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## The Prevalence and Pattern of Accidents in Yazd Province

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**Abstract:** To examine the prevalence of accidents a cross-sectional study for 6494 retrieved randomly from the Yazd province. Data was gathered via a questionnaire filled by referring personally to their residential premises. Generally, the prevalence of accidents in this study was 3.54% of in which motor vehicle accidents accounted for the majority of accidents (39.1%) followed by falls (29.1%), burns and poisonings (13%). In conclusion, age, sex and literacy levels are the main determining factors of accidents. This study, therefore, provides sufficient evidence to support the need for an aggressive campaign to reduce accidents in this area.

**Key words:** Accidents, patterns of accidents, prevalence, Yazd

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### INTRODUCTION

Accidents are considered as a major medical and social problem and the second leading cause of death in populations aged between 5 and 45 years. The World Health Organization slogan in the year 2004; "Safe roads have no accidents" shows the importance of accidents in today's world<sup>[1]</sup>. It has globally been shown that, 1.2 million deaths resulted from road traffic injury and about 10 times this number was injured in 2001<sup>[2]</sup>. According to the data published by the National Center for Prevention and Control of Accidents in America indicate that two thirds of the deaths in children and young people aged between 15 and 19 years are due to accidents, majority of which (32%) are motor vehicle accidents<sup>[3,4]</sup>. Motor vehicle accidents are the leading cause of death in adolescents and young adults worldwide. Nearly three-quarters of road deaths occur in developing countries and men comprise a mean 80% of casualties<sup>[5]</sup>. On the other hand, accidents account for 15.3% of the total deaths and two hundred thousand young people aged between 14 and 17 years suffer from workplace accidents every year and it is estimated that about 50% of those are so severe that they require hospitalization<sup>[6,7]</sup>. Studies of the common causes of death in Yazd between 1999 and 2000 have shown that the leading causes of death in the descending order are cardio

vascular diseases, accidents and cancers. Traffic accidents are responsible for 13.45% of the total life years lost. The prevalence of accidents in the city of Yazd in 1999 is reported to be 6.9%<sup>[8]</sup> and the mean age of those involved is 38.3 years<sup>[9]</sup>. The aim of this study was to study the prevalence and pattern of accidents in people aged between 5-45 years in Yazd. It is also aimed to start the public awareness campaign for prevention of accidents.

### MATERIALS AND METHODS

To examine the prevalence and pattern of accidents, a cross-sectional study was carried out in October, 2004 in Yazd province. The total numbers of 6494 individuals who belonged to 560 families were studied. Accidents included falls, burns, poisonings and motor vehicle accidents which unexpectedly resulted in being bedridden at home for one day, hospitalizations and/or death. Method of sampling was in the form of clusters. Data was gathered via a questionnaire prepared by consulting a group of five specialists and filled by referring personally to their residential premises. To determine the internal reliability of the questionnaire, Cronbach's alpha was calculated for each scale ( $\alpha = 0.8$ ). All data were transferred to SPSS for analysis and statistical tests e.g. chi-square and logistic regression model.

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**RESULTS**

In this study, 6494 cases were included in which 223 cases (3.54%) had met with accidents. Motor vehicle accidents accounted for the majority of accidents (39.1%) followed by falls (29.1%), burns and poisonings (13%). Regarding the type of vehicles, two wheelers were mostly involved (Table 1). Generally, most of the accidents occurred in 20-29 years age groups (29.6%) and the least in the 5-9 years age group (7.7%). This study also showed that the main causes of falls in the descending order were slips (40.9%), fall from heights (27%) and fall from stairs (24%). There was significant relationship between type of accident and age ( $p=0.0001$ ) in that 39% motor vehicle accidents and 41.5% of the falls accidents occurred mostly in young people aged between 20 and 29 years. Chi square test also showed a significant relationship between type of accident and sex ( $p=0.0001$ ), in which the prevalence of accidents in men was higher than women (97.7 vs 32.3%). In contrast to burns and poisoning, the occurrence of accidents in men was higher than women (Table 2).

Generally, 83.7% of the accidents had occurred away from home, while 16.3% occurred at home or school. Sixty percent of parents believed that their own carelessness was responsible for the accidents, while 35% considered others to be responsible for the accidents. Results of this study showed that 2.2% of those who had met with accidents died, while the rest were treated either at home, out patient department or hospital. The most affected parts of the body in descending order were lower limbs (47%), head and neck (17.6%) and upper limbs (16.5%).

With regard to the organs of the body involved, 6 cases of upper limbs and 5 cases of lower limbs involvement were reported. Regarding site of burn accidents, most of them (10 cases) occurred at home. Similarly, 69% of the parents considered the carelessness of the individual involved as the cause of the burn accident. Ten cases of burning were due to hot liquids,

two cases were due to gas leakage and only one case was due to pressure cooker as a non standard appliance. To determine the relationship between the above mentioned factors and accidents, logistic regression model was used. Present findings showed that only age, sex and literacy levels of parents remained in this model in which these factors together increased the risk of accidents (Table 3). The results of this study pointed out that the majority of accidents were happened in September (15.5%) and October (18%) and fewer in December, January, February and March (3%).

**DISCUSSION**

The results of various studies performed all over the world show that the main causes of mortality in the 5-14 and 15-29 years age group are injuries due to motor vehicle accidents. Generally 30-86% of all the trauma hospital admissions in poor and developing countries are due to motor vehicle accidents<sup>[10-12]</sup>. The mortality due to motor vehicle accidents in developed countries has also increased by 65% in 2002 in comparison to 2000, whereas, this increase was 80% in developing or recently developed countries<sup>[10]</sup>. One of the main reasons for this rise in motor vehicle accidents is the daily increase in the number of vehicles<sup>[1]</sup> and is also related to the situation in the countries<sup>[13-16]</sup>.

The city of Yazd, due to its climatic conditions and cultural history has always been known as the city of bicycles<sup>[16]</sup>. Currently, on one hand due to the replacement of bicycles by motorcycles and on the other hand, common routes for both cars and motorcycles have led to an increase in the number of traffic accidents. The results of this study showed that the most accidents happened due to motor vehicles, in particular motorcycles. The results also point out that most of the accidents occur in the 20-29 years age group. Considering the fact that most of the motorcycle riders are young, every year a large number of active people suffer from injuries, permanent disabilities or early death. The results of this study are

**Table 1: The frequency and percentage of different types of accidents in people aged 5-45 years**

Age	Vehicle No. (%)	Fall No. (%)	Burns poisonings No. (%)	Cut circuit No. (%)	Total No. (%)
5-9	3 (3.5)	5 (7.7)	5 (17.3)	4 (9.5)	17 (7.7)
10-19	26 (30.0)	5 (7.7)	7 (24.2)	24 (57.1)	62 (27.8)
20-29	34 (39.0)	27 (41.5)	3 (10.3)	2 (4.8)	66 (29.6)
30-39	17 (19.5)	11 (17.0)	7 (24.1)	12 (28.6)	47 (21.1)
>40	7 (8.0)	17 (26.1)	7 (24.1)	0 (0.0)	31 (13.8)
Total	87 (39.1)	65 (29.1)	29 (13.0)	42 (18.8)	223 (100.0)

$X^2=28.29$        $d.f=12$        $p\text{-value}=0.0001$

**Table 2: The frequency and percentage of different types of accidents according to sex in people aged 5-45 years**

Sex	Vehicle No. (%)	Fall No. (%)	Burns poisonings No. (%)	Cut circuit No. (%)	Total No. (%)
Male	74 (85.1)	46 (71)	13 (44.8)	18 (42.8)	151 (67.7)
Female	13 (14.9)	19 (29)	16 (55.2)	24 (57.2)	72 (32.3)

Table 3: Logistic analysis of situation of accident according to age, sex, family dimensions, literacy level of mother and family income and literacy level of father in people aged 5-45 years

Results factors	Analysis			
	B	SE	Significant level	Level of risk
Age	-0.013	0.007	0.050	0.987
Sex	0.758	0.160	0.000	2.130
Family income	0.002	0.002	0.113	1.002
Literacy of mother	-0.171	0.083	0.030	0.843
Literacy of father	0.173	0.076	0.024	1.189
Family dimension	0.017	0.048	0.722	1.017
Constant	2.200	0.496	0.000	9.075

similar to the Kenyan study which shows that 75% of the motor vehicle accidents occur in the young<sup>[11]</sup>. Study of the statistics of motor vehicle accidents in Iran also confirms the results of this study<sup>[7]</sup>.

The results of the present study indicate that the second leading cause of accidents is falls which is agreement with the studies carried out in Britain (45%)<sup>[17]</sup>. The identification of high risk sites at home, school and work place, planning of home visits and education of parents about safe environments for children may be helpful for prevention of accidents. With the exception of burns and poisoning, the prevalence of accidents in men is nearly two times than women<sup>[18,19]</sup>. According to, the results of the study performed in the year 2000, 85% of burns occurred at home<sup>[20]</sup> which confirm the increased possibility of burn accidents in women. The results of this study totally correspond to the role of men and women in society and their physical activities. In order to prevent burn accidents at home, education of women about safety measures, standardization of household appliances (water heaters, pressure cookers, etc.) and availability of fire extinguishers with appropriate education for fast and proper use is essential. The high prevalence of accidents happened in September and October might be due to the fact that schools and educational centers re-open after vacations during these two months in Iran.

To understand the main background factors responsible for accidents, logistic regression model was used. With considering factors like age, sex, family income, literacy level of parents and family in the model, it was concluded that age, sex and social levels (literacy levels) are the main determining factors of accidents. In conclusion, to prevent accidents, appropriate laws and measures in society should be implemented, children and parents should be educated and various governmental organizations like city councils should be actively involved<sup>[21,22]</sup>. In addition, mass media can also play an important role for this matter. This study provides sufficient evidence to support the need for an aggressive campaign to reduce accidents in this area by strategies of information and education and the introduction of safety containers.

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