

Original Research Article

A cross-sectional study on domestic accidents in the urban field practice area of a private medical college, Davangere, Karnataka

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ABSTRACT

Background: The public health experts have coined the name 'Modern Day Epidemic' for accidents. Accidents especially domestic are a world-wide public health problem. The relationship between domestic accidents and human health is direct and associated with a chain of socio-economic consequences. The objectives were to study the magnitude and types of domestic accidents in the urban field practice area and to study the healthcare seeking behaviour following domestic accidents.

Methods: A community based cross-sectional study was carried out during September 2016 - November 2016 in the urban field practice area of a Medical College in Davangere. A sample size of 2000 was covered by interviewing 366 households. By using pre-designed, pre-tested questionnaire information was collected on basic socio-demographic details, housing conditions, nature and timing of domestic accidents and the health care seeking behaviour.

Results: The magnitude of domestic accidents was 5.2%, with falls being the most common domestic accidents (67.2%) occurring during the evening hours. Health seeking behaviour was found to be satisfactory.

Conclusions: In our study the domestic accidents were more commonly found in the extreme age groups. Falls were the most frequent type of domestic accidents which occurred during the morning and evening hours, therefore there is a need for adequate lighting during evening hours to prevent dim light as well as proper designing of house to make it elderly and children friendly. The health education should be given regarding necessary safety precautions to reduce the occurrence of domestic accidents.

Keywords: Domestic accidents, Falls, Urban area, Health seeking behaviour

INTRODUCTION

Accidents represent a major epidemic of non-communicable disease in our country. The public health experts have coined the name 'Modern Day Epidemic' for accidents. Accidents especially domestic are a world-wide public health problem. Accidents have their own natural history and fortunately follow the same epidemiological pattern of agent, host and environment thereby facilitating their study. The relationship between

domestic accidents and human health is direct and associated with a chain of socio-economic consequences.¹

Injuries are responsible for approximately 9% (about 5.12 million) of all causes of deaths in the world and about 16% of the disabilities are reported due to injuries. About 3.6 million people die of unintentional injuries and about 1.5 million die of intentional injuries.² Injury accounts for 10% of disability-adjusted life years (DALYs) lost globally and 16% of total disease burden in terms of

DALYs in India which is expected to increase to 20% by 2020.^{3,4} An estimated 424,000 fatal falls occur each year, which are responsible for 17 million DALYs lost and 80% of them occur in the low and middle income countries making it the second leading cause of unintentional injury death, after road traffic injuries.⁵ In 2011, an estimated 359,000 people died from drowning making it a major public health problem worldwide. It is the 3rd leading cause of unintentional injuries/death constituting about 7% of the injury related deaths. Burns account for 265,000 deaths annually and estimated 1 lakh people are moderately or severely burnt every year in India making it a global public health problem.¹ People from lower socio economic status, with underlying medical conditions, living in poor housing conditions and lack of proper safety measures are at higher risk of domestic accidents. The problem is graver in developing countries, particularly in rural and urban areas, shanty towns or informal dwellings.⁶ Due to domestic accidents people may land up into economic loss, disability, deformity and premature death. The type of accidents varies with the age group; children in particular are more vulnerable to domestic accidents during playing or sometimes due to lack of attention, elderly people are prone to accidents because of their failing vision, slow movements, osteoporosis and osteoarthritis. Along with the communicable and non-communicable diseases domestic accidents also attribute to a remarkable morbidity and mortality. Hence this study intends to bring out magnitude of domestic accidents and their pattern in the urban field practice area of a Medical college in Davangere.

METHODS

The present descriptive cross sectional study was carried out in the urban field practice area (Bashanagar) of S.S. Institute of Medical Sciences and Research centre, Davangere from September to November 2016. There are 17 cross/lanes in the urban field practice area comprising of 1,987 households and a population of 11,598. Six crosses were selected randomly, which covered 385 houses. The members who did not give consent to participate in the study, the houses which were locked even after two consecutive visits, intentional injuries such as suicide attempts, homicide, and violent assault were excluded from the study. A total of 366 houses which constituted 2000 individuals were visited and interviewed after obtaining informed consent. Complete information of 2000 study participants was collected by trained postgraduate students and interns using a semi-structured, pre-tested questionnaire consisting of socio-demographic details, housing conditions, time, place of occurrence and nature of domestic accidents, money spent for treatment and the health care seeking behaviour.

Domestic accident was considered when any of these individuals had met an accident inside the house or in the immediate surroundings of the house during the last 3 months from the date of survey. Overcrowding was

considered when the number of persons per room exceeded the accepted standards.¹ Socio economic classification was estimated based on the modified BG Prasad's classification. For children, data were collected from their parents/close relatives.

The following operational definitions were used in the study. An accident is defined as "a sudden, unexpected series of undesired occurrences in the interplay between individual and environment which lead to personal injury". "Domestic accident" means an accident which takes place in the home or in its immediate surroundings, and, more generally, all accidents not connected with traffic, vehicles or sports. They include poisoning (drugs, insecticides, rat poison, kerosene), falls (stair cases, while playing, slipping in the bathroom), burns (any hot liquid, electricity, crackers or fireworks, chemicals etc.), drowning (water tanks of the house), injuries due to sharp objects, ingestion of foreign bodies and animal bites like scorpion sting, snake bite, centipede bite etc.¹

Statistical analysis

The collected data were entered in Microsoft Excel 2013 and analysed using Epi info 6. The results were interpreted as percentages and proportions. Chi-square test was applied to study the association between occurrence of accidents and different socio-demographic variables. P value less than 0.05 was considered significant.

RESULTS

The present cross sectional study included 2000 participants belonging to 366 households of the urban field practice area. Among the study participants 50.9% were males and 49.1% were females. Majority of the participants were in the age group of 0-15 years (35.5%), while only 5.1% were above 60 years. About 56.3% of the participants belonged to class 4 and only 2.4% belonged to class 1 socio economic status according to Modified BG Prasad's classification. Majority of the participants (71.7%) were living in semi-pucca houses and 58.8% of the participants were residing in the overcrowded housing conditions (Table 1).

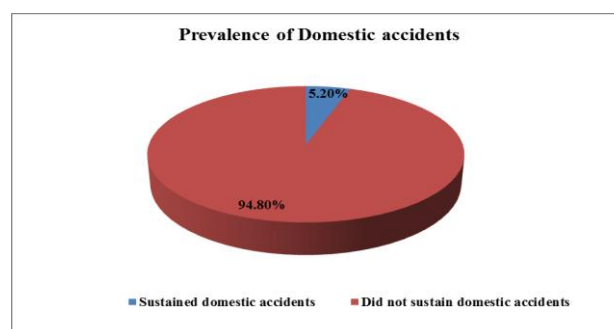


Figure 1: Prevalence of domestic accidents among the study participants (n=2000).

Among the 2000 study participants, 104 individuals sustained domestic injuries; hence the magnitude of domestic accidents is 5.2% (Figure 1). Out of 104 individuals who sustained injuries, 54.8% were males and 45.2% were females (Figure 2).

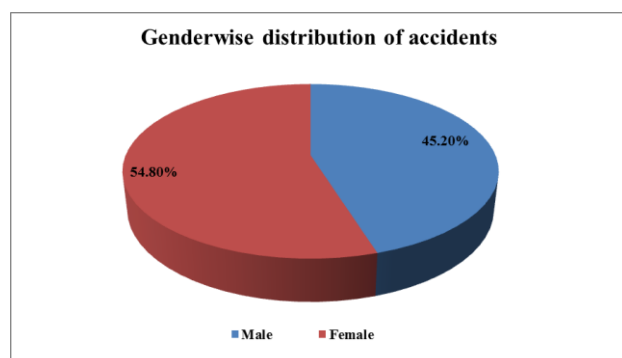


Figure 2: Gender wise distribution of accidents (n=104).

Table 1: Socio-demographic characteristics and housing condition of the study population.

Variable	Frequency	Percentage (%)
Gender		
Male	1018	50.9
Female	982	49.1
Age group (years)		
0-15	710	35.5
16-30	390	19.5
31-45	410	20.5
46-60	387	19.3
61-75	103	5.1
Socio - economic status (modified BG Prasad's)		
Class I	48	2.1
Class II	220	11.0
Class III	606	30.3
Class IV	1126	56.3
Type of house		
Semi – pucca	1434	71.7
Kutcha	128	6.4
Pucca	438	21.9
Overcrowding		
Yes	1176	58.8
No	824	41.2
Total	2000	100

Table 2, represents the pattern of domestic accidents. The most commonly reported accidents were falls, i.e., 67.3% which includes fall on floor, slipping in bathroom, fall from height and fall from stairs etc., followed by burns (25%) which included burns in kitchen while cooking, burns due to spilling of hot liquids or due to hot water in the bathroom. Electrical accidents such as electrocution accounted for 5.7% cases. There was one case each of drowning and animal bite.

Table 2: Pattern of domestic accidents.

Nature of accidents	Frequency	Percentage (%)
Falls	70	67.3
Burns	26	25.0
Electrical accidents	6	5.7
Drowning in water tank	1	1.0
Animal bite	1	1.0
Time of the accident		
Evening	40	38.5
Morning	36	34.6
Afternoon	18	17.3
Night	10	9.6
Site of domestic accident		
Front yard	41	39.4
Kitchen	25	24.0
Living room	14	13.5
Bathroom	12	11.5
Stairs	8	7.7
Backyard	4	3.8
Total	104	100

Occurrence of domestic accidents were found to be more during the evening hours (38.5%) followed by the morning hours (34.6%) and the majority of the accidents occurred in the front yard (39.4%) followed by kitchen (24%). Bruises and abrasions (52%) were the most common type of injuries sustained followed by burns (23%) and fractures (13.5%) (Table 3).

Table 3: Type of injury.

Sl no	Type of injury	Frequency	Percentage (%)
1	Bruises and abrasions	54	52.0
2	Burns	24	23.0
3	Cut and lacerations	12	11.5
4	Fractures	14	13.5
Total		104	100

Table 4: Occurrence of domestic accidents according to age group.

Age group	Domestic accident		Total n (%)
	Yes n (%)	No n (%)	
0 -15	40 (5.2)	730 (94.8)	770 (100)
16-30	24 (5.2)	436 (94.8)	460 (100)
31-45	22 (5.2)	399 (94.8)	421 (100)
46-60	8 (5.0)	150 (95.0)	158 (100)
61-75	10 (5.2)	181 (94.8)	191 (100)
Total	104 (5.2)	1896 (94.8)	2000 (100)

$\chi^2=0.007368$, $df=4$, $p=1$.

Table 5: Occurrence of falls according to age group.

Age group	Falls n (%)	No domestic accidents n (%)	Total n (%)
0 -15	37 (4.8)	730 (95.2)	767 (100)
16-30	2 (0.5)	436 (99.5)	438 (100)
31-45	15 (3.6)	399 (96.4)	414 (100)
46-60	7 (4.5)	150 (95.5)	157 (100)
61-75	9 (4.7)	181 (95.3)	190 (100)
Total	70 (3.6)	1896 (96.4)	1966 (100)

 $\chi^2=16.99$, df=4, p=0.001.

Table 6: Occurrence of falls with overcrowding.

Overcrowding	Falls		Total
	Yes	No	
Yes	45	113	1176
No	25	799	824
Total	70	1930	2000

 $\chi^2=0.9011$, df=1, p=0.17.

Table 4 shows that occurrence of accidents was almost same in each age groups whereas occurrence of falls was higher in the extremes of age groups i.e. in the younger age group of 0 -15 years and elderly above 60 years and least in 31-45 year age group which is statistically significant (Table 5).

In our study, the occurrence of falls was found to be more in the houses which were overcrowded compared to houses which were not overcrowded, though this was not found to be statistically significant (Table 6).

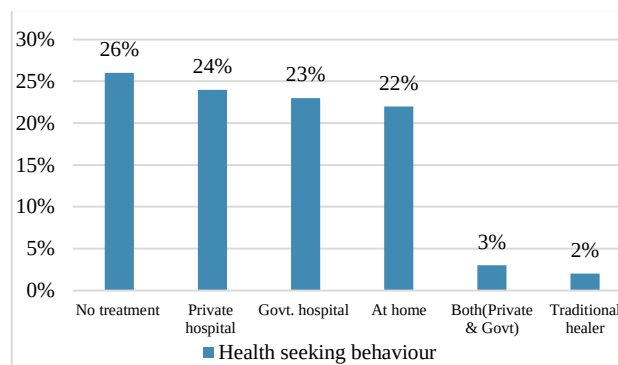

Figure 3: Health seeking behaviour (n=104).

Figure 3 shows that the health seeking behaviour of the participants who sustained injuries. On sustaining injury, 24% visited private hospital, 23% visited government hospital, while few (3%) sought health care from both government and private hospitals. About one fourth (26%) of the study participants who sustained injury had taken no treatment at all because of the minor injuries which did not require treatment in health facility. 22% were found to have taken self-medication or treatment at home with the home remedies like turmeric, oil massage, applying toothpaste for minor burns etc. (Table 7) and 2% sought healthcare from the traditional healer.

Majority of the people who sustained injuries recovered completely (85.6%), while 12.5% had temporary disability and 1.9% had permanent disability. The mean days of restricted activity were 33 days. The average amount spent on treatment was Rs.5302.8 and the income lost due to accident was Rs.7677.27 (Table 8).

Table 7: Home remedies used for the management of domestic accidents.

Types of accidents and practices		
Cuts and laceration:	Burns and scalds:	Others:
- Application of turmeric paste. - Application of pressure at the bleeding site.	- Application of toothpaste or any cold cream to relieve the pain. - Puncturing of the scalded portion and application of any available antiseptics.	- In insect bites like centipede, scorpion bite applying ice and later turmeric. - Taking the old medicines which are present at home which were taken for the same complaints previously, advised by the doctor.

Table 8: Outcome of domestic accidents and socio economic consequences (n=104).

Variable	Frequency	Result
Hospitalization		
Yes	16	15.4%
No	88	84.6%
Outcome of injury		
Recovered fully	89	85.6%
Temporary disability	13	12.5%
Permanent disability	2	1.9%
Total	104	100%
Mean days of hospitalization		13.6 days
Mean days of restricted activity		33.09 days
Average money spent on treatment		Rs 5302.8
Average income lost due to accident		Rs 7677.27

DISCUSSION

In our study out of the 2000 study participants, 104 had suffered from domestic accidents in past 3 months. In our study, the overall prevalence of domestic accidents was 5.2% which is less compared to that of 9.6% found in a study conducted by Masthi et al in Karnataka and to 9.4% in a study conducted by Sudhir et al.^{7,8} Similarly in a study done by Shawon et al, the prevalence of domestic accidents was found to be 14.6%.⁹ The difference in the prevalence of above studies may be because they have included the domestic accidents which have occurred in the last one year where as in our study domestic accidents which occurred in the past 3 months were included. Similar to our study, Bhandari et al conducted a study in a semi urban area of Gujarat where in the prevalence was very less (1.7%) because of better housing conditions and the safety precautions taken to avoid any such injuries.¹⁰

Falls was the most common domestic accidents reported in our study that is similar to that of studies done by Masthi et al, Sudhir et al, Shawon et al and also in the study done by Bhandari et al.⁷⁻¹⁰ However, there are some studies conducted in Turkey, Pakistan and Iran that reported burns as the most common domestic accident.¹¹⁻¹³ This variation could be due to the differences in the lifestyle, habits and level of people's awareness among these countries.

Males were more commonly affected by the domestic accidents compared to females in our study though it is not significant but it was similar to the studies done in Imphal by Hmingthanzuala et al and in Tamilnadu by Kumarasamy et al where as in the studies of Masthi et al, Bhandari et al and Haniff et al, they were more common in females as they spend most of the time at home compared to males.^{7,10,14-16} Falls was more commonly reported among children and elderly, which is consistent with the results of Sudhir et al and Bhandari et al.^{8,10} However, studies conducted in Avsarogullari et al, Neghab et al and by Chaurasia et al, it was observed that higher proportion of burns as most common domestic accident.^{11,13,17} Shawon et al reported that courtyards and kitchen were the common places where domestic accidents happened, where as in our study, they were common in front yard and kitchen.⁹ This is because of the absence of courtyards in many of the houses located in our study area. Evening hours were the commonest time period when many domestic accidents took place in our study; this might be because of inadequate lighting during evening hours. These findings are same as the study conducted by Madhavi et al, whereas they were more during morning hours in a study carried out in Gujarat.^{18,10}

About 50% of the domestic accident victims received treatment either in private/government hospitals or in both the health facilities, which is lesser compared to study carried out in Bangladesh (84%).⁹ In our study 22% of the subjects took self-treatment at home by home

remedies. This might be because the injuries were not serious or very minor, hence not requiring any treatment at hospitals. Out of the participants who sustained injuries and gone to hospital 15% were admitted in inpatient wards, whereas in Gujarat study, it was 17.4%.¹⁰ The mean duration of hospital stay was 14 days in our study.

We have observed that most of the victims of domestic accident had recovered completely (85.6%), some were in the temporary disability phase (12.5%), and few victims had permanent disability (1.9%). No deaths were reported due to domestic accidents. This is consistent with the results of a study by Bhandari et al where full recovery was observed in 83% cases of domestic accidents.¹⁰ However, Neghab et al in shiraz reported that permanent disability rate was 0.05% and mortality rate due to domestic accidents was 1% in their study.¹³ Disability and economic loss was higher among falls because of the fractures and bedridden status than other accidents.

The strengths of our study are large sample size, inclusion of all domestic accidents and detailed study of risk factors, medical and economic consequences of the domestic accidents.

Chances of recall bias are one of the limitations of our study because any minor injuries might have been forgotten by the participants. However, efforts were made to reduce this bias through intensive training before the study and continuous supportive supervision during the study by the research staff and postgraduates.

Falls was the most common domestic accident reported. Some important risk groups for domestic accidents were children, female and elderly. Economical loss in terms of money lost due to restricted activity was more than the money spent on the treatment. In order to prevent and control the domestic accidents, promotion of household safety measures, and creation of awareness among the community using IEC interventions have to be undertaken.

CONCLUSION

The present study was an attempt to highlight the epidemiological features of domestic accidents in the study area. They were more commonly found in the extreme age groups with falls being the most frequent type, majority of which occurred during the morning and evening hours because of the dim light inside and outside the houses and they were more in males. Burns were the second most common domestic accidents. Health Education in local language regarding prevention of accidents was given to the participants after filling the proforma such as adopting roof-rails, stair-rails, good illumination inside the house, avoid slippery and sloppy surfaces, avoiding floor-level cooking, contact with the hot liquids and open flames to avoid falls and burns. Our study also identified the health seeking behaviour and economic impact on the victims of domestic accidents.

Hence, people should be educated regarding necessary safety precautions for reducing the occurrence of domestic accidents.

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