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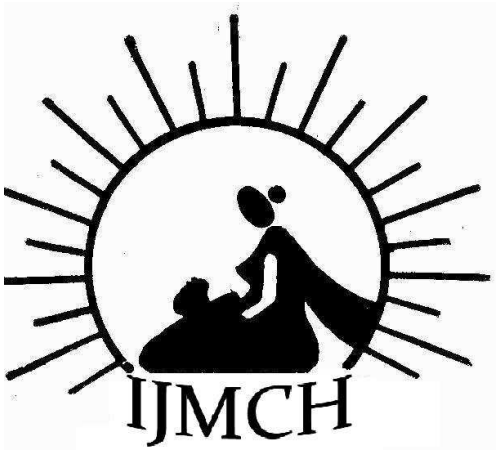

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To study the frequency and type of domestic accidents in children below 15 years of age.

PATTERN OF DOMESTIC ACCIDENTS IN CHILDREN IN A RURAL AREA OF PUNJAB

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Abstract

Objective: To study the frequency and type of domestic accidents in children below 15 years of age.

Study design: Prospective Epidemiological study

Participants / Study area**: Rural area of Dehlon block, Ludhiana district, Punjab**

Methodology: 669 children aged less than fifteen years were studied for a period of one year from Mar 2004 to Feb 2005. Frequency of domestic accidents was studied in them as per Age, sex, mode of injury and category of injury.

Statistical analysis: Percentages

Results: A total of 153 accidents occurred in one year in children under-15 years of age. Incidence density was calculated to be 228 accidents per thousand person-years of observation. 35.32% children in the age-group of 0-5 years & 16.85 % children in 5-15 year age-group met with an accident in one year. In both the age groups, more accidents occurred in males (58.82%) as compared to females (41.17%). There were 53.2 % Trivial, 27.3% Minor & 11.7% serious accidents in under-five age-group. In 5-15 year age-group, there were 23.7 % Trivial, 40.8 % Minor and 23.7 % Serious accidents .There was no Fatal accident in either of the two groups.

Key words: Children, domestic accidents, rural community, mode of injury, category of injury.

INTRODUCTION

Child injuries are a growing global public health problem. They are a significant area of concern from the age of one year, & progressively contribute more to overall rates of death until children reach adulthood. Injury and violence is a major killer of children throughout the world, responsible for about 950 000 deaths in children and young people under the age of 18 years each year (WHO Global Burden of Disease: 2004 update). Unintentional injuries account for almost 90% of these cases. They are the leading cause of death for children aged 10-19 years. (1)

With advances in modern medicine & the control of infectious diseases in the middle of the century, injuries have emerged as a principal threat to the health & welfare of children & adolescents.(2) Accidents in the home as causes of injury and death are of great importance – the equivalent – in Public Health terms , of a major epidemic. (3)

Amongst the accidents in younger age groups, it is seen that the age 1-4 years is the most vulnerable with a rate of 49 accidents per thousand person-years. Most common cause of accidents was fall (38.9%) followed by 24.3% burns (4).

It has been seen that the less severe injuries are often neglected especially if they are non-road-traffic injuries & if the disability period is less than seven days (5). Most of the research, especially hospital based research, has been focused on Major and Fatal injuries. Non fatal injury has not been adequately studied. Hence, this population based study was done.

MATERIAL & METHODS

This was a descriptive l Prospective Epidemiological community-based study carried out in the rural field practice area of Dept of Community Medicine, Dayanand Medical College & Hospital, Ludhiana, Punjab. The study group comprised of 669 children aged less than 15 years**.** The period of study was one year starting from 1st March 2004 to 28th Feb, 2005.

Domestic accident in this study included any unforeseen untoward happening in the house, its compound, up to and including the steps leading to the house.

The entire population of the rural area is closely monitored by female health workers who provide home-based comprehensive healthcare. The health workers of each village made a specific regular enquiry about the occurrence of any accident in the family since their previous visit and reported to the investigator, who then investigated all the accidents personally. During the visit, a pre-tested proforma incorporating the particulars of the family, its dwelling and its surrounding was completed. A second proforma incorporating the details about the accident was also filled up. The proforma covered accidents occurring in the house such as falls, electric current injuries, cuts and burns during kitchen practice, injuries while playing in the house and any mishap by taking poisons / household products like kerosene oil / medicines lying in the house / pesticides and any other type of accidents. These parameters were as per International statistical classification of disease and related health Problems (ICD-10). (6) For each accident case a closely matched control was studied.

Accidents outside the home i.e. at the place of work or at school and those which happen to be road traffic accidents were excluded from the study. Guests/visitors who are not the permanent members of the family were not considered in this study.

The severity of accidents was classified as below: (7)

Trivial: Examined but no treatment given.

Minor: Treated and no more treatment required / Referred to G.P / Admitted for < 1 day.

Serious: Admitted for 1 to 3 days.

Very serious: Admitted for >3 days / Transferred to a specialist.
Fatal: All deaths due to accidents.

The data so collected was tabulated and analyzed. The Incidence density of accidents per thousand person-years of exposure was calculated.

RESULTS

Table 1: Demographic distribution of population

Age-group (years)	Males	Females	Total (%)
0-5	128	90	218 (32.58)
5-15	242	209	451(61.41)
Total	370	299	669(100.00)

Figures in parentheses indicate percentages

The population under study comprised of 669 children less than 15 years of age, out of which 370 were males & 299 female children.(Table 1)
A total of 153 accidents occurred in one year in children under-15 years of age.
Incidence density was calculated to be 228 accidents per thousand person-years of observation.

Table 2: Distribution of Domestic Accident cases as per Age

Age-group (years)	No. of children n=669	No. of cases n=153	No of children injured as a % of total no of children in each age-group
0-5	218 (32.58)	77(50.32)	35.32
5-15	451(67.41)	76(49.67)	16.85
Total	669(100.00)	153(100.00)	22.86

Figures in parentheses indicate percentages

35.32% children in the age-group of 0-5 years & 16.85 % children in 5-15 year age-group met with an accident in one year.(Table 2)

77 (50.3%) accidents occurred in under-five and 76 (49.7%) accidents occurred in 5 -15 years age group.(Table 2)

In both the age groups, more accidents occurred in males (58.82%) as compared to females (41.17%).(Table 3)

Table 3: Distribution of Domestic Accident Cases as per Age & Sex

Age-group (years)	Males	Females	Total
0-5	44 (57.1)	33 (42.9)	77 (100.0)
5-15	46 (60.5)	30 (39.5)	76 (100.0)
Total	**90 (58.82)**	**63 (41.17)**	**153 (100.0)**

Figures in parentheses indicate percentages

There were 53.2 % Trivial, 27.3% Minor & 11.7% serious accidents in under-five age-group. In 5-15 year age-group, there were 23.7 % Trivial, 40.8 % Minor and 23.7 % Serious accidents.

There was no Fatal accident in either of the two groups. (Table 4)

65 % accidents occurred because of falls in under-five age group, whereas exposure to inanimate mechanical forces led to 14.3% accidents. Contact with hot objects/liquids led to 18.2% accidents. In 5-15 year age group, 40.8 % accidents occurred because of exposure to inanimate mechanical forces whereas falls led to 40% accidents. (Table 5)

Maximum accidents occurred in the courtyard (50.6% & 67.1%)followed by the room (29.9% & 23.7%) in both 0-5 and 5-15 year age-group respectively.(Table 6)

Table 4: Age wise distribution of accident cases with respect to category of injury

Age Group	Injury Category					Total
	Trivial	Minor	Serious	V. Serious	Fatal	
0-5	41 (53.2)	21 (27.3)	9 (11.7)	6 (7.8)	0	77 (100.0)
5-15	18 (23.7)	31 (40.8)	18 (23.7)	9 (11.8)	0	76 (100.0)

Figures in parentheses indicate percentages

Table 5: Age wise distribution of accident cases with respect to mode of injury

Mode of Injury	Age Group (Years)	
	0-5	**5-15**
Fall at level	23 (29.9)	21 (27.6)
Fall from height	27 (35.1)	9 (11.8)
Exposure to inanimate mechanical forces	11(14.3)	31 (40.8)
Exposure to animate mechanical forces	0	5 (6.6)
Accidental drowning & submersion	0	0
Other accidental threats to breathing	1	0
Exposure to electric current, radiation & extreme ambient air temperature & pressure	0	0
Exposure to smoke, fire & flames	1(1.3)	2 (2.6)
Contact with heat & hot substances	14 (18.2)	8 (10.5)
Contact with venomous animals & Plants	0	0
Exposure to forces of nature	0	0
Accidental poisoning by & exposure to noxious substances	0	0
Overexertion, travel & privation	0	0
Accidental exposure to unspecified factors	0	0
Total	**77(100.0)**	**76(100.0)**

Figures in parentheses indicate percentages

Table 6: Distribution of Accident Cases as per Age and Place of injury

Place of Injury	Age Group (Years)	
	0-5	5-15
Room	23 (29.9)	18 (23.7)
Kitchen	8 (10.4)	3 (3.9)
Bathroom	02(2.6)	0
Court Yard	39(50.6)	51 (67.1)
Other	5(6.5)	4(5.3)
Total	77(100.0)	76(100.0)

Figures in parentheses indicate percentages

DISCUSSION

The purpose of the present study was to highlight the epidemiological correlates of domestic accidents in the rural area of Dist. Ludhiana in order to address issues in prevention & pre-hospital care and to link the results of this study with existing literature. However, lack of large-scale population- or hospital-based epidemiological studies presented difficulties in analyzing the situation. Further, variations in research design and methodology made comparisons across studies difficult. Nevertheless, the available data from various studies has been presented here along with the results of this research. A total of 153 accident cases which occurred during the study period and 153 matched controls formed the material of study. The calculated incidence density was 228 accident cases per thousand person-years of observation.

Domestic accidents as per Age & Gender

77 (50.3%) accidents occurred in under-five and 76 (49.7%) accidents occurred in 5 -15 years age group. More accidents occurred in the male children (58.82%) than females (41.17%) in both the age-groups. The large number of accidents in age group of 1-5 year can be explained on the basis of their exploratory habit. Children are at high risk because of their natural curiosity, their mode of reaction, their impulsiveness and their lack of experience in the calculation of risk.

A study from Chandigarh shows that 70% of the fire-work injuries are reported in children leading to severe ocular injuries (8). Age 1-4 years was found to be most vulnerable with a rate of 49 per thousand persons-years by Mittal et.al. (1975). A high incidence rate of 33 per thousand person-years was reported in the age-group 5-14 years. The accident rate was almost equal in males & female (4). Another study done by Anita & others in the under-five children in Shindoli village, Belgaum in 2003 found out that 128 episodes of accidents

occurred in the 375 children under observation. 40% of accidents occurred in children of 4-5 year age. 67% accidents occurred in males. (9)

A study about accidents in the Nigerian children reported highest number of accidents in 1-4 year urban age-group & 5-9 year rural age-group. Boys were found to be more involved in domestic accidents. (10) A survey of domestic childhood accidental injuries (1998) conducted in a rural general practice in Arau, Perlis, found out that male children between the age of 6-12 years were the most commonly affected with a male to female ratio of 1.7:1 (11)

An American study by Scheidt and Jones (1995) about nonfatal injuries reported that boys had higher risk of injuries than girls did in nearly all the ages. 13-17 year old boys were 1.85 times more likely to be injured than girls. (2)

Domestic accidents as per the category of Injury

Young children (0-5 years) met with more trivial (53.2%) and minor (27.3%) accidents. In 5-15 year age group, about 65% accidents were trivial and minor, while there were 23.7% serious and 11.8% very serious injuries.

The Chandigarh study in slum children reports maximum number of minor injuries (66.8%) in under-five children (12).

A study on Non-fatal Injuries in 'US Children & Youth' showed that the youngest children had the lowest proportion of serious injuries (17.7%) while adolescents had more proportion of serious injuries (38.7%) (2).

Domestic accidents as per Mode of Injury

In 0-5 year age group, fall from height led to 35% accidents while 29.9% cases occurred due to fall at level. Contact with hot substances led to 18.2%, inanimate mechanical forces 14.3% and accidental threat to breathing led to 1.3% accidents. Falls from height in young children includes falls from one level to another such as from beds, tables, chairs & playground equipment. In 5-15 year age group, 40% accidents each occurred due to falls and exposure to inanimate mechanical forces. Some accidents also occurred because of animate mechanical forces (6.6%), contact with heat/hot substances (10.5%) and smoke /fire (2.6%). Fortunately, no case of poisoning was reported in the study area during the present study.

Similar was the finding in a study carried out in Tunisia (2003) about children's accidents in rural environment. It concluded that falls represented the most frequent domestic accident (38%) (13). Similar finding was reported by a study carried in a Moscow polyclinic in the year 2003 (14).

However, in Ghana (1995) 61% of all injuries in children <5 years old were reported to be burns; 85% of these were scalds primarily from cooking-pots on open, ground-level, wood cooking fires (15).

Domestic accidents as per the place of accident

In the present study, children in both 0-5 & 5-15 years age group met with maximum accidents in the courtyard (50.6% & 67.1% respectively) and room (29.9% & 23.7%).This is because young children fall down frequently while playing & also fall down from bed while sleeping. The interaction of host & environment revealed marked similarity with the type of functions performed at a particular age & a particular place. Mittal BN et al found that the most frequent sites of accidents were bed/ living room & kitchen.(4) However, in a study carried out in Perlis (1998), maximum injuries were seen in the house compound in age 4-12 years and in the kitchen in <4-year old children. (11)

CONCLUSIONS & RECOMMENDATIONS

The present study was an attempt to highlight the epidemiological features of domestic accidents in the study area. It also tried to address issues in prevention of domestic accidents. eg Health Education in local language regarding prevention of accidents, installation of fences, roof-rails, stair-rails, etc. to prevent accidental falls, & preventing floor-level cooking to avoid accidental burns.

Thus, domestic accident cases are a special group in themselves reflecting more clearly than any other, the character & way of living of people. Quite a new pattern of injury attributable to domestic accidents emerges with each technical or cultural change. It is time to create a world where children can learn, play, grow up and live without being killed or injured.

LIMITATIONS

Some degree of Recall bias especially with reference to Trivial injuries could not be ruled out.

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