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A Survey on Injuries in Kerman Residents 2005

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Abstract: This study was conducted to determine the profile of injuries in Kerman citizens. In this population-based cross-sectional survey a total of 845 households in Kerman, Iran were selected for inclusion in the study using cluster sampling from March through June, 2006. Ten skillful and interested interviewers made interview with 845 families based on cluster sampling method in the city of Kerman and filled a standard questionnaire based on World Health Organization (WHO) guidelines. In total 3324 individuals were enrolled in the study, including 1652 females and 1672 males. Forty eight injuries were found (CI 95%: 1.1-1.9%), the most common of which was wounding (12 cases) and the least common was head injury (2 cases). The most common place of injury occurrence were the street and the roads (22 cases) and then the house (18 cases) and the most common mechanism of injury was a fall (7 cases) and then motor vehicle accident (5 cases). Five of the injuries were intentional: one self-induced and the other 4 were aimed upon others. The most commonly involved motor-vehicle was motorcycle (6 cases). The most common reported disability was limitation of activity. In 3 cases the victim had lost his job, in 5 cases had been forced to borrow money and in 2 cases had sold his property on pressure. Although the figures resulting from present study are low in comparison to their global counterparts, indicate the necessity of paying attention to this social problem and performing larger studies.

Key words: Injury, household, Kerman

INTRODUCTION

Injury is defined as physical damage resulting from introduction of intolerable energy to human body. Around the world and especially in the mid and low-income countries, injuries and violence are among the most common causes of mortality and morbidity and unfortunately the problem is expanding according to global statistics (Sethi *et al.*, 2004). The etiology of this problem should be sought in the egress to new epidemiologic, economic and social conditions. This is the case, while especially in these countries there is no exact data available on the subject of injuries and violence. Road accidents constitute the second cause of death in all age groups and the first in the under 40 age group in Iran, but in spite of the fact that the rate of injuries in this country is increasing, it is called the neglected epidemics (Montazeri, 2004). Most studies conducted in Iran are based on secondary data (i.e., hospital records or police documents) (Montazeri, 2004). As it will be

discussed later, this type of data collection may be prone to errors and other ways have been suggested. Considering this, there is a clear need for more informative data on the profile of injuries in the country. This study was conducted in an effort to clarify the condition by a household survey (WHO, 2004) and compare it with global statistics, using the WHO (Sethi *et al.*, 2004) and CDC guidelines (Holder *et al.*, 2004). It was taken for granted that the data collected in this study, would be a better representative for actual figures. As far as we are aware such a study has not taken place, neither in methodology nor on the topic.

MATERIALS AND METHODS

A total of 845 households in Kerman City (the capital of the largest province of the country located in Southern Iran) were selected for inclusion in the study using probability-proportionate-to-size cluster sampling from March through June 2006. To ensure that the sample

is adequate p was set to 0.5 (50%) and for a 95% confidence interval ($Z_{1-\alpha/2} = 1.96$) precision of 0.05 and attrition rate of 10% the sample size was calculated 384. This was then multiplied by a design effect of 2 to take account of cluster randomization. Each cluster was divided into some segments and then considering the number of families in each segment, using the probability proportion to size method, households were examined in each segment. One house was chosen in each segment in a random manner and 30 consecutive houses were examined. Field supervisor was elected and had to introduce families ten skillful and interested interviewers, all of them staff of health centers and familiar with this type of study, were trained. They attended the houses of the citizens and filled the questionnaires by asking the senior female in the household (Sethi *et al.*, 2004) and if not available the oldest attendant. If no one was present in the house, the interviewer committed again and if no one was present, the case was entered as missing. So was the case if the house attendants refused to answer to the interviewer. The respondents were asked whether anyone in the household had experienced an injury within the last year. Each interviewer had to cover 60 to 90 houses. The questionnaire was prepared using the guidelines of WHO and CDC and was field tested on 10 individuals. It consisted of two types of questions: (1) core and (2) expanded. The core questions were the 24 questions that were to be included in the questionnaire and the expanded were those that the investigator would add them based on the circumstances (Sethi *et al.*, 2004). SPSS 14 software was used for summarization of the data.

RESULTS

Out of 845 women invited for the interview, 750 ones accepted to participate in the study (89% response rate). Totally the injury history of 3324 household members were obtained including 1652 females and 1672 males. Baseline characteristics of the studied subjects are shown in Table 1. Overall 48 injuries were found (1.4%, 95% CI: 0.9-2.2%): 12 cuts or open wounds (0.4%), 11 contusion or sprains (0.3%), dislocation in 3 individuals (0.09%), burns in 3 (0.09%), 2 head injuries (0.06%), 2 cases of internal bleeding (0.06%) and 15 individuals mentioned the other injuries. Five of the detected injuries were intentional (10.4% of 48 cases): One self-directed and the other 4 were interpersonal. The mechanisms of injury is shown in Table 2. The most common place of injury occurrence were the street and the roads (Table 3). The percentage of the types of transport in the 26 traffic related injuries were

Table 1: Characteristics of household members studied (n = 3324)

Characteristics	No.	(%)
Age group		
≤4	237	7.1
5-14	542	16.3
15-19	439	13.2
20-24	449	13.5
25-44	1057	31.8
45-64	475	14.3
≥65	115	3.5
Education		
Less than school age	303	9.1
Illiterate	128	3.8
Primary school	609	18.3
Secondary	1629	49.0
College	605	18.2
Job		
Under work age	183	5.5
Housewife	681	20.5
Student	887	26.7
Retired	183	5.5
Jobless	192	5.8
Worker	47	1.4
Others	1151	34.6

Table 2: Mechanisms of injury in 48 cases detected

Mechanism	Frequency	(%)
Road traffic crashes	26	54.2
Falls	7	14.6
Stab	5	10.4
Struck/hit by person or object	3	6.2
Fire, flames or heat	1	2.1
Animal bite	1	2.1
Electricity shock	1	2.1
Gun shot	0	0.0
Unknown	4	8.3
Total	48	100.0

Table 3: Type of place where the injury event occurred

Place of injury	Frequency	(%)
Street/road	28	58.3
Home	12	25.0
School	3	6.3
Commercial area	1	2.1
others	4	8.3
Total	48	100.0

Table 4: Physical nature of the disability causing impairment (No. of disabled cases = 26)*

Disability	Frequency	(%)
Limping	16	61.5
Hand or arm disability	7	26.9
Loss of vision	1	3.8
Respiratory difficulty	1	3.8
Others	8	30.8

*: One case may have more than one type of disability

motorcycle (46.1), car (23.1), walking (23.1) and other motorized vehicles (7.7). Twenty six of the 48 injured cases (54.2) reported some form of disability (Table 4). All of the injured had sought treatment, 38 individuals had hospital attendance (79.2% of 48 cases), 16.7% referred to OPD clinics and one referral to local bone setter (2%). In total 16 hospital admissions were reported (0.5% of the sample studied, CI 95%: 0.22-0.99), the longest of which

was 10 days and the shortest 1 day. The answer to the question that could the injury victim return to his or her preinjury activities after the completion of convalescence period? was no in 16 cases (0.5% of the sample studied). Three (6% of injured cases) had lost their job and in 11 instances, at least one of the family members had abstinence from workplace for a period of time to take care of the patient (23% of injured cases). On 7 occasions the family income lowered as a result of injury (in 14.6% of cases) and in one case the family had problem with primitive needs. In 6 cases the injured had lost his job or studies (12.5%), on 5 occasions had to burrow money (10.4%) and on 2 the family members had to sell their property (4.2%) to take care of the injured. One death due to trauma was reported, in which the victim had passed away at the scene of accident (with an incidence of 0.3 per 1000).

DISCUSSION

Injuries are divided into three main groups: (1) unintentional (incidental) (2) Intentional and (3) unknown. Another common method of classification is according to the mechanism which caused the injury: road traffic crashes; poisoning; falls; fires/burns; drowning/near-drowning; firearms (Sethi *et al.*, 2004). In 1989 the first universal congress on injury control and prevention was held in Stockholm Sweden and international decision was made for prevention of injuries, decrement of its disabilities and rehabilitation of the injured, but the attendants could nicely understand that no precise data was available on neither of the subjects. From the historical point of view, the main cause of this neglect has been the accidental and random consideration of the injuries (Sethi *et al.*, 2004). From that time on, injury surveillance has become a public health priority in many countries and public health organs. The proper performance of the task is necessitating a standard classification system for injuries (which has been performed), in association with a precise system for data collection and preservation. These studies were performed in many countries and are still being performed (Boland, 2005; Kannus, 2001; Di Bartolomeo *et al.*, 2004; Moshiro, 2005).

In western countries, for every individual killed due to injury 30 are hospitalized and 300 are treated as out patient (Guyer *et al.*, 1990). The expenses of caring of the injured patients is so much that in these countries 5% of the current expenses is specialized to the subject (Gorman *et al.*, 1999). Of course, the expenses incurred by these patients is of paramount significance, for which we couldn't find any resources and in developing countries,

there is not available any statistics in any of these aspects, although it seems that the victims of injury are more in number in these countries. Interesting is the fact that injury prevention has been noticed in reacher countries more than the others. In this project we tried to study this aspect of injuries, the expenditure on the injured, the result of which is noticeable: Loss of job in 6 individuals, burrowing in 5 cases and selling of property in 2 cases, among 800 studied families.

The basis for control and prevention of diseases is epidemiologic data. For development of preventive programs, we need exact information, especially about the number and type of the incurred injuries and the circumstances of it's development. So, availability of epidemiologic data is of utmost importance (Sethi *et al.*, 2004). The main source of epidemiologic studies that have been performed in Iran, have been the legal medicine resources (Montazeri, 2004; Zadeh *et al.*, 2004) and hospitals (Zargar *et al.*, 2001; Cole, 2004). As far as the authors are aware, no study with the population based method has been performed to study the epidemiology of injuries in Iran. Referral to data of mortality due to trauma is not the sole indication of it's burden on the society, so performance of household survey is of utmost significance. In spite of the large studies that have been performed in the developed countries, the authorities in these countries believe that lack of data has been one the causes that control interventions have not been performed with exact programming (Gorman *et al.*, 1999). WHO method for injury control has four stages: (1) Surveillance (2) recognition of risk factors (3) performance and (4) intervention assessment. The above interventions are based upon surveillance, for which many methods have been suggested. Of these methods two are more worthful, data collection from the hospitals and data collection from the population (Holder *et al.*, 2004). Between these two methods, emphasis has been put on the population based method (Sethi *et al.*, 2004). The reasons for this are: (1) The instant death cases do not reach hospital and (2) Many of minor cases are not referred to the hospital, but attend OPD and private clinics. On the other hand population based data gathering is fronted with some difficulties, such as the expanded expenditure and recall bias (Sethi *et al.*, 2004), which may have been involved in our study too, as will be mentioned later.

Noticing the condition of Iran roads in many of which safety measurements have not been regarded and also the social and population-recognition condition of the country, awareness of the condition of injuries and especially accidents in the area is of prime importance (Ghaffar *et al.*, 2004). This is the condition while in many

developing countries such as Pakistan, Malaysia, Vietnam and population based studies have been performed and the report has appeared in international journals (Ghaffar *et al.*, 2004; Hang *et al.*, 2003; Moe, 2002). In present study we tried to answer this question that what percent of Kermanian citizens had sustained injuries in the last year and what was the distribution of the sustained injuries. The harvested figures were surprisingly low. The statistics harvested in this study demonstrated 48 injuries in 3324 individuals, it means about one injury in every 70 people and as 800 families had been involved in the study this means that one in about 14 families had 1 injured member in the last year. In comparison with notice to the data gathered in similar study performed in Vietnam (Hang *et al.*, 2003), you reach the figure of 450 new injuries in 5952 individuals, which is about 5 times greater than the figures reached upon in present study.

Anyway in the present study, injuries with more severity had lower incidence, so that injury leading to immediate death was fortunately encountered in only one instance. We can not present any rational reason for the low resulting figures in this study, especially noting that Iran has become the number one of rural and road accidents and the mortality from it for several consecutive years. The mistake or neglectance of the questioners is extremely unlikely: although because of expenditure decrement, the salary paid to them was not high and even adequate, most of them had been involved because of their self interest and not for financial problems. Also many of them had the past experience of participation in such studies with success. Aside from this, as they themselves were aware, their performance was controlled by supervisors. Perhaps the most convincing reason that can be declared is the mistake of responders, perhaps intentional, because of the fear of revelation of their secrets or their tiredness because of responding more than 30 questions.

In the present study, at it was predictable, the most common cause of injury sustaining were motor vehicles and especially motorcycles. Unfortunately in our country this vehicle is used most often by low income families and perhaps this is one of the reasons that this part of the society is prone to injury. Note that some of the injured in this study did not use safety measures (helmets and seat belts) and this emphasizes on the necessity of more rigid attitude toward them.

The figures resulted from this study although low in comparison with their global counterparts, indicate the existence of a great problem namely the injuries in

our society, which like any other problem should be assessed and encountered in a proper manner. If the figures that were reached in Kerman are expanded to the country of Iran, we will reach surprising and really painful results such as 15000 immediate deaths or property sell for taking care of the injured in more than 8000 families.

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