JCHR

Journal of Community Health Research 2017; 6(3): 185-91.

The Epidemiological Profile of Injuries in Children up to 59 Months Old in Kermanshah Province in 2015

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ARTICLE INFO

Original

Received: 20 June 2017

Accepted: 3 Sep 2017

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ABSTRACT

Introduction: Injuries have always been among the main factors threatening human life and health, and children are one of the vulnerable population groups in this field. The aim of this study is to survey incident and examine the distribution of injuries in children up to 59 months old in Kermanshah Province in 2015.

Methods: This survey is a cross-sectional study, gathering its data from Health Vice-presidency of Kermanshah University of Medical Sciences. It covers all the injured whose reason of injury was referring to private and public hospitals under the supervision of Health Vice-presidency of Kermanshah University of Medical Sciences, during 2015. Data was collected from the injury software package of Ministry of Health. All registered individuals in this software were included in the study. In addition, all the injuries, including electric shock, road traffic accidents, animal attacks, violence, fall, burn, hit, scorpion and snake sting, drowning, poisoning were entered in our research.

Results: The number of injuries in children was 3499 cases: 2216 (63.3%) boys and 1283 (36.7%) girls. Incidence of injuries was 23.3 cases per 1000 children aged 0-59 months old. The highest frequency of injuries was in children aged 0 to 11 months (42%) and majority of them occurred at home (58.5%). Most of the injuries were in summer (especially in September). The most common causes of injuries included fall (52.7%), road traffic injuries (29.6%), and poisoning (14.1%).

Conclusion: In the present study, the most frequent injury was falling at home. It is important to make the home a safe environment for children.

Keywords: Injury, children, epidemiology, cross sectional, Kermanshah

How to cite this paper:
Soleimani A, Bayat MR, Biglari H, Khademi N, Saniee V, Khoramdad M, Shafiei J, Firouzi AR. The Epidemiological Profile of Injuries in Children 0 to 59 Months Old in Kermanshah Province in 2015. J Community Health Research. 2017; 6(3): 185-91.

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Introduction

Injuries have always been among the main factors threatening human life and health; industrialization and technology, communication development, urbanization, progress in medical and health sciences; changes in life patterns and styles cause accidents and incidents daily and make them turn out in various ways [1]. Currently, injuries constitute one of the main fatal reasons for death in the world [2]. Children are one of the most vulnerable groups in this regard considering their physical, mental, and behavioral characteristics and their encounter, playing, and living patterns in the environment made by adults [3, 4]. Children are the most valuable and vulnerable age group. Therefore, if they are not provided with appropriate developmental factors, their most basic right, i.e. life, will be in danger, and their future will also be severely scarred by some latent mental and physical effects [5].

Stanhope and Lancaster stated the following regarding the importance of paying attention to this large, vulnerable group: "The future of any nation hinges upon healthy and dynamic workforce, and children will create the future of any country; so taking good care of them and supplying their material and spiritual needs will result in healthy and competent adults in future [6].

Injuries are one of the major health problems and the third fatal reason for death after cardiovascular diseases and cancers in the world [7]; annually, about 11 million, daily, 30,000, and every minute, 20 children in the world die before reaching the age of 5, about 5 million of whom die because of injuries. WHO predicts that this figure will reach 4.8 million in 2020, mostly in low- and average-income countries, especially African and South Asian countries [8, 9].

In 2000, countries in the world, in order to achieve the millennium development goals, assumed the responsibility of cutting down children death cases by 75% in 2015 compared to 1990 [10]. According to UNICEF report, childhood injuries have decreased by 50% in high-income countries, while this is quite the opposite in poor countries, based on many reports [11].

It worthy of note that in children accidents, in addition to death, serious injuries disable millions of children temporarily or permanently in a year; those who escape injury may need 24 hours' care. It should be pointed out that injuries not only endanger children health, they also have bad effects on education and other dimensions of the life of children and their parents [2]. Injuries impose enormous costs on civil health and treatment systems [12].

In a retrospective study, using data of infirmaries under the supervision of health-treatment centers in urban and rural areas, and also data of hospitals under Home Accidents Prevention Policy in Fars Province, most incidence was reported to belong to the age groups younger than 5[13]; according to statistics of Tehran Forensic Medicine, of 1439 children death cases, referring to the medical centers, 1072 cases were due to accidents [14].

Unfortunately, there is a lack of epidemiological data on this age group in Kermanshah province. So this study was conducted to develop preventive and regulatory plans, considering the epidemiological profile of injuries.

Methods

This survey is a cross-sectional study, gathering its data from Health Vice-presidency of Kermanshah University of Medical Sciences. It covers all the injured whose reason of injury was referring to private and public hospitals under the supervision of Health Vice-presidency of Kermanshah University of Medical Sciences, during 2015. The total number of hospitals included in this study was 20 from 12 cities of Kermanshah Province. The methodology of gathering data for this study involved nurses in A & E departments of hospitals keying in the information of the injured people into the State Software for injury Registration, and reporting it to Health Administration of Kermanshah at the end of each year. All registered individuals in the software were included in the study. The definition and classification of information related to injury

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types are based on the International Statistical Classification of Diseases and related Health Problems (10th Edition) [15]: age, sex, injury type, region/zone where injury occurred, place where injury occurred, injury outcomes, season and month of injury [16]. The data was reported by descriptive statistics and analyzed via SPSS 16.

Results

In 2015, 3499 cases were registered in hospitals of Kermanshah Province, 63.3% of which (2216 people) were boys and 36.7% (1283 people) were girls. The average age of these people was 17.11±26.76 months old, ranging from 0 to 59 months old; it became evident that the highest frequency belongs to both sexes in 0-11 months' age group. Moreover, the frequency was more in boys in just 2 age groups (0-11 months & 12-23 months); in others, the frequency of injuries was more in girls (Figure 1).

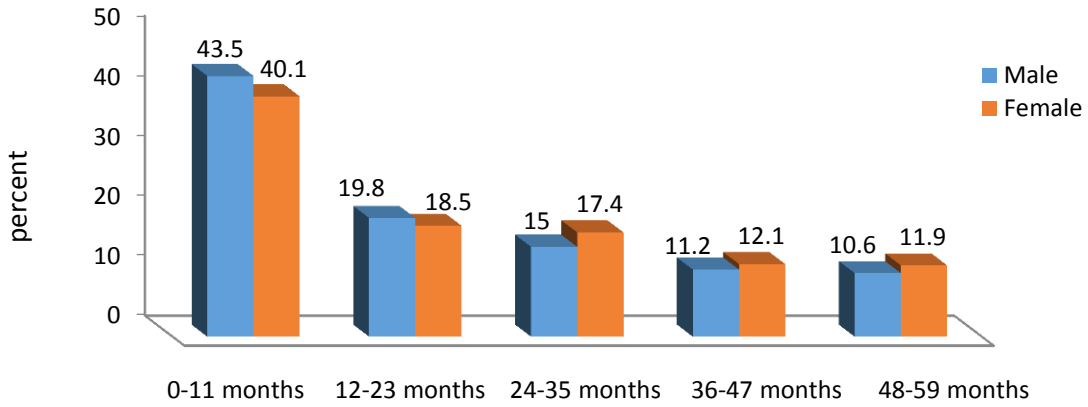


Figure 1. Distribution of injury in children 0-59 months old based on age (months), and sex, Kermanshah Province, 2015

Incidence of injuries in 0-59 months' age group in 2015, was 23.3 cases per 1000 children aged 0-59 months old; the highest incidence was in Javanroud, and the lowest, in Dalahou (Table 1).

Table 1. The Incidence of injury in children 0-59 months old based on Cities of Kermanshah, Kermanshah Province, 2015 (per 1000 people of 0-59 months)

Town	Male	Female	Total	
	Number	Number	Number	Incidence
Dalahou	1	1	2	0.7
Sahneh	1	4	5	0.8
Gilan-e-Qarb	9	6	15	3.6
Qasr-e-shirin	12	6	18	4.3
Kangavar	29	17	46	7.4
Harseen	32	25	57	7.6
Eslamabad Qarb	119	52	171	15
Sonqor	100	69	169	15
Paveh	48	32	80	15.6
Sarpol Zahab	107	71	178	25
Kermanshah	1585	926	2511	32
Javanroud	173	74	247	37
Total	2216	1283	3499	23.3

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In the injuries which occurred to both sexes, the most was falling (52.7%) and the least was drowning (0.02%), which mainly took place in the home. Additionally, the examination showed that 84% of injuries (2938 people) occurred in cities and 8.9% (312 people), in villages. Also, injuries occurred mostly in summer (48.8%), then in spring (33%). Out of the total accidents that occurred in 2015, 99.86% (3494 people) of children survived and 0.14 %(5 people) of children died; 11 of the survived children suffered from permanent disability (Table 2).

Another result was the classification of injuries in terms of months: most injuries occurred in September and least injuries occurred in December (Figure 2).

Table 2. Distribution of injury in children 0-59 months old based on type, place, region, season, and outcome injury, Kermanshah Province, 2015

Variable	Men		Female		Total	
Injury Type	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Road traffic injury (Pedestrian**)**	173	7.8	102	8.0	275	7.9
Road traffic injury (Motorcyclist)	47	2.1	8	.6	55	1.6
Road traffic injury (Occupant)	492	22.2	210	16.4	702	20.1
Scorpion and Snake Sting	56	2.5	31	2.4	87	2.5
Electric Shock	7	0.3	1	0.1	8	0.2
Drowning	1	0.04	0	0	1	0.02
Animal Bite	26	1.2	15	1.2	41	1.2
Violence	64	2.9	16	1.2	80	2.3
Poisoning	292	13.2	200	15.6	492	14.1
Fall	780	35.2	517	40.3	1297	52.7
Burn	213	9.6	156	12.2	369	10.5
Others	65	20.8	27	22.2	92	2.6
Place of Injury						
Public & Recreational Places	53	2.4	17	1.3	70	2.0
Sports Centers	7	0.3	6	0.5	13	0.4
Road & Highway	510	23.0	201	15.7	711	20.3
Home	1222	55.1	824	64.2	2046	58.5
Street & Alley	317	14.3	176	13.7	493	14.1
Work Place	31	1.4	4	0.3	35	1.0
Kindergarten	4	0.2	5	0.4	9	0.3
Unspecified	72	3.2	50	3.9	122	3.5
Region of Injury						
Urban	1855	83.7	1083	84.4	2938	84.0
Rural	180	8.1	132	10.3	312	8.9
Unspecified	181	8.2	68	5.3	249	7.1
Season						
Spring	704	31.8	449	35	1153	33
Summer	1125	50.8	581	45	1706	48.8
Autumn	176	7.9	131	10.2	307	8.8
Winter	211	9.5	122	9.5	333	9.5
Outcome						
Treatment Received	2207	99.6	1276	99.5	3483	99.55
Death	5	0.2	0	0	5	0.14
Disability	4	0.2	7	0.5	11	0.31

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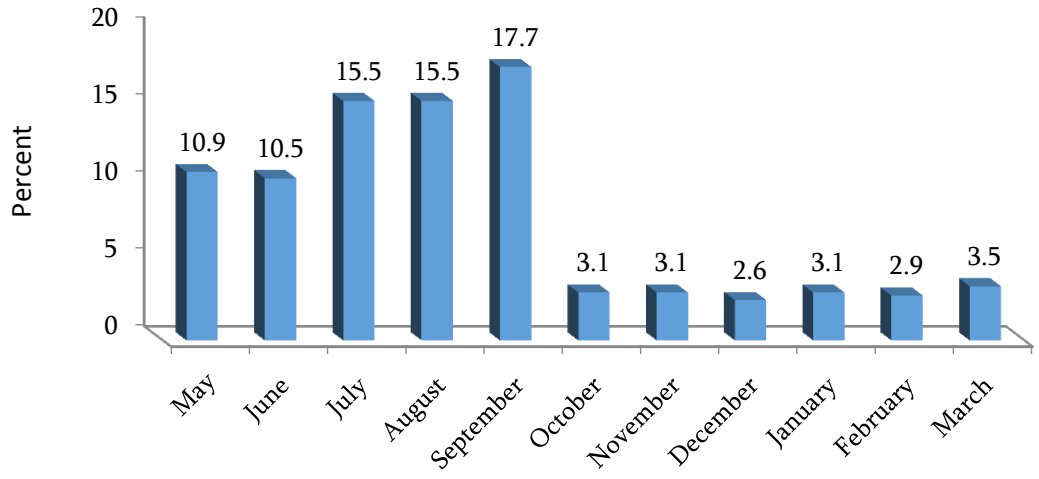


Figure 2. Distribution of injury in children 0-59 months old based on months of the year, Kermanshah Province, 2015

Discussion

Considering that this data was collected from all injured people referring to private and public hospitals of Kermanshah City and other cities in the province, it can be claimed that epidemiological information and the incidence found in this study are valid and can be used for planning.

Results of this study show clearly that boys are more at risk than girls. These results converge with the findings of the study carried out by Bayat et al. in Aligoudarz in 2011 [17]; this study also conforms with similar researches, especially the investigation of 30 hospital cases in Ahvaz in 1999, it was indicated that 63.8% of the injured children and infants were boys and 36.2% of them were girls [18]. Thus mortality is higher in young boys, and several other studies approved of this claim, e.g. the study carried out in Kurdistan showed that mortality rate was 55.7% in boys and 44% in girls [19]; in the study in southern Africa, the ratio of mortality in boys to girls was 1.26 [20]. In the current study, all death cases were in boys, all of them were over 2 years old but one; these results can be attributed to behavioral characteristics, risk-taking temperament, and curiosity of the boys.

Generally speaking, children under 5 years old are the most vulnerable group with regard to home injuries. The highest incidence in this age group was related to fall (52.7%), which has been reported in other studies, for example in a study in Saudi Arabia, it was reported that more than 60% of facial injuries are due to fall. also approved that the most important reason for the death of children under 1 year old was fall [21, 22]. It is worth mentioning that of most of these injuries occurred in residential places (homes) (58.4%) which is in line with the WHO report and Eldosoky study (2012), stating that more than half of injuries that occurred to children younger than 5 years old were at home [23, 24]. Therefore, turning home into safer places and according to the agreed-upon standards is of utmost importance.

Another result of this study was the incidence of road traffic accidents in children. In Iran, the most vulnerable group in this regard includes pedestrians and motorcyclists [25]: in pedestrian collisions, majority was in the age group of young children and those who wanted to start school [26]. In the current study, if the type of injury is exclusively and separately considered, the highest share of road traffic injury goes to children 1 to 59 months old (29.6%), including occupants, pedestrians, and motorcyclists. In statistics

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published in 2004 in Iran, the most common reason for unintentional death cases in infants was the traffic accident [27]. These results confirm that it is mandatory to streamline the cars for more safety and standardize them, and also give instructions to people about driving rules and regulations, whether they are motorists or pedestrians.

In this paper, the highest frequency of injuries was in children 0-11 months old. Study of mortality and death of under-5-year-old children in 4 Iranian provinces showed that most death cases (60.2%) occurred within 0 to 11 months, and the injuries were 2nd most crucial reason of death in this age group [28].

In terms of seasons, the highest number of injuries occurred in the summer (48.8%); totally, most accidents occurred in September (Shahrivar) compared to other months of the year. In a research done in 2011 on the incidence of injuries in Canada, it was also shown that most injuries (about 30%) took place in summer [29], whereas the study by Neghab et al. done within 2001 and 2003 in Shiraz showed a higher incidence in winter [30].

Generally, some important measures must be taken to prevent injuries from happening to this age group with their idiosyncratic physical, physiological, and mental characteristics, and their special restrictions. In Canada, 2 strategies of parental surveillance and elimination of environmental dangers were, either single or in combination, effective in decreasing the rate of injuries [29]. We can also put on the agenda some preventive methods, such as safety and health measures, ergonomic reforms in the home, furniture, dishes, tools, devices, installations, etc. and also safety instructions in order to curtail the incidence of injuries [30].

Conclusion

In the present study, the most frequent injury was falling at home. Since Children less than 5 years old spend most of their time at home, it is important to make the home a safe environment for children. It is recommended to instruct parents about safety conditions.

Acknowledgment

The authors wish to thank the staff of Kermanshah province health center and all those who cooperated to conduct this study.

Conflict of Interest

None declared by authors.

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