Some factors influencing home accidents in children

G.A.T.K Athauda[1] and Lalini C. Rajapaksa[2]

Journal of College of Community Physicians of Sri Lanka 1996; 1 : 30 -35.

Abstract

Objective:
To identify risk factors for home accidents that necessitate hospitalization.

Methodology:
Two hundred children admitted to Lady Ridgeway Hospital after a home accident were compared with a control group of 200 children, admitted to the same hospital for a cause other than an injury. Socio-demographic characteristics, physical and psychosocial environment of the child and child care arrangements were compared between the two groups.

Results:
The commonest injuries were falls (43.5%), followed by accidental entry of foreign bodies (21.5%). No significant differences were observed between the two groups in socio-demographic characteristics and risk factors in the physical environment. Psychosocial environment was compared by assessing child behaviour and mother's attitude towards the child. Abnormal behaviour and negative maternal attitude towards the child were commoner among cases. Mothers of accident victims spent less time at home ($p<0.0001$) and child care arrangements were less satisfactory. Logistic regression analysis identified a birth interval of less than one year between index child and older sibling, insufficient time spent by mother at home and negative maternal attitude towards the child as being the most important risk factors in home accidents.

Conclusion:
Quality of child care is important in prevention of home accidents.

Key words: home accidents, child care, psychosocial environment.

[1] Lecturer and
[2] Senior Lecturer , Department of Community Medicine, Faculty of Medicine, Colombo.

Introduction

The effective control of infectious diseases and the resultant drop in mortality from these causes has resulted in accidental injuries assuming a prominent position as a cause of death in childhood. Data available from many countries demonstrate this transition over time (1).

Much of the dramatic drop in childhood mortality recorded in Sri Lanka in recent times, has been due to the reduction of deaths from infectious diseases. This has led to an increase in the importance of accidental injuries as causes of mortality and morbidity in childhood. The Annual Health Bulletin of 1989 (2), ranks accidental deaths other than those due to road traffic accidents as the leading cause of death in those between 5-9 and 10-14 years of age. It ranks as the 10th commonest cause of mortality among children under one year and 5th for those between 1-4 years of age.

Mortality however, is only the tip of the iceberg. Morbidity due to non fatal accidents results in suffering, disfigurement and disablement, often permanent. In Sri Lanka, the hospital morbidity statistics for the year 1989, ranks accidental injuries as the sixth commonest cause for seeking outpatient treatment by those under one year and as the 5th cause for those in the age groups of 2-4 and 5-12 years (2).
Prevention of home accidents therefore assumes public health importance and the planning of preventive strategies is dependent on the risk factors associated with such events. The present

study seeks to identify factors that are associated with home accidents severe enough to need hospitalization.

Methodology

Two hundred children 0-12 years of age, admitted consecutively to the Lady Ridgeway Hospital (LRH) as a result of a home accident, were studied in comparison with a control group of children. Admissions to both medical and surgical wards were included. For each case of home accident, the very next child in the admission register with a non-accidental cause for entering hospital was taken as a control.

Information was obtained on the details of the injury, socio-demographic characteristics of the family and child care arrangements. In the pre-school children, an assessment of their behaviour was carried out using the questionnaire developed by Richmon. An assessment of the mother's mental health was made using a questionnaire developed by Rutter. These questionnaires have been adapted for use in Sri Lanka and validated by Nikapotha.

Results

The children with home accidents were compared with the controls in respect of age, sex, ethnicity and area of residence. It was seen that the age distribution of the two groups were very similar; the mean age for the cases was 5.2 years (SD 3.6), while in the controls mean age was 5.3 years (SD 3.6).

Males were predominant in both groups, 58% for cases and 59% for controls (Table 1). The ethnic distribution of the two groups was very similar, being mainly Sinhalese. A higher percentage of cases were from urban areas (63.5%), compared with the controls (50%) and the difference in proportions was seen to be statistically significant ($p<0.01$). The parental characteristics studied were age, educational level, occupation, marital status and family income. There were no significant differences between cases and controls in these characteristics.

Table 1: Distribution of age, sex, ethnicity and area of residence in the study and control groups

	Cases n=200	Controls n=200
Age in years		
< 1	15 (7.5)	35(17.5)
1 -	90 (45.0)	79(39.5)
5 -	56 (28.0)	61(30.5)
10-12	39 (19.5)	25(12.5)
Sex		
Male	116(58.0)	118(59.0)
Female	84 (42.0)	82(41.0)
Ethnicity		
Sinhala	165(82.5)	174(87.0)
Tamils	13(6.5)	16(8.0)
Others	22(11.5)	10 (5.0)
Area of Residence		
Urban	127(63.5)	100(50.0)
Rural	73(36.5)	100(50.0)

(% are in parentheses)

The physical environment in the homes was studied to ascertain conditions that were likely to increase the risk of home accidents. The method of illumination, type of fuel used for cooking, availability of a separate kitchen, level of the hearth and methods used for the storage of kerosene, medicines and insecticides were studied. Although there were statistically significant differences between cases and controls in respect of the method used for illumination and the type of fuel used for cooking, more of the controls were found to use kerosene oil for illumination and firewood for cooking.

Unsafe practices in respect of storage of kerosene was more common among the controls. Medicines were stored out of reach of children in most instances, in both cases (84.1%) and in controls (81.7%).

When the place used for playing was looked into, it was seen that the accident victims were found to be more adventurous, 28.6% playing at least ten feet away from the house and 4%, away from the home garden. Among the controls, the percentages were 16.4% and 2.8% respectively. More controls preferred to play inside the house (42.3%) than the accident victims (33.1%). This difference in proportions was found to be statistically significant ($p<0.05$).

The psychosocial environment of the study subjects was also assessed. Possible stress in the family was assessed using information on the number of siblings, the birth intervals between the child older to and younger than the index child, mother's health status, attitudes and reactions of the mother to specific child behaviours and the mother's perception of help and support she gets in carrying out her household work load. There were no differences observed between the cases and controls in respect of the number of siblings in the family; 21% of the cases and 30% of the controls were 'only' children.

The mean number of years between the index child and the child immediately older to him was 4.7 years (SD=3.6) in accident victims, in comparison with 8.8 years (SD=2.5) in the control group. This difference was statistically significant ($p < 0.0001$).
The mean number of years between the index child and the child immediately younger was 7.0 years in both groups, the standard deviation being 3.0 and 4.2 respectively.

Four percent of the fathers of accident victims and 6% of the fathers of the others had experienced a serious physical illness. Although this difference was statistically significant, paternal illness does not appear to increase the risk of accidents. The two groups did not differ in the reporting of physical illness in the mothers. The mother's mental health as assessed by using Rutter's questionnaire, did not show a difference in the mean scores obtained by the two groups.

Family problems as perceived by the mother were seen more among the accident group ($p<0.01$), but there was no difference between the two groups regarding the availability of family support as perceived by the mother.

The mother's attitudes towards common child behaviours were studied using the Family Interview Schedule developed by Nikapotha. Mothers were asked to identify actions of the child which made them most angry. Hundred and fifty five of the mothers of accident victims and 144 of the controls responded. Mothers of the controls had identified only six actions, as those that made them angry, while the mothers of accident victims identified, eleven behaviours.
Attitudes were also assessed by using the responses received after direct questioning of the mothers (Table 2).

Table 2 : Attitude of mothers towards children

Attitude	Cases %	Controls %	Level of significance P
Did not get angry by action of child	19.2 n=194	27.6 n=199	<0.05
Reported they got angry easily with children	36.9 n=192	32.4 n=191	NS
Wanted to send child away from home when angry	39.4 n=71	16.1 n=62	<0.01
Punished child when they were angry	49.9 n=178	59.8 n=152	NS

(NS - Not Significant, $p>0.05$)

Twenty seven percent of the mothers of controls did not identify even a single action as provoking anger while among the cases this was

only 19%. (Table 2). The fact that the mothers of the controls were more tolerant towards various childhood behaviours was statistically significant ($p < 0.05$).

Mothers who reported anger with the child easily when they were tired differed significantly in the two groups, being 37% in the cases and 32% in the controls (Table 2). The manner in which the mothers responded when provoked to anger also differed in the two groups. Thirty nine percent of the mothers of cases thought of sending the child away when they were tired while only 16% of mothers in the controls group had a similar reaction ($p<0.01$). On the contrary, nearly 60% of mothers of controls took punitive action to stop a child from an undesirable behaviour while only 50% of the mothers of cases used such actions.

A significantly high proportion of mothers of accident victims (18%) were unable to identify a person in whom the child sought consolation in such instances, while in the controls only 10% could not do so ($p<0.05$).

The behaviour of the preschool children in the study population was assessed using Richmon's questionnaire. The instrument used had 17 questions scored on a graded scale ranging from 1-3, a relatively higher score indicating a tendency towards abnormal behaviour. The mean score for cases was 25.9 (SD=2.4) and that for controls was 24.3 (SD=1.6), the difference being statistically significant ($p<0.05$).

The childcare arrangements were compared between the two groups (Table 3). Only 77% of the accident victims lived with both parents, while 92% of the controls did so ($p<0.01$).
The time spent by the parents at home during the period 6.00 am to 6.00 p.m. was assessed by direct questioning. The time spent by the fathers was very similar in the two groups while the amount of time spent by the mothers of cases (mean=9 hours, SD=1.3) was significantly less ($p<0.0001$) than in the controls (mean=11 hours, SD=2.4). The mean time the mothers actually spent with the children while at home was the same in both groups. However, mothers of the accident victims, spent most of their time also providing care to children other than the index child. In 93% of controls and 80% of the accident victims the mother was the source of information, being the bystander. This difference in proportions was found to be statistically significant ($p<0.01$).

Among the accident victims, the grandparents were the principal caretakers (64.9%) while the percentage for the controls was 29.4. Sixty five percent of accident victims had not been under supervision of an adult at the time of the accident, 31.5% were under direct supervision and 3% were supervised in a group.

Table 3: Child care arrangements

	Cases	Controls	Level of significance
No. residing with both both parents	77% n=200	91.5% n=200	<0.01
Mean time spent by mother at home	9 hrs. n=182	11 hrs. n=197	<0.0001
Mother present as bystander	80% n=200	93% n=200	<0.01

Falling was the commonest injury (43.0%), followed by accidental entry of foreign bodies (21.5%). Accidents caused by a blunt object accounted for 11.5% of injuries. The balance (24%) consisted of burns, poisoning, animal bites and injuries due to sharp objects.

The relative importance of the risk factors for home accidents were studied using multiple logistic regression analysis. Table 4 shows the

factors that were found to explain much of the differences observed between the cases and the controls to be, the gap between the index child and the child immediately older to him (<1 year), the time spent by the mother at home (< 1 hour) and negative attitudes of the mother towards the child.

Table 4: Best fit logistic regression model of risk factors

Level of exposure variable	Coefficient	Level of significance	OR
Age gap between index older child			
> =1 yr.			
< 1 yr.	3.335	0.001	2.81
Time spent by mother at home / 24 hrs.			
> 4 hrs.			
1-4 hrs.	0.6979	0.269	2.01
< 1 hr.	2.011	0.009	7.47
Mother thinks of not sending sending (child away when tired)	1.930	0.012	6.82

Discussion

The two groups were similar in the socio-demographic and parental characteristics studied except in respect of the area of residence. This may be because the choice of healthcare facilities is influenced by social background. The predominance of urban children among the accident victims may be a reflection of the differential admission pattern rather than an increased proneness in the urban child to home accidents.

Meyer et al (3) reported that in 63% of the home accident cases studied, the environment contained many avoidable hazards and the parents of the control group showed greater appreciation of the hazards and were able to help children to avoid these. The present study did not demonstrate this association, again probably due to the similarity in the backgrounds of the two groups. There was a significant difference between the two groups in respect of where the child usually played. More controls played within the house (42.3%) and were in a more protected environment.

Both, the birth interval and the time spent by the mother at home are directly related to the amount of time the mother spent with the index child, showing the importance of inadequate maternal supervision as a risk factor for home accidents. The findings of the study suggests that deficiencies in child supervision and care arrangements are important factors that increase proneness to accidents.

Child spacing and maternal responses suggestive of deficient mother child bonding are seen to play important roles. Accidents were also found to be associated with abnormal behaviour in children. The other factor that was found to be important is the mother's attitude towards the child and the negative way in which she responded to a given situation. This situation probably leads to a sense of insecurity in the child making him more prone to risk behaviour. This highlights the important role played by the quality of child care in the causation of home accidents.

The highest percentage of injuries resulted from falls (43%) while entry of a foreign body through an orifice was seen to be the second commonest cause (21.5%). Animal bites accounted for 6% of the accidents, almost all being dog bites. This is an important area for prevention, specially in view of the high incidence of rabies. There were no snake bites, the study group being mostly urban and semi urban dwellers. The pattern of injuries is somewhat different to that reported by

Karunaratne (5) for a similar population admitted to LRH. In his series he reported only 2.9% of accidents as being due to entry of foreign bodies. This may be due to the fact that present study also included admissions to the ENT ward. Aloysius (6) studying accidents in a general practice setting, reported more injuries due to sharp objects (33%) with falls taking second place (28%). Falls are probably perceived by parents as more dangerous and needing hospitalization for observation and are brought directly to hospital, bypassing the general practitioners.

Conclusions

Quality of childcare including adequate child care arrangements are important for prevention of home accidents. Knowledge to improve the quality of parenting and mother child bonding needs to be imparted to parents. These measures are very necessary in the present context when mothers increasingly seek employment outside the home.

References

1. Taket A. Accidental mortality in children, adolescents and young adults. World Health Statistics Quarterly 1986; 39: 32-56.
2. Ministry of Health. Annual Health Bulletin Sri Lanka, 1989.
3. Meyer RJ, Roelofs HA, Bluestone J, Redmond S. Accidental injury to the preschool child. The Journal of Paediatrics 1963; 63: 95-105.
4. Corsa L, Stallons RA. Epidemiological study of childhood poisoning in two Californian Counties. Paediatrics 1961; 28: 480-85.
5. Karunaratne GW. Home accidents in Sri Lanka. Ceylon Journal of Child Health 1981; 12: 3-8.
6. Aloysius DJ. Home accidents in general practice. Ceylon Medical Journal 1984; 291: 29-33.