sup>. This research was designed to examine the characteristics of motor cycle accidents in entire year of 2004 in the Kashan district, located in the central part of Iran.

### MATERIALS AND METHOD

All of the recorded files of trauma accidents admitted to Shahid Beheshti hospital of Kashan University of Medical Sciences in the year 2004 were examined. Demographic variables including age, job, place of accident and education level was identified and analyzed using SPSS: PC

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16.0. Overall, 1862 cases of motor cycle traumas were recorded for this year. Descriptive as well as inferential statistics including chi-square test of significance were employed to report the result. All the results were presented in tables and figures using Microsoft Word.

**RESULTS**

There was a significant difference between the proportions of injuries for the age groups ( $p=0.000$ ), so that 1862 cases (41.8%) were in the age group 19-30 and (24.7%) were under the age 18 years. The result of analysis also revealed a significant differences between the proportions of injuries and occupations ( $p=0.0001$ ). Workers were

more injured than other occupations. The difference between the level of education and injury was also significant ( $p=0.0001$ ). Individuals with elementary education level had a higher incidence of injury with 58.8% table 1. Chi square test of significance indicated that there was a significantly higher proportion of injuries occurred in the avenues ( $P=0.0001$ ). This result is presented in table 1.

Table 2 presents the frequency of accidents according to gender and locations of the incidents. A significantly higher proportions of accidents occurred in avenues (75.2%) and more male than female were injured (90.8)( $p=0.0001$ ).

Figure 1 presents the frequency distribution of motor cycle accident victims according to the occupation. As it is evident, a significantly higher frequency of accidents occurred for the workers

**Table 1.** Characteristics and frequency of motor cycle injuries according to the age, education and occupation of the victims

Frequency Percent	Frequency	Age group (year)
5.0	94	under 12
24.7	460	12-17.9
41.8	779	18-29
13.4	249	30-39
6.4	120	40-50
4.2	78	51-60
2.5	47	61-70
1.9	35	70-100
100	1862	Total
	Education	
2.7	50	Child
6.7	125	Illiterate
58.8	1094	elementary school
28.7	534	high school
3.1	57	after diploma
.1	2	master or higher
100.0	1862	Total
	Occupation	
2.7	50	child
3.9	73	staff
33.4	622	worker
3.3	62	farmer
5.0	93	unemployed
16.4	305	students
19.2	358	businessmen
6.6	122	housewives
8.1	150	others job
1.5	27	unknown
100.0	1862	Total

**DISCUSSION**

The purpose of this study was to describe the characteristics of the motor cycle accident injuries referring to Trauma centers for treatments in the entire year of 2004. Descriptive research of this type provides the bases on which the motor cycle traumas can be more carefully scrutinize on subsequent years. The result of this research showed that a considerable proportion of the motor cycle accident victims were very young; approximately, 25 percent were less than 18 years of age. Considering this age group, the

**Table 2.** Frequency of motor cycle injuries according to gender and accidents' location

Frequency Percent	Frequency	Gender
90.8	1691	male
9.2	171	female
	Location	
75.2	1400	Avenue
17.0	316	Road
1.2	23	Free way
.4	7	House
.3	6	Work place
5.7	107	Village
.2	3	Others
100.0	1862	Total

victims are not still legally qualified to ride the motor cycle since they are under the age for obtaining a motor cycle license. Despite many attempts made by the health authorities and legal sources to discourage such risky behavior, more and more young people at this age group endanger their life and others. Psychologically looking at the matter, such incidences may be due to a so called “personal fable” syndrome. The personal fable is described as a cognitive distortion in which adolescents believe that they are the focus of everyone else’s attention and concern<sup>12, 13,14</sup>. In this regard, three types of the syndrome have been identified in the literature: *Omnipotence* type relates to those adolescent believing that they have great authority or power over events; they think they are capable of what most others are not. *Invulnerability* refers to a belief held by the youngster that he cannot be harmed or affected in the ways others can. And finally, *uniqueness* is the adolescent’s belief that he/she and his/her experiences are novel and unique to him/her. According to the belief presented by Bright (2008 ) the omnipotence does not seem to be related to delinquent behavior<sup>15</sup>. Contrary to omnipotence, invulnerability relates to high risk behavior and delinquency. Risky behaviors such as performing acrobatic actions of riding on one wheel of motor cycle, refusing to wear helmet and ignoring the traffic rules, riding with lights off and using mechanically defective motor cycles may all contribute to the occurrence of accident<sup>14</sup>. However this is only an assumption and needs further evaluation and studies.

The highest frequency of injury was found in the age group 18 to 30 years. This age

group includes individuals who are mostly workers and considering the economic situation of Kashan as an industrial region, they use the vehicle to go work. An eye ball inspection of table 1 confirms this condition. Motor cycle is a convenient, quick and, perhaps, cost effective mean of transportation for the workers who are in distressed socioeconomic condition. A considerable number of traumas have occurred in age groups under 12 or even 5 years of age. These victims are the one who sit in the back of the driver and become involved in accident once there is a collision.

The pattern of injury in this study regarding age of the victims was similar to what was reported from Nigeria<sup>4</sup>, in which the authors reported 30 years as the mean age of motor cycle victims.

Men are about 9 times more likely to be injured than women. This is similar to many other reports<sup>11,16</sup>. The higher ratio of male to female in this study is due to the fact that only men are permitted to drive motor cycles in our society, and those females who are injured in the motor cycle accidents are either pedestrians or passenger riders. Based on a report for motor cycle accident within 10 years, it was found that about 90 percent of the motorcyclists injured in crashes were motorcycle riders (oper-ators) and 10 percent were motorcycle passengers<sup>15</sup>.

The majority of the victims of motor cycle accidents were elementary or high school graduates. This may indicate that the individual with higher education are more aware of the dangers and risks of accident when riding the motor cycle and take the precautionary measures more

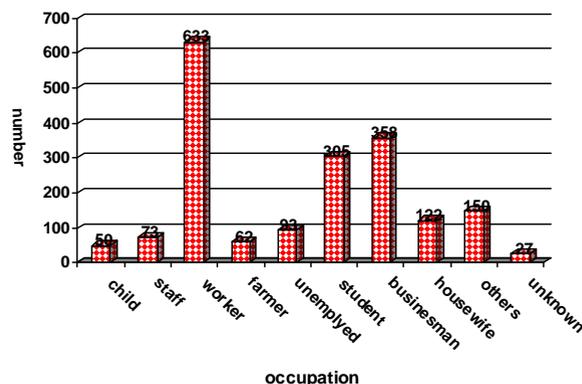


Fig. 1. The frequency of motor cycle trauma from according to occupation

carefully, or they may have higher socioeconomic level and use safer vehicles.

Preventive measures such as presenting education programs in high schools and factories in addition to reinforcing the law for riding and driving motor cycles may reduce the number of accidents and the various hidden costs of accidents including the economic and social consequences. Of course to overwhelm the high number of accidents and covering the economic problems a well-planned public transportation system should be planned. These costs are very difficult, if not impossible, to be estimated. One may be too many for a family. Some of the victims are the head of family and the entire family is dependent on the income earned by the victim and thus may face catastrophic consequences.

### CONCLUSION

The figures for motor cycle accidents are more apprehensive than other types of traffic accidents so further studies are needed to identify different aspects of the event and overcome its mortality and morbidity.

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