



A Cross Sectional Study on Domestic Accidents in Urban Slum Community Of Eastern Mumbai, Maharashtra

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ABSTRACT

Accidents are rightly coined as 'Modern Day Epidemic' by public health experts. Home is the most likely location for unintentional injuries. Domestic accidents constitute significant size problem still they have commanded least attention. The objectives of undertaking this study were to find prevalence of domestic accidents and factors influencing different types of domestic accidents in an urban slum. It was a community based cross sectional study carried out from June 2015 to June 2016 in suburban area of eastern Mumbai. Cluster sampling technique followed by simple random sampling from sample frame was used and data was collected from 210 individuals. The collected data was analysed by SPSS (version 20). p value <0.05 was taken as level of significance. Prevalence of domestic accidents in an urban slum community was found to be 10.9%. Majority 77 (36.7%) were ≤ 15 years of age and females were more 130 (61.9%) compared to males 80 (38.1%). Most common domestic accident reported was fall 88 (41.90%). Majority of domestic accidents occurred in morning hours 79 (37.62%). Upper limb was the most common 126 (47.70%) site of injury and incised wound was the most common type of injury 63 (28.20%) among all. Majority of domestic accident subjects found to be occupying overcrowded houses. Age, sex, time of occurrence and overcrowded house showed significant association with type of domestic accident.

Key words: accident, domestic, urban

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INTRODUCTION:

Accidents along with cardiovascular diseases and cancers currently form leading causes of morbidity and mortality both in developed and developing countries. Each year, ten thousands of accidents occur worldwide. In a World Health Organization (WHO) report, the number of deaths caused by accidents was estimated to be 3.5 million annually. This figure corresponds to an average of 10,000 deaths per day [1]. WHO brochure on injuries in SEAR reports that out of 5.1 million deaths from injuries globally, more than a quarter are estimated to occur in the countries of the SEA Region [2]. A total of 75,511 accidental deaths were reported in 53 mega cities during 2014. Maximum number of accidental deaths (9,106 deaths) was reported in Mumbai accounting for 11.7% of total deaths [3]. A large-scale community-based survey in Bangalore revealed that domestic injuries accounted for 14% of total injuries, with the majority occurring among children and the elderly. Common household objects were responsible for all injuries [4]. Accidents can take place in wide variety of environments and there is possibility of accidents in every sphere of human life: at home, while travelling, at play and at work [1]. Home is the most likely location for unintentional injuries [5]. However, accidents which occur in and around the home still command the least attention. There are very few research studies done on home injury compared to road traffic and occupational injuries. Although, domestic accidents represent an important setting for unintentional injuries, most of the studies confined only to specific types of injury, mainly in the pediatric age group and among hospital cases. Studies on domestic accidents are virtually nonexistent in India (underreporting) [6]. The traditional view of injury as an accident has resulted in neglect of this aspect of public health. Information about their distribution, pattern, predisposing factors are hardly known to the epidemiologists [7]. Today injuries are low in priority for policy makers, and only few plans are drawn for injury prevention. In urban areas especially slums, there is overcrowding, lower socioeconomic status and poor housing conditions predisposing population at higher risk of domestic accidents due to lack of proper safety measures. Due to domestic accidents people may land up into economic loss, disability,

deformity and sometimes premature death. Hospital based studies provide a limited and biased picture of the situation regarding injuries, especially in developing countries where a large number of people tend not to use formal health services. Also most of research, especially hospital based research, has focused on major and fatal injuries. Population based estimates of the burden of common injuries such as falls, burns and farm/field related injuries are still uncommon [8]. Hence, in this background this population based household survey study was conducted to know burden, types and factors contributing to domestic accidents and desired information on circumstances in representative samples so that information obtained from study may contribute to the planners in developing appropriate preventive measures.

MATERIAL AND METHODS

Study area and population

This community based observational, cross sectional study was done in Cheetah camp, Mankhurda which is a field practice area of Urban Health training Center of Department of Community Medicine of Topiwala National Medical College, Mumbai. It has population of 83,253 as per family survey done in 2015.

Inclusion & exclusion criteria

All domestic accidents in last one year which required medical attention or home remedies were included. Injuries resulted as a consequence of domestic violence or intentional home injuries were excluded.

Operational definitions

1. Domestic accident: In our study domestic accident refers to an unplanned, unexpected occurrence of event which took place at home resulting in injury to person.

2. Home: In our study home includes dwelling place itself and its immediate surrounding as yard, balcony, stairs and all that is personal to the household

Sample size and sampling technique

Total population of study area as per family survey done in 2015 was 83,253. This area is divided into 11 sectors from sector A to sector K. Total no. of houses in these 11 sectors were 14,297. Cluster sampling technique was used to select samples. First, Out of 11 sectors, two sectors were selected by lottery method (sector F and K). Thus, these two selected sectors had total 1,479 houses comprising of population of 9,616. Then, a rapid survey was conducted by visiting every house in sector F and sector K to do complete enumeration and to find out cases of domestic accidents. All houses which had cases of domestic accidents meeting inclusion criteria were listed. Out of total 1,479 houses 11 houses were locked. So we got information from 1,468 houses consisting of 9,560 individuals. Out of these 1,468 houses 1,024 houses had history of domestic accidents. These 1,024 houses had total 1,042 domestic accident cases (as 18 houses had more than one person with history of domestic accident in last one year) meeting our inclusion criteria. So, this was our sample frame consisting of 1042 individuals.

From our sample frame 20% individuals were selected by simple random sampling as our study sample. This way our sample came out to be 209 so we took round figure 210.

Data Collection & analysis:

Researcher did a house to house visit to houses of selected individuals from sample frame in afternoon time. All study samples were interviewed in their home. The nature, purpose and objectives of the study were explained to the head of family or responsible adult person in family. An informed consent was obtained. The person was interviewed using a semi-structured and pre-tested interview schedule. The interview schedule included information regarding socio-demographic factors and details of domestic accidents. Details of it were entered in proforma. After that we moved to the next selected house. The collected data was entered in Microsoft Excel 2007 (Microsoft Corp., Redmond, WA, USA), and then transferred to and analyzed by using Statistical Package for Social Sciences (SPSS) version 20 (IBM Corp., Armonk, NY, USA). Qualitative data was presented with frequency & percentage tables. Association among various study parameters was assessed by Chi-Square test. The results were presented in the form of text, tables. The results are interpreted and compared with various studies done previously. p value <0.05 is taken as level of significance.

RESULTS

Prevalence of domestic accidents in the present study was found to be 10.9%. Among 210 domestic accident cases, average age was 30 ± 22.89 years. Majority 77 (36.7%) were ≤ 15 years of age. Domestic accident was more common in females 130 (61.9%) compared to males 80 (38.1%). Majority 80 (38.1%) belonged to socioeconomic Class IV. Most of study subjects 108 (51.43%) were educated up to primary school and 111 (52.9%) belonged to nuclear type of family. (Table 1)

Fall was the most common 88(41.90%) domestic accident reported followed by 64(30.48%) cuts and 42(20%) burns. Most 79(37.62%) of the domestic accidents occurred in morning hours. Upper limb was the most common 126(47.70%) site of injury and incised wound was the most common 63 (28.20%) type of injury among all. Majority 135 (64.29%) of domestic accident cases took treatment on OPD basis. Maximum 174 (82.86%) domestic accident cases showed complete recovery. Maximum domestic accident subjects found to be occupying overcrowded houses. Falls were common in extremes of age group i.e. 50 (56.8%) in ≤15 years and 20(22.7%) in ≥61years whereas burns and cuts were most common in the age group of 16-30 i.e.13 (31%) and 22 (34.4%) respectively. IPD care was required for 8 individuals, among these maximum i.e. 7 were in geriatric age group which shows this age group has more severe effects of domestic accidents. (Table 2)

Age, sex, time of occurrence and overcrowded house showed significant association with type of domestic accident while socioeconomic class, place of treatment taken did not show significant association with type of domestic accident. (Table 3)

TABLE 1: Socio-demographic characteristics of domestic accident cases (N=210)

Socio-demographic character	Frequency (%)	
Age Group		
≤15	77 (36.67%)	Mean -30 SD- 22.89
16-30	2 (20.00%)	
31-45	31 (14.76%)	
46-60	10.48% (22)	
≥61	18.10% (38)	
Sex		
Male	38.10% (80)	
Female	61.90% (130)	
Marital status of study subjects*		
Married	75.96% (98)	
Unmarried	13.95% (18)	
Widow	6.21% (8)	
Widower	3.88% (5)	
Socioeconomic status		
Class I	3.33% (7)	
Class II	8.57% (18)	
Class III	33.81% (71)	
Class IV	38.10% (80)	
Class V	16.19% (34)	
Level of education		
Illiterate	25.24% (53)	
Primary school	51.43% (108)	
Secondary school	10.00% (21)	
Higher secondary school	8.57% (18)	
Graduate	4.76% (10)	
Type of family		
Nuclear	52.86% (111)	
Joint	6.67% (14)	
Extended nuclear	40.48% (85)	

(*excluding females < 18 years and males < 21 years, N= 129)

Table2: Distribution of domestic accidents among the study sample (N=210)

Domestic accident	% (Frequency)
Type	
Fall	41.90% (88)
Burn	20.00% (42)
Cuts	30.48% (64)
Other*	7.62% (16)
Time of occurrence	
Morning	37.62% (79)
Afternoon	12.86% (27)
Evening	34.29% (72)
Night	15.24% (32)
Place of occurrence	
Living room	43.33% (91)

Kitchen	27.14% (57)
Bathroom	14.29% (30)
Immediate surrounding	15.24% (32)
Site of injury#	
Upper limb	47.70% (126)
Lower limb	35.30% (93)
Back	6.40% (17)
Head and neck	7.20% (19)
Thorax and abdomen	3.40% (9)
Type of injury#	
Abrasion	26.70% (60)
Contusion	10.70% (24)
Incised wound	28.20% (63)
Laceration	11.20% (25)
Thermal burn / Electric burn	18.70% (44)
Fracture or crush injury	3.60% (08)
Outcome of domestic accident	
Recovery phase	10.95% (23)
Complete recovery	82.86% (174)
Recovered with chronic pain	2.38% (05)
Recovered with deformity or disability	3.81% (08)

* includes fall of object on body, stumbled against steps, catching of fingers in door or window hinges
 #multiple injuries involving multiple sites so total exceeds 210

TABLE 3: Different epidemiological factors associated with type of domestic accidents

	Fall (%)	Burn (%)	Cuts (%)	Other (%)	Total (%)	Chi-square value	p-value*
Age Group						70.869	<0.001
≤15	50 (56.8%)	11(26.2%)	9(14.1%)	7(43.8%)	77(36.7%)		
16-30	7(8.0%)	13(31.0%)	22(34.4%)	0(0.0%)	42(20.0%)		
31-45	3(3.4%)	10(23.8%)	18(28.1%)	0(0.0%)	31(14.8%)		
46-60	8(9.1%)	3(7.1%)	9(14.1%)	2(12.5%)	22(10.5%)		
≥61	20(22.7%)	5(11.9%)	6(9.4%)	7(43.8%)	38(18.1%)		
Sex						15.808	<0.001
Male	47(53.4%)	13(31.0%)	17(26.6%)	3(18.8%)	80(38.1%)		
Female	41(46.6%)	29(69.0%)	47(73.4%)	13(81.3%)	130(61.9%)		
Time of domestic accident						37.567	<0.001
Morning	19(21.6%)	25(59.5%)	30(46.9%)	5(31.3%)	79(37.6%)		
Afternoon	10(11.4%)	1(2.4%)	12(18.8%)	4(25.0%)	27(12.9%)		
Evening	35(39.8%)	15(35.7%)	17(26.6%)	5(31.3%)	72(34.3%)		
Night	24(27.3%)	1(2.4%)	5(7.8%)	2(12.5%)	32(15.2%)		
Place of treatment taken						8.677	0.193
Home care	26 (29.5%)	10 (23.8%)	27(42.2%)	4(25.0%)	67 (31.9%)		
OPD	56 (63.6%)	31 (73.8%)	36(56.3%)	12(75.0%)	135(64.3%)		
IPD	6(6.8%)	1(2.4%)	1(1.6%)	0(0%)	8(3.8%)		
Overcrowding						10.676	0.014
Present	76(86.4%)	28(66.7%)	57(89.1%)	12(75.0%)	173(82.4%)		
Absent	12(13.6%)	14(33.3%)	7(10.9%)	4(25.0%)	37(17.6%)		

* p-value < 0.05 statistically significant

DISCUSSION

We found prevalence of domestic accidents as 10.9% in our study which is almost similar to one year study done by Divya BV et al. who reported prevalence of 8.6% in an urban slum community of Chidambaram. A cross-sectional study conducted in the rural field practice area of Kempegowda Institute of Medical Sciences, Bangalore by Ramesh Masthi NR et al. reported similar the prevalence of domestic accidents i.e. 9.6%. However, Haniff J et al. in their study observed that the prevalence of self-reported home injury for all age groups was 2.5% for one-year [8 - 10]. This difference may be due to different socio-cultural practices and level of awareness in the population under study.

We found domestic accidents more common (36.7%) in the age group ≤15 years . Our findings were similar to findings observed in study by Bhanderi DJ et al. who also mentioned domestic accidents to be more common in 0-15 years and study by Neghab M *et al* who also mentioned more than 25% of accidents occurred among children under 4 years of age [1,11]. This may be because children are at

higher risk because of their natural curiosity, mode of reaction and their impulsiveness and lack of experience in calculation of risk.

We found domestic accidents more in females 130 (61.9%) compared to males 80 (38.1%) in our study. Similar finding was reported by Chaurasia and Shukul in their study as high incidence of domestic accidents in females [12]. This may be attributed to the fact that in our study 68 (32.38%) females were housewives and so they spent more time at home and have a far greater share in the domestic activities as compared to males. In a cross sectional study done by Sudhir *et al.* in rural field practice area of a medical college in Mysore district of South India for duration of one year, the domestic accidents were found to be more common in (68.2%) females [13]. Our findings were in contrary to a study conducted by Thein MM *et al.* where prevalence rate was higher among boys (21.4%) than in (17.5%) girls [14].

Fall (41.90%) was commonest type of domestic accident followed by sharp cut injuries (30.48%), burns (20%) and other types (7.62%) in our study which is similar to findings reported by Bhanderi DJ *et al.*, Chaurasia R *et al.* and Ramesh Masthi NR *et al.* who also found fall to be commonest domestic accident [9,11,12]. But the LARES survey of the WHO Regional Office for Europe reported cuts as the most frequent accident type, followed by falls and burns [15].

In our study, we found domestic accidents occurred mostly (37.62%) during morning hours. Similar findings were reported in the study conducted by Bhanderi DJ *et al.* where majority of domestic accidents occurred during the morning and evening hours [11]. Vani Madhavi Komulla *et al.* in their study conducted in rural area of South India reported that most of the domestic accidents (73.6%) occurred in the morning followed by evening hours [16]. Morning and afternoon were the commonest time period for the domestic accidents as per study conducted by Sudhir *et al.* in rural India [13]. This may be attributed to increased work load in the morning. However in another study conducted by Alptekin F *et al.* it was observed that injuries occurred commonly in (32.6%) evening followed by (24.4%) morning [17].

In present study, living room was the most common 91 (43.3%) whereas bathroom was the least common 30 (14.3%) place of occurrence of domestic accident. In a study conducted by Alptekin F *et al.* 30% of the injuries occurred in the living room [17]. Kitchen was the second most common place for injuries (26.7%) and the bathroom or the toilet was the third (22.1%). Thein MM *et al.* in his study observed that, the commonest place at home where injuries occurred was the (54.7%) living room, followed by (17.7%) kitchen, (13.7%) bedroom and (9.5%) bathroom [14]. In a study done by Ramesh Masthi NR *et al.* the most common place of occurrence of domestic accidents was (46%) kitchen [9].

In our study, upper limbs were observed to be the most frequently involved 126 (47.7%) site of injury followed by lower limbs 93 (35.30%). In a study by Mohammad Reza Fazel on epidemiology of home injuries for a six-year period in Iran, limbs were the most common body region that was injured [18]. Ramesh Masthi NR *et al.* in their study reported upper limbs to be the (70%) most frequent site of injuries in domestic accidents [9]. Similarly, Singh AJ *et al.* in their study observed that limbs were the most frequently involved body parts [19].

In present study, incised wound 63 (28.20%) and abrasion 60 (26.70%) were found to be more common type of injury. This is similar to findings of Ramesh Masthi NR *et al.* in their study in rural area who also reported abrasion (49%) to be the most frequent type of injury [9].

In present study, it was observed that majority 135 (64.30%) of individuals who met with domestic accident took treatment at OPD services. This may be because of good awareness and easy accessibility to health services in study area. While 67 (31.90%) took treatment at home and only 8 (3.8%) of victims required IPD care. Bhanderi DJ *et al.* also observed in their study in semi-urban area that 10.1% were treated at home, 72.5% as outdoor patients and 17.4% as indoor patients [11]. Sudhir *et al.* in their study in rural India found that most of the people took treatment at their home [13]. This difference between an urban slum and rural areas may be because of poor availability and accessibility of health services in rural areas. This difference can also partly be attributed to comparatively lesser health awareness among the people of rural areas.

In present study, fall was found to be the most common in extremes of age group with bimodal age distribution i.e. 56.8 % in ≤ 15 years of age followed by 22.7% in age group of ≥ 61 years. Higher prevalence in children may be because they are very active; they also indulge in playing and other exploratory habits without a proper judgement of risk calculation. Hence they are more exposed to domestic accidents as fall. In older people, physical and mental functions progressively decline. Poor reflexes, lack of proper judgement and co-ordination that accompanies ageing also makes them vulnerable. In addition, arthritis, low vision, etc. are the other disablers of old people that greatly lessen their ability to carry on usual activities safely.

Burn and cuts were most common in 16-30 years i.e. 31% and 34.4% respectively. Individuals in this age are more involved in domestic works like cooking, cleaning etc. This puts them at a greater risk of causing such injuries.

Age, sex, time of occurrence and overcrowded house showed significant association with type of domestic accident while socioeconomic Class, place of treatment taken did not show significant association with type of domestic accident. Bhandari DJ *et al.*, Vani *et al.* and Divya BV *et al.* also reported same findings [8, 11, 16]. However in a study done by Shankar Radhakrishnan *et al.* did not show any statistical association of time with the domestic injuries [20].

LIMITATION

Recall bias can be there as events in past one year were observed so some participants might have missed recalling an episode of domestic accident.

CONCLUSION

Present study was undertaken in an urban slum of field practice area of Community Medicine department of parent Medical College concluded that prevalence of domestic accidents in an urban slum was 10.9%. Most commonly involved age group was ≤ 15 years of age. Females were more prone to domestic accidents compared to males. Socioeconomic Class IV had maximum number of domestic accidents. Fall was found to be the most common type of domestic accident. Majority domestic accidents occurred in morning hours. Upper limb was most commonly involved site of injury. Majority of domestic accident cases took treatment at OPD. Among those who required IPD care maximum were from geriatric age group. Majority of domestic accidents recovered completely. Age, sex, time of occurrence and overcrowded house showed significant association with type of domestic accident while socioeconomic Class, place of treatment taken did not show significant association with type of domestic accident.

RECOMMENDATIONS

Females should be taught safety precautions to be followed while doing domestic work specially cooking. Schools should provide primary education about safety practices to children. Old age people should be provided with nutritional supplements like calcium etc to avoid severity of an accident.

Information, Education and Communication (IEC) activities regarding domestic accidents and its prevention, use of first aid kits for the community is needed. Similar studies involving larger samples and geographical areas are needed for generalization of the results.

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Author's Contribution:

All authors contributed in conceptualization of study, analysis and preparation of manuscript.

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REFERENCES

1. Neghab M, Rajaei FM, Habibi M, Choobinch A. (2006). Home accidents in rural and urban areas of Shiraz, 2000-02. *East Mediterr Health J* 2006;12(6);824-33.
2. Mohan, Varghese M. (2002). Injuries in South-East Asia Region: Priorities for policy and action. New Delhi: World Health Organization; 1-19. SEA/Injuries/Al.
3. Accidental Deaths & Suicides in India, New Delhi: (2014). National Crime Records Bureau Ministry of Home Affairs Government of India.
4. Gururaj G, Suryanarayana SP. (2004). Burden and impact of injuries: Results of population-based survey. Proceedings of the 7th world conference on injury prevention and control, Vienna; 275-76.
5. Home Accident Prevention Strategy and Action Plan 2004-2009. Belfast: Department of Health, Social Services and Public Safety; 2004: 2-32.
6. Gururaj G. Injuries in India : A national perspective In: Burden of disease in India. National commission on Macroeconomics And Health. Ministry Of Health And Family Welfare. Government Of India 2005: 325-47 (Accessed on 2014 Dec 23) Available from: http://www.nimhans.kar.nic.in/epidemiology/doc/ep_ft23.pdf

7. Md. Shajedur Rahman Shawon . (2012). Domestic accidents in a rural community of Bangladesh: A cross-sectional study on their incidence and characteristics. *Developing Country Studies* ISSN 2224-607X 2012:2(7) (Accessed on 3 Dec 2016) Available from URL : www.iiste.org/Journals /index.php/DCS /article/view File/2444/2466
8. Divya BV, Jayasree TM, Felix AJW. A study on occurrence and risk factors of domestic accidents in South India. *Int J Community Med Public Health* 2016;3:2387-92.)
9. Ramesh Masthi NR, Kishore SG, G. Prevalence of Domestic Accidents in The Rural Field Practice Area of a Medical College in Bangalore, Karnataka. *Indian J Public Health* 2012;56:235-7.
10. Haniff J, Aris T, Hairi F, Home Injury in Malaysia: Findings from the 1996 NHMS. *Malaysian Journal of Public Health Medicine* 2000;1:48-54.
11. Bhanderi DJ, Choudhary S. A study of occurrence of domestic accidents in semi- urban community. *Indian J Community Med* 2008;33(2):104-06.
12. Chaurasia R, Shukul M. Home — Is it the safest place? *J Soc Sci* 2006;12(3):171-76.
13. Sudhir, Deepa Krishna, Ashok Nagaralu Channabasappa, Murali Dhar. Prevalence of Domestic Accidents in Rural India: A Cross Sectional study. *Sch. J. App. Med. Sci.*, 2014; 2(2B):657-659
14. Thein MM, Lee BW, Bun PY. Childhood injuries in Singapore: a community nationwide study. *Singapore Med J* 2005;46(3):116-21.
15. Large analysis and review of European housing and health status (LARES). Copenhagen: World Health Organization: 2007.
16. Vani Madhavi Kommula, G.N.Kusneniwar. A Study of Domestic Accidents in the rural area of South India. *Int.J.Curr.Microbiol.App.Sci* (2015) 4(4): 764-767
17. Alptekin F, Uskun E, Kisioglu AN, Ozturk M. Unintentional non-fatal home- related injuries in Central Anatolia. Turkey: Frequencies, characteristics, and outcomes. *Injury, Int J Care Injured* 2008;39:535-46.
18. Mohammad Reza Fazel, Esmaeil Fakharian, Ebrahim Razi et al. Epidemiology of home related injuries. *Arch Trauma Res.*2012;1(3): 118-122
19. Singh AJ, Kaur A. Minor Injuries in Ninth Class School Children of Chandigarh and Rural Haryana. *Indian Pediatr* 1996 Jan;33:25-30.
20. Radhakrishnan S, Nayeem A. (2016). Prevalence and factors influencing domestic accidents in a rural area in Salem district. *Int J Med Sci Public Health*;5:1688-1692

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