

Epidemiology of Domestic Accidents

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Abstract

Background: Man has been trying to have safe environment from time immemorial. Most of his time he is leading in the house because of availability of better comforts compared to his occupational environment. If the domestic environment is not safe he will be prone to various types of accidents. The same domestic conditions are not suitable to all the age groups. Global domestic accidents are in the increasing trend and one of the important causes of higher mortality. For prevention of domestic accidents, one should know the reasons for accidents. The present study is to know causes of domestic accidents in different age groups.

Materials and Methods: The present study is a longitudinal study conducted from 2004 to 2007 in Forensic Department of Gandhi Medical College. This is made on the dead bodies subjected to postpartum examinations in the mortuary. A sample size of 100 subjects was taken through simple random method from reported cases due to domestic deaths. Data collected by using first information report, hospital records and postmortem examination report. Laboratory support was obtained in ambiguous postpartum reports. The entry of data a format was designed with pretesting of adequate sample. Data analyzed using excel.

Result and Observations: In the present study 100 subjects were taken. Among the study subjects 59% are males and 41 females. 41% of domestic accidents are in children. Significant deaths are from illiterate and from low income groups. Most of the deaths reported from day wage earners and from manual labors. Injuries due to falls, burns and poisoning are the major causes observed in the present study. Three fourth of deaths occurred during day time. In old people deaths occurred in wash rooms due to falling.

Conclusion and Recommendations: Injuries are the leading causes of deaths in all age groups. Injuries, burns, poisoning, drowning, electrocution, poisonous animal bites, and asphyxia are seen as causes of death. Creating awareness on domestic accidents and preventive measures will play an important role.

Keywords: Domestic accidents; Asphyxia, Electrocution, Injuries.

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Introduction

Accidents take place in a wide variety of environment including domestic environment. The following are some of the domestic accidents commonly seen in various age groups. Fires (including the Deepavali accidents in children), Arson Inhalation of smoke (including carbon monoxide. Lightning. Electrical hazards

Liquefied Petroleum Gas explosions in Kitchens, Kerosene pumps stove explosions Accidental poisoning consumption of stored chemicals (including the organophosphates, chemicals used for cleaning or gardening, oxalic acid, sodium meta bisulphate. Over Dosage of Medicines and consumption of medicines under confusion in elderly people. Accidental falls in the bathrooms in elderly people. Toddler – injuries (like scalds and other injuries).

Socio-economic conditions of the families play an important role in acquiring basic comforts of home.¹ These are compromised in low income groups. Irregular arrangements of furniture, imperfect electrical wiring and exposing of sharp objects in kitchen are commonly observed in some of the upper socio-economic families as causes for domestic accidents. Birth asphyxia is the main cause of death in new borne babies. Poisoning due to colors of dyes is the main cause in infants. Toddlers have more curiosity of exploring and may susceptible to accidents due to injuries. Addictions to drugs are commonly seen in adolescent age groups. Psychological hazards related to stress are seen in adult age group. Degenerative changes due to increase of age is responsible domestic accidents in elderly.

Domestic accidents are common all over the world.¹ In the rural areas of developing countries, domestic accidents are a serious problem.² It is quite a new pattern of injury, attributable to domestic accidents emerging with technical or cultural change.³ The public health experts have coined the name Modern Day Epidemic to accidents.⁴ Within the accidents, domestic accident is gaining more importance among the researchers.⁵ Domestic accidents are one of the five leading causes of death in industrialized and developing countries.⁶

Domestic accidents are of two types. They may be natural and intentional like suicides or homicides. Accidents can be prevented through behavioral changes of public and structural changes of domestic environment.³ Structural changes of home environment are giving more promising results in most of the cases. The present study is to know the epidemiological features of domestic deaths. The study was conducted in Gandhi Medical College, Hyderabad.

Objectives

1. To correlate the socio-demographic factors in relation to domestic deaths
2. To know the types of domestic deaths

Materials and Methods

The study is made on the dead bodies of the deceased, which were subjected to Postmortem examinations in the mortuary of Department of Forensic Medicine, Gandhi Medical College, Hyderabad, from January 2004 to June 2007. Only those dead bodies, which died of domestic accidents, are selected.

The inquest, First information report, Statements made by the relatives, Hospital records, Panchanama of scene of offence etc, are collected from the Police, apart from the Postmortem examination report from the Department to get the data. Some information is also collected from the relatives, who attended the Mortuary at the time of Postmortem examination, for history of events. Visit to the scene of offence is made whenever it is necessary.

In some cases where they are admitted in to the Hospital, their investigations, including X-rays and CT scanning reports are taken and they correlated with findings of Postmortem examination.

After collecting the above information, a data sheet is prepared and analyzed. The data is then processed. All the information is tabulated.

Results

The incidences of domestic accident deaths were more due to injuries (37%) followed by burns (28%) and poisoning (17%). In this total the males outnumbered the females by 13%.

The present study was mainly aimed to analyze the different deaths occurring in the domestic environment. In this study 100 subjects were taken. The study period was from 2004 to 2007. The sex ratio of the study subjects was M: 59:F: 41. The study shows that, accidents were common in childhood including toddlers and children (41). Again, it rose in the age group of more than sixty years (34). No neonates died in the present study, and only one 10 months male infant died of drowning in a bath room, by falling in to a water tub.

Table 1: Age and Sex distribution of Domestic Accidents

	Male	Female	Total
Neonate (less than 28 days)	0	0	0
Infant (less than one year)	1	0	1
Toddler (one to three years)	9	5	14
Child (Three to twelve years)	15	12	27
Adolescent (Thirteen to nineteen years)	8	6	14

	Male	Female	Total
Adult (Twenty to fifty nine years)	6	4	10
Old aged (Above Sixty years)	20	14	34
Total	59	41	100

The incidence of domestic accidents was more in illiterate and in low socio-economic Group 1. Majority of the victims were from labour category, of both industrial and agricultural origin. Deaths among professionals and skilled men were less. More number of domestic deaths reported from urban area. There was no difference on basis of status of marriage.

Table 2: Marital status of Victims of Domestic accidents

	Male	Female	Total
Unmarried	33	23	56
Married	20	14	34
Widowed	6	3	9
Divorced	0	1	1
Total	59	41	100

Injuries due to falls (14), burns and scalds (10), and poisoning (10) were the leading causes of death in toddlers and children. Deaths due to Drowning (5) were exclusively seen in this age group of people. One male child died of electrocution, while playing with kite on terrace, one male child died of scorpion sting, and another female child died of strangulation when she was playing in a cotton sling (made like a cradle).

Many of the deaths (76) occurred during day time. All animal bites (3) occurred during night time only. Incidence of injuries (11), burns (5) and electrocution (4) were also significant during night time. One old aged male person died after falling in to unprotected wall of balcony, in the night time.

Table 3: Occupation of victims of Domestic accidents

	Male	Female	Total
Non working	12	8	20
Students	10	6	16
Labourer	25	10	35
House hold	4	14	18
Skilled labourer	7	2	9
Professional	1	1	2
Total	59	41	100

In adolescents also injuries (5) was leading over burns (4) and poisonings (3). One girl drowned to death by falling in to a water sump in the garden.

In adults, burns (5) were the leading cause, over injuries (3) and electrocution (2).

Table 4: Residence of victims

	Male	Female	Total
Rural	19	8	27
Urban slum	26	25	51
Urban	14	8	22
Total	59	41	100

In relation to the place of accident, Kitchen (17) was the place for most of the accidents in toddlers and children, followed by living room (7), bed room(5), bath room(5), garden (5), and staircase (2). Bath room (11) was the area for receiving injuries in old aged people. Living room (9) was also another important area to meet with accidents in old age. Other prone areas include stairway (6), garden/terrace (3), bed room (2), and kitchen (2), and one security guard died in out house.

For adolescents and adults, Kitchen (8) was found to be the risky area, followed by bed room (5), garden (5), living room (4), stairway (1), and bath room (1).

With regards to the rooms where accidents took place, Injuries (7) and burns (7) were common in the living room, followed by poisoning (5). One electrocution also occurred in living room. Injuries (6) and burns (4) were also common in bed room. One asphyxial death and one poisoning was seen in an old women in bed room. Head injuries (4), injuries to spinal column (2) and one fracture of femur were among the injury deaths. All these occurred due to fall from height, when they were working

Bath room was the place, where most of the old people slipped and received fatal injuries (11). Drowning (6) of children and toddlers occurred in bath rooms. One incidence of burns occurred in an adolescent female, nearby bath room, when she was heating water. Fractures of long bones of lower limb (7), head injuries (4) were seen in injury deaths.

Kitchen was the place to receive most of the fatal accidental burns (16). Poisonings (7) also occurred in kitchen apart from injuries (2) and electrocutions (2). People fell down from stairway and received injuries in 9 cases.

Poisoning (4), Electrocution (3), snake and scorpion bites (3), Injuries (2) and one drowning were seen in garden.

One security guard died in outhouse due to inhalation of smoke.

Table 5: Place of occurrence in relation with sex/age.

Place of occurrence	Sex	Children	Adolescent	Adult	Old age	Total
Living room	Male	4	2	0	5	11
	Female	3	2	0	4	9
Bed room	Male	2	1	2	1	6
	Female	3	1	1	1	6
Bath room	Male	4	0	1	4	9
	Female	2	0	0	7	9
Kitchen	Male	10	3	0	1	14
	Female	7	2	3	1	13
Stairway	Male	1	0	1	5	7
	Female	1	0	0	1	2
Terrace/ garden	Male	1	0	1	5	7
	Female	1	1	0	0	2
Out house	Male	0	0	0	1	1
	Female	0	0	0	0	0

Discussion

Community based studies carried out at Ghana (1999),⁷ Driscoll et al. in Australia and Macleod et al.⁸ reported higher injury incidence in older people. It was observed that in the age group 5–15 years, 25.3% suffered from domestic accidents in Agarwal et al.⁹ study and in the present study it was 27% it can be explained on the basis of their exploratory habits. The Children are at high-risk because of their mode of reaction and impulsiveness and their lack of experience in the calculation of risk. As per the Agarwal study,⁹ the percentages of deaths due to domestic accidents in age group of 15–45 years were 34.3% compared to the present which is 24%. As per the EHO meeting at Bonn.¹⁰ in May 2008 the accidental domestic deaths in the age group of 0–14 years was 50% which is high compared to the present study which is 6%.

In the present study, males suffered more domestic accidents compared to females the ratio was 59:41 As the per Birute Lithuania study.¹¹ the percentage of deaths of boys who died due to domestic accidents were 64.6% and girls were 35.4%. As per the study of Mackesske and fetch Banbury.¹² UK, deaths due to domestic accidents injuries in age group of 65 years were 18% in females and 32% in males compared to the present study which was 34.1% in females and 33.8% in males.

In the present study the deaths due to injuries were 37% followed by burns 28%, poison 17%, drowning 7%, Electrocution 6% Animal bites 3%, and Asphyxia 2% As per R. Agarwal et al. study.⁹

it was observed that fall from height was a major mode of injury of 44.3%, followed by Mechanical injury 34.6% and burns which was 13% which is similar to the present study. According to the study of Dr. Nathalie Robbel in analysis of the Lereese.¹³ the accident deaths in kitchen were 30% and in bathroom are 25% compared to the present study where in the kitchen it is 27% and in bathroom are 18%. As per the study of Agarwal,⁹ Percentage of injuries deaths in kitchen it were 16.3%, in the stair case 7.3% and bathroom 2.3% compared to the present study where the percentage of deaths due to domestic injuries are 27% in the kitchen, 9% in the stair case and 18% in the bathrooms. As per study of Dr. Gbrielle Ellasabar of Germany,¹⁴ the accident deaths at staircase were 9.2% compared to the present study which is 9% of the total.

Conclusion

1. Children and Old people are the most vulnerable victims for these accidents. There is little variation in sex distribution, and male showed increased tendency to meet with domestic accidents. Injuries, burns, poisoning, drowning, electrocution, poisonous animal bites, and asphyxia are seen as causes of death. Most of the accidents occurred during day time. Burns occurred in kitchen frequently. Poisoning occurred under confusion or due to unprotected spraying in the garden. Electrocution found exclusively in male population, may because of over caution in females or over confidence in male.
2. Poisonous animal bites are seen in garden areas, because of their habitat. Drowning is commonly seen in bathrooms. One old security guard died in his outhouse, where there was burning chulla, liberated smoke, and caused suffocation. Another old woman died of accidental smothering in bed room, when she lay down in prone position, had accidental smothering.
3. Electrocution, drowning, and asphyxia caused instantaneous deaths in many cases. Injuries and poisoning caused deaths within 3 days in most of the cases. Burns caused late deaths.
4. Increasing awareness and accessibility to health care systems are making the relatives

to the victims for rescuing them. And that is why many of the spot death cases are brought to hospital.

Recommendations

In the present study, it is observed that, many of the deaths could be prevented. Majority of the deaths occurred due to lack of awareness and protective measures, Hence some remedies noted, would reduce the incidence.

Children and especially toddlers, being curious start exploring, and become victims of accidents. Hence, the things which harm them must be kept beyond their reach, like, sharp objects, heavy objects, hot objects, inflammable and poisonous substances.

Old aged people, because of their incapability to look after themselves due to their low sensory deficits, motor incapacitation, and reduced reflexes, hence, they must be always under vigilance. Protective measures like railings, guards must be kept to their cots, their toilets must have skid proof flooring. Surfaces of the skid proof floor must always be kept dry. Hearing aids, walking sticks, surgeries for cataracts and treatment for other illnesses, certainly reduces the incidence of injuries.

Kitchen must be well ventilated to let out the fumes by using exhaust fans. All inflammable materials must be handled properly. Insecticides must not be kept in kitchen room to prevent accidental poisoning.

Toilet cleaners, acids etc. must be kept at height. The tiles on the floor of the toilet should be rough (anti-skid) so that one cannot slip.

Garden tools must be kept away from the reach of the children and all garbage and remains of food must be regularly removed, to prevent the habitat of poisonous insects.

Conflict of interest: There are no conflict of interest

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