

Accidents in Children under 5 Years in Yazd Province, Iran

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ABSTRACT

Introduction: Accidents are one of the most important causes of injury and death across the world, including Iran. The epidemiological data play a key role in taking effective strategic decisions for their prevention and control.

This study was conducted to determine the Frequency of different types of accidents in children aged under 5 years living in Yazd province, Iran.

Methods: In this cross-sectional study, data on 2489 children under 5 years referred to hospitals in Yazd province were collected from March, 2015 to March, 2016, using the accidents registration forms and the related software. Chi-square test was incorporated to analyze the results using SPSS version 19.

Results: The frequency of accidents in boys was 1460 (58.7%) and in girls 1029 (41.3%). Accidents occurred most frequently in April-May (n: 245, 9.8%) and the winter (n: 693, 27.8%). 93.3% of accidents occurred in the urban areas, 4.4% in the rural areas and 2.3% in outside the city and the villages. The total number of accidents at home was 1743 (70%) and in the alleys and on the streets 495 (19%), the most frequent accident was falling (n: 743, 29.9%), followed by burns (n: 543, 21.8%) and trauma (n: 495, 19.9%).

The difference in the type of accident between different age groups was significant ($P < 0.001$).

Conclusion: The comparatively higher frequency of falling, burn, trauma, as well as the accidents at home and in the winter indicate parents' insufficient attention to home safety standards and their lack of adequate information about protection of children under 5 years against the most common accidents of this age group. Planning for and intervention in these areas might help in reducing the accidents.

Keywords: Epidemiology, Accidents, Child, Yazd

Introduction

An accident refers to an event that occurs as a result of an unintentional, sudden and rapid cause, which might lead to physical or psychological injury (1). Accidents are one of the main causes of death, and are a part of the cost due to industrialization that human beings have to pay. Currently, accidents are considered as a global

problem, which is particularly noticeable in low and middle-income countries, and occurs at homes in addition to the other environments (1, 2).

The changing environmental conditions, the location, and the proper nutrition, immunization and application of quarantine procedures for infectious diseases have reduced the risk of infectious diseases,



but at present, environmental risk factors such as motorcycles and cars have increased the risk of injury (3).

Children are one of the age groups that are more vulnerable to accidents. The pattern of accidents differs between children and adults, which can be attributed to physiological and anatomical differences that make children more vulnerable to injuries (4).

In other words, physiological limitations, growth and development process, sensory and motor development, reaction capacities including experience, educational and exploratory needs, and high-risk behaviors cause children to be at higher risk and to experience more severe accident-related injuries compared to adults.

If these characteristics are accompanied by low environmental safety and reduced parental care and supervision, the Frequency of accidents and the resulting injuries will dramatically increase in children (5).

Children mortality is one of the most important indicators of national development. Worldwide, 11 million children aged less than 5 years die annually, which means that 30,000 of children die every day, and one dies every 20 minutes (6).

Children who do not die may need care during entire lifetime.

In addition to physical health, the disability in these children can impact other aspects of their lives and even their families, and also impose stupendous costs on the health system (7).

In 2004, more than 950,000 children under the age of 18 died due to intentional or unintentional accidents. In 2008, accidents were reported as the main cause of the death in children older than one year (8). These findings show that the incidence of childhood accidents is very high, especially in those aged under 5 years (9). Half of children die due to accidents. It has also been reported that the reason for hospitalization of one per 6 children in hospital emergency wards is accidents (10).

In the United Kingdom, 10% of children's admissions are due to accidents (5). The unplanned accidents in the Eastern Mediterranean region are estimated at 112.7(per 100 000) in the age group under one year and 49.4(per 100 000) in the age

group of 1-4 years, with the corresponding global figures being 96.1(per 100 000) and 45.8(per 100 000), respectively (11).

The 2008-2007 survey in Iran showed that unintentional injury accounted for 25% of deaths in under-5-year children (12).

The study of causes of death in Ardabil also showed that accidents, poisoning and burns totally accounted for 18% of deaths in children under the age of 5 (13).

Several studies in Iran have shown a decrease in the children mortality rate, i.e., the death of children under the age of 5 decreased from 44 per 1,000 live births in 2000 to 25 per 1000 live births in 2015, but this decrease does not suffice to reach the goal of the Millennium Development (14).

One of the goals of the Millennium Development is to eradicate the death of children under the age of 5 by 2028. Therefore, appropriate strategies should be adopted to achieve this goal.

Obviously, obtaining the necessary information about the types of accidents, their frequency, and the affected people are important in preventing the accidents (15). Therefore, considering the importance of mortality and injuries in children under the age of 5, as well as the association between age, gender, area and type of accident on the type and severity of injury, and the dependence of prevention strategies, the present study was conducted to determine the Frequency of different types of accidents in children with under 5 years of age living in Yazd province during 2016-2017.

Materials and Methods

Study population

This cross-sectional study was conducted during one year (from 21 March, 2015 to 20 March, 2016) on 2489 children under 5 years referred to 17 hospitals in Yazd province (nine were located in Yazd County). Both outpatients and hospitalized children referring to the hospitals for any accident type, were included in the current study.

Data collection procedure and data analysis

The required data were collected using a standard data collection form developed by the Office of injury prevention and safety promotion

of the Ministry of Health. Before completing the forms, the emergency department nurses and the staff were trained about filling the forms.

The collected data included the name, age, the city/village where the accident was occurred, the time (month) of the accident, the accident area, the accident location, and the type and consequence of the accident.

Age less than one month was recorded in days, age under one year was recorded in months, and the age of 1 to 4 year children was recorded in year. The accident time (month) was also recorded. The accident place (the place of residence) was recorded as urban, rural, and outside city and villages.

The accident area components consisted of home, alley and street, highway and road, school and educational places, public places, and sports and recreational facilities.

The accident types consisted of falling, poisoning, animal attack, burn, electric shock, drowning, scorpion and snake bites, pedestrian accident, motorcycle accident, car accident and other accidents (trauma).

The staff of the Yazd province healthcare networks checked the hospitals' emergency wards to compare the number of recorded cases in the registration form with the number of injured people referred to the emergency department to eliminate under-registration or potential registration drawbacks.

The forms were sent to the health center of each County every 3-month and their data entered into the hospital registration software developed by the Ministry of Health.

Since a number of the affected patients are dispatched, duplicate cases were deleted in generating cumulative data. Data was entered into the SPSS version 19.

Data analysis was performed by the descriptive statistics; furthermore, analytical statistics, including chi-square test was incorporated to investigate the relationship between the accident cause, gender and the accidents' area. The statistically significance level (*P*) was considered as $P < 0.05$ for all analyses.

Ethical considerations

The data were entered into the hospital accidents registration form after the approval of the Ministry of Health was obtained.

Completion of the form was also performed after all necessary therapeutic interventions were done for the injured patients. All information was also recorded in the hospital registration system (HIS) according to routine procedure to observe relevant ethical considerations.

Results

The total number of children under the age of 5 admitted to hospitals in Yazd province during 2016-2017 was 2489, 1460 (58.7%) of whom were boys and 1029 (41.3%) were girls.

Accidents occurred most frequently in April-May (n: 245, 9.8%) and least frequently in July-August (n: 159, 6.4%). 693 accidents (27.8%) were recorded in the winter, and 587 (23.6%) in the autumn.

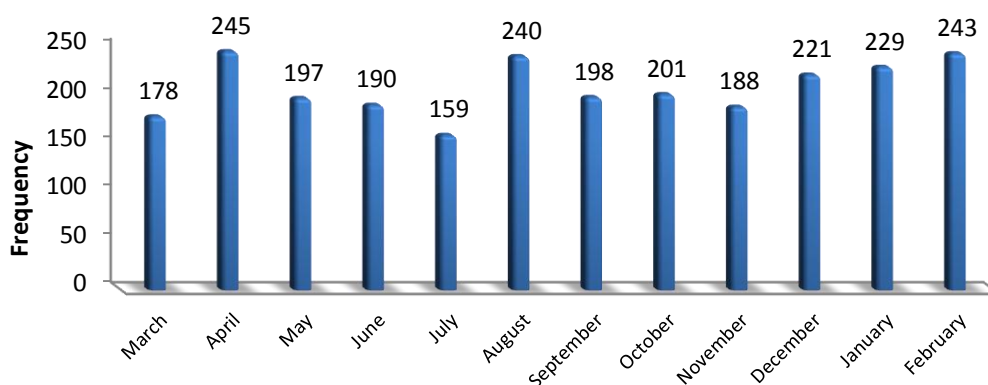


Figure 1: Frequency of accidents in children under 5 years admitted to the emergency department of Yazd province's hospitals during 2016-2017 by month.

As shown in **Table 1**, 2322 accidents (93.3%) occurred in the urban areas, 110 (4.4%) in the rural areas and 57 (2.3%) in outside urban and rural areas. Overall, 1743 accidents took place at home (70%), followed by 495 (19.9%) accidents in the streets and alleys, comprised the most accidents during 2016-2017. The frequency of injuries by the type of accident, the gender of the patient, and accident location is shown in **Table 2**.

In terms of the accident type, the number of falling cases was 743 (29.9%), burns 543 (21.8%), and the trauma 495 (19.9%).

Of the total number of accidents, 23.75% occurred in children aged under one year, followed by the accidents in the age groups of 1-2 years, 2-3 years, 3-4 years and 4-5 years, therefore, that accidents occurred least frequently in the age group of 4-5 years (16.2%)

Table 1: General characteristics of the injured children under 5 year in Yazd province 2016

	Specifications	N	Percentage
Gender	Male	1460	58.7
	Female	1029	41.3
Age at census (years)	0-1	590	23.7
	1-2	543	21.8
	2-3	484	19.4
	3-4	471	18.9
	4-5	401	16.2
Season	Spring	620	24.9
	Summer	589	23.7
	Fall	587	23.6
	Winter	693	27.8
Location of Accident	Road and highway	77	3.1
	Alley and street	495	19.9
	House	1743	70
	Public places	43	1.7
	Recreational and Sporting places	73	2.9
	Schools and Kindergartens	26	1.1
	Others	18	0.7
	Unknown	14	0.6
Area of accident	Urban	2322	93.3
	Rural	110	4.4
	Out of Urban and Rural	57	2.3

There was no significant relationship between children's gender and the type of accident ($P = 0.244$). In both boys and girls, falling was the most frequent accident, followed by burns and trauma.

Falling was the most frequent accident in urban areas, followed by burns and trauma, and in rural areas, the most frequent accident was falling, followed by car accidents and trauma ($P < 0.001$).

Table 2: The relationship between gender and type of accident in children under 5 year in Yazd province 2016

Accident's cause	Gender(N %)		
	Boy	Girl	Total
Electric shock	7(0.5)	2(0.2)	9(0.4)
Scorpion and snake bites	9(0.6)	10(1.0)	19(0.8)
Animal bites	7(0.5)	4(0.4)	11(0.4)

Burn	293(20.1)	250(24.3)	543(21.8)
Fall	436(29.9)	307(29.8)	743(29.9)
Moto cycle accident	103(7.1)	61(5.9)	164(6.6)
Car accident	98(6.7)	74(7.2)	172(6.9)
Pedestrian accident	86(5.9)	52(5.1)	138(5.5)
Drowning	1(0.1)	2(0.2)	3(0.1)
Poisoning	120(8.2)	70(6.8)	190(7.6)
Violence	2(0.1)	0(0)	2(0.1)
Miscellaneous (trauma)	298(20.4)	197(19.1)	495(19.9)
Total	1460(100.0)	1029(100.0)	2489(100.0)

Table 3:The relationship between the area of Accident and type of accident in children under 5 year in Yazd province 2016

Accidents' cause	Area of Accident (N %)			
	Urban	Rural	Out of Urban and Rural	Total
Electric shock	9(0.4)	0(0)	0(0)	9(0.4)
Scorpion and snake bites	17(0.7)	2(1.8)	0(0)	19(0.8)
Animal bites	11(0.5)	0(0)	0(0)	11(0.4)
Burn	533(22.9)	10(9.1)	0(0)	543(21.8)
Fall	693(29.8)	48(43.6)	2(3.6)	743(29.9)
Moto cycle accident	149(6.4)	12(10.9)	3(5.4)	164(6.6)
Car accident	105(4.5)	18(16.4)	49(87.5)	172(6.9)
Pedestrian accident	135(5.8)	3(2.7)	0(0)	138(5.5)
Drowning	3(0.1)	0(0)	0(0)	3(0.1)
Poisoning	185(8.0)	4(3.6)	1(1.8)	190(7.6)
Violence	2(0.1)	0(0)	0(0)	2(0.1)
Miscellaneous (trauma)	481(20.7)	13(11.8)	1(1.8)	495(19.9)
Total	2323(100.0)	110(100.0)	56(100.0)	2489(100.0)

Table 4 shows that the most frequently occurring accidents, in the age group of less than one year, were burns, followed by falling and trauma. In other age groups, the most frequent accidents were

falling. Meanwhile, the difference in the type of accident between different age groups was significant ($P < 0.001$).

Table 4: The relationship between the age group and type of accident in children under 5 year in Yazd province 2016

type of accident	Age groups (years, N %)					Total
	0-1	1-2	2-3	3-4	4-5	
Cause of the accident						
Electric shock	2(0.3)	2(0.4)	2(0.4)	1(0.2)	2(0.5)	9(0.4)
Scorpion and snake bites	4(0.7)	3(0.6)	3(0.6)	6(1.3)	3(0.7)	19(0.8)
Animal bites	4(0.7)	0(0.0)	3(0.6)	2(0.4)	2(0.5)	11(0.4)
Burn	209(35.4)	127(23.4)	91(18.8)	67(14.2)	49(12.2)	543(21.8)
Fall	138(23.4)	167(30.8)	147(30.4)	153(32.5)	138(34.4)	743(29.9)
Motorcycle accident	32(5.4)	22(4.1)	27(5.6)	46(9.8)	37(9.2)	164(6.6)
Car accident	38(6.4)	36(6.6)	24(5.0)	35(7.4)	39(9.7)	172(6.9)
Pedestrian accident	8(1.4)	21(3.9)	44(9.1)	33(7.0)	32(8.0)	138(5.5)
Drowning	0(0.0)	1(0.2)	1(0.2)	1(0.2)	0(0.0)	3(0.1)
Poisoning	59(10.0)	58(10.7)	33(6.8)	22(4.7)	18(4.5)	190(7.6)
Violence	0(0.0)	0(0.0)	1(0.2)	0(0.0)	1(0.2)	2(0.1)
Miscellaneous (trauma)	96(16.3)	106(19.5)	108(22.3)	105(22.3)	80(20.0)	495(19.9)
Total	590(100.0)	543(100.0)	484(100.0)	471(100.0)	401(100.0)	2489

Discussion

Because of the importance of injuries and deaths in children aged under 5 years of age, prevention and control of accidents in this age group are of particular importance.

The present study showed that the accident rate in children under the age of 5 years who referred to hospitals in 2016-2017 in Yazd province, was 22.5 per 1,000 individuals. The incidence rate in the study of Kermanshah in 2015 was reported to be 23.3 per 1,000 individuals (16). This indicates that the incidence rates of accidents in this age group in the two provinces were similar.

Besides that, the overall Frequency of accidents was higher in boys compared with girls. In the study of accidents in children under 15 years in Fasa (Fars province), accidents were also more frequent in boys (62%) (15).

In spite of thought-out arrangements, under-registration was noticed in a number of hospitals in Yazd County due to the high volume of duties of hospital staff and the impossibility of hiring workforce for exclusively registering accidents during all work shifts.

Obviously, this study only investigated the cases referred to the hospitals but not those that suffered from no or minor injuries or death at the site of the accident.

Therefore, this study cannot address minor accidents that do not lead to medical and emergency interventions.

The study of the accidents in children under 15 years in Rafsanjan (Kerman province) showed that traumatic accidents were more frequent in boys and non-traumatic accidents were more frequent in girls (17).

A study conducted in 2008-2009 on accidents among children aged under 5 years in Ahwaz city showed that more than half of the affected children were boys (52.9%) and the rest (47.1%) were girls (7).

In the study done by Bayat et al. on the accidents in children under 5 years in Aligudarz (Lorestan province), 63.3% of the affected children were boys the rest (37.7%) girls (18).

In the study of causes of mortality in children under 5 years in Ardabil in 2011, the children's mortality due to accidents was 11% higher in boys compared with girls (19).

In the study of Vakili et al. in Yazd, in 52% of accident-affected children were boys and 48% of them were girls. However, our results showed that the fallings were more frequent in girls compared with boys, however, other accidents were more frequent in boys (5), which is consistent with the study by Tajaddini et al., and the conducted by

Soleimani et al. in Kermanshah in 2015, and the study of causes of children mortality by Zabol in 2007-2008 (6, 16, 20).

The cohort study of Sridharan in the United States, which included 2397 households for 5 years, also showed that by the fifth year, 12.5% of the children experienced accidents, with male gender being the strongest predictor of the accident (21).

The potential reasons for the higher frequency of accidents in boys of this age group include their curiosity, risk taking, and behavioral characteristics; in addition, parents are more likely to pay more attention and take more care of girls less than 5 years due to cultural teachings according to which boys are assumed as being more independent than girls.

The important point in comparing the data of various studies is that the gender ratio of children's mortality does not necessarily correspond to the gender ratio of the affected children, because many accidents occur very frequently in children that do not lead to death ; therefore ,relying on mortality rates cannot be a valid pattern for the incidence of children mortality, although gender-based children's mortality statistics can be studied to prevent the accidents that lead to children's death.

Regarding the frequency of accidents based on their location in our study, most accidents (70%) occurred at home followed by those on streets and the alleys (19%). In the study in Kermanshah, 58% of the accidents occurred at home (16).

The study of WHO and Eldosoky (22) also showed that more than half of the accidents occurred at home, which is consistent with the current study and the study conducted in Kermanshah(16), but inconsistent with the study in Hamadan, in which the most frequent accidents in children under one year occurred on highways and roads (44.4%) (23).

Contrary to popular belief that the home is a safe environment, the accidents especially for children are always more likely to occur at homes and, incidentally, the place most people consider to be safe and serve as a shelter against the street, alley and workplace, has turned into one of the most dangerous ones.

There are many types of hazards at home and the insecurity of rooms, kitchens, yards, roofs, balconies, windows, furniture as well as non-fixing of home appliances that affect non-structural safety is one of the factors that can cause further damage to the children of this age group.

The present study also showed that the most accidents occurred in winter (693 cases, 27.8%). Accidents occurred most frequently in April-May (n: 245) followed by February-March (n: 243) and August-September (n: 241).

In the study done in Kermanshah, accidents were found to occur most frequently in summer (48.8%) (September) (16). The study in Kerman also reported that the accidents in children occurred most frequently in the spring (29.6%) (24).

The study of Neghab et al. in Shiraz also it was shown that the most of the accidents occurred in winter (25), however survey in Canada in 2011, indicated that 30% of accidents occurred in the summer (26).

The difference in the Frequency of accidents in children in different seasons and months can be attributed to the climatic and cultural conditions of the communities.

The type of accidents can also explain changes in Frequency of different types of accidents in different seasons. For example ,Neghab et al. (25) studied only domestic injuries.

Obviously, in the winter, accidents and injuries in the home increases due to an increase in the time of stay at home due to cold weather. Or in the study done in Kermanshah (16), accidents were reported to occur more frequently in the season in which the temperature was more conducive to the presence of children in the outdoor environment.

The present study in Yazd also showed the impact of climatic conditions on the Frequency of accidents in different months and seasons of the year (23).

Due to the climatic conditions in Yazd, children find fewer outdoor activities to perform during the hot months of the year.

The increased incidence of accidents in these children in the winter is due to their longer stay at

home and injuries that are more likely to be related to the risks and insecurity of the home.

April-May, February-March, and August-September are also among the 30-day periods of the year in which the burden and type of activities of the parents change.

Reduced parental care of children and exposing children to risk factors are among the causes of increased accidents in these months.

As a result, increasing the awareness of parents about the hazards at home and improving the safety of homes are among the points to be taken into account, and related interventions should be designed and implemented.

Based on the results of this study, 93.3% of accidents in children under the age of 5 years in Yazd province occurred in the urban areas.

The study done by Soleimani et al. in Kermanshah showed that 84% of the accidents in children under the age of 59 months occurred in the urban areas (16), however, in the study of Lin et al. on the mortality of children under 5 years in the province of Hunan in China in 2009-2014, the rate of mortality among children under 5 years was 3.7 times higher in rural areas than in urban areas (27).

The high rate of accidents in children in urban areas of Yazd and similar provinces can be attributed to the lack of hospital in rural areas and lack of registration of accidents, in addition to the ratio of urban population to rural population.

Registration of accidents in the mentioned study was conducted only in hospitals, but most of the affected people in the villages received medical services in rural health centers and their data were not recorded, and only the data of those referred to the hospitals in the cities were recorded.

Our study did not show any statistically significant difference in the type of accident between boys and girls, so that falling, burns and trauma in both genders were dominant, but in a study conducted in Hamadan, car accidents, motorcycle accidents, and being hit by hard objects were found as most common accidents among boys and car accidents, trauma and falling as the most frequent ones in girls, and the difference in the type

of accident was statistically significant between boys and girls (23).

Inconsistency in the results of these two studies can be attributed to the studied age groups (under 1 year in the study in Hamadan and under 5 year in the present study).

In the present study, the frequency of accidents in urban and rural areas were significantly different with respect to the types of accidents, so that the most frequent accident in the urban areas was falling followed by burn and trauma, and in the rural areas falling was followed by car accidents and burns.

The study in Hamadan also showed a significant difference between the accidents in urban and rural areas; more clearly, the most common accidents were car accidents, trauma and falling in urban areas, and trauma, falling and motorcycle accidents in rural areas (23).

The nature and severity of the accidents in the city and the countryside should be taken into account. Data were collected from the hospital in both our study and the study conducted in Hamadan (23).

Obviously, children who are referred from the villages to the emergency departments of hospitals in the cities have comparatively more severe injuries, and mild cases are treated as outpatients in rural health centers, while children living in urban areas who refer to a hospital emergency department have a range of injuries including minor ones to those leading to hospitalization or even death.

Although the difference is statistically significant, the injuries were actually different in the nature between the children living in urban and rural areas.

The present study showed that the frequency of accidents in the age group of less than one year was 590 (23.7%), and the frequency of accidents decreased with increasing age.

The most common accident in the age group under one year in the present study was burn, followed by falling and trauma. In Scotland, 55% of all referrals and 38% of admissions in children were related to injuries in the age group under one year (28).

In Canada, the most frequent accidents in children under the age of one were reported to be falling followed by foreign body ingestion and burns (28).

A study in Mashhad also showed that the most common accidents in children under 5 years was falling followed by foreign body ingestion, and cuts and burns(23).

In the study in Hamadan, after car accidents and trauma, the falling was found to be the third leading accident (23).

The Frequencies of accidents due to falling in the studies done by Saman, Pourahmadi, and Warnight et al. were reported as 13.2%, 4% and 22%, respectively, but in our study, total rate of falling was 29.9%, which was the highest rate in the age group of less than 5 years.

Our results are consistent with a study in California conducted in children under the age of 4, in which the main cause of death in children was falling, the incidence of which was found to be twice higher than poisoning as the second leading cause of death (29).

In the present study, the second leading cause of the accidents in children under 5 years was burn (21.8%). The frequency of burn was 10.8% in the study of Sasan et al. (30).

Studies show that up to 20% of burns caused by fire or hot liquids occurred in children aged less than one year (23).

In our study, the frequency of accidents due to burns was 35.4% of all accidents in children aged under one year, which is remarkable. Due to the lack of Details about the cause of the burn, the high frequency of this accident in the age group cannot be precisely explained.

However, given the incidence of children accidents in the present study at home and in winter, it can be concluded that improper use of gas heaters might be effective in increasing the frequency of injuries.

Traffic accidents are one of the most important causes of mortality and morbidity in all societies. In our study, traffic accidents accounted for 19% of the total incidents, and were derived as the fourth leading cause of injuries in children under

the age of 5 years. The corresponding figure in the study in Hamadan was 53.4%, which is markedly higher than the figure in our study (23).

In the study of Bayat et al., car accidents were found to account for 11% of the accidents in children, which is lower than the corresponding figure in our study (16).

The higher corresponding figure reported by the study in Hamadan and in the age group under one year can be attributed to the common location of accidents in that study, i.e., roads and highways (44.4%), but how more than half of the children under the age of one year were involved in traffic accidents on the highways and roads needs to be further explored.

In the study of Bayat et al. in Aligudarz, the low incidence of traffic accidents can be attributed to the conduction of the study in one county rather than in one province (18). However, traffic accidents account for at least one-fifth of the injuries in children under the age of 5 in the Yazd province, with highly similar frequency distribution among pedestrians (5.5%), motorcycles (6.6%) and drivers (6.9%).

In our study in the children aged less than one year, traffic accidents accounted for 13.2% of the accidents, while the study of Alspeck and Maddox showed that this type of accident was uncommon in children less than one year (31).

The study of Sasan et al. also identified falling as the leading cause of accidents in under-one-year children, and traffic accidents were reported, by far, to be the sixth cause of the accidents in this age group (30), which is not consistent with the study in Hamadan (23). In the study of NekoeiMoghadam et al. in Kerman, the proportion of traffic accidents in the accidents of the age group under one year was reported to be 10.8% (24), which is almost consistent with the findings of the study in Yazd.

Study Limitations

Data source limitation due to the data of hospital sources alone was one of the most important limitations of the study, which led to under-registration of some minor and possibly

high-frequency injuries in cities, as well as numerous minor to moderate injuries in the rural areas.

Failure to record injuries based on the ICD-10 codes also causes failure to record some types of accidents, and it seems that recording the types of accident, such as trauma or others, depends on the individual judgment and perception of the registrant.

In addition, the accidents that led to the death of children under the age of 5 at the accident site due to the accident's severity were not included in the current study because relevant data were not available.

Conclusion

Environmental risky conditions are always a threat to the under-5-year children. Although vaccination, nutritional care and the monitoring of the growth and development have led to decrease in diseases and associated mortality, there is still concern about the occurrence of injuries and death due to accidents in this age group.

According to our results, boys were injured due to accidents more frequently than girls, home was the most damaging environments, and accidents occurred most frequently in the winter and the fall and burn and trauma were the most frequent accidents in children under the age of 5 years.

In addition, the age of affected child and the area of accident were significantly associated with the type of accident, while the relationship between gender and the type of accident was not significant.

Therefore, factors such as living in urban or rural areas, age and season, and potential harmful factors in the home should be taken into account in development of educational programs and preventive interventions. Paying attention to the above-mentioned point might help in preventing the predictable accidents and reduce their severity and impact.

The Frequency of accidents such as falling, burns, trauma and traffic accidents show that not only the safety principles in homes remain to be

fulfilled, but many parents also do not have enough knowledge or skills regarding the care of children under the age of 5 years with respect to accidents.

Recommendations

Given the high Frequency of predictable and preventable accidents in the age group under 5 years, and the importance of this age group as one of the indicators of health and economic development, it is suggested that accidents prevention programs implemented in the primary health care system.

Besides that, development of certain programs in the electronic health record that might record accidents according to the standard codes will help gain more accurate knowledge about the accidents in children of the covered area and will lead to more convenient and less costly design of interventions.

It is also suggested that further research be conducted to determine the pattern of mortality from accidents in children under the age of 5 years, risk factors, and interventions, and to assess the measures that have been taken.

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Conflict of interest

The authors of this study announce no conflict of interest.

Authors' contribution

All authors equally contributed to this project and article. All authors read and approved the final manuscript

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