Original Research Article

Domestic injuries among geriatric population: a study in a rural community of Bankura district

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ABSTRACT

Background: Domestic injury is an injury, which takes place in the home or in its immediate surroundings and more generally, all injury not connected with traffic, vehicles or sport. It is a worldwide public health problem. Geriatric population is more vulnerable to domestic injury. Objectives of this study are to estimate the incidence and to identify the correlates, if any, of domestic injuries among geriatric population and to study the consequences of domestic injuries among study subjects.

Methods: Community-based descriptive study with longitudinal design. Multistage random sampling was adopted in the study. One block was selected by simple random sampling method then cluster sampling method (30/7) was used considering village as cluster. Three cross-sectional surveys were conducted in study subjects. Data was collected with the help of pre-designed, pre-tested, semi-structured schedule by paying house-to-house visits and review of records.

Results: The subjects under study comprised of 210 elderly individuals, out of which 27 faced domestic injuries and three study subjects faced injury twice in study period. So, total number of injured was 30. Incidence rate was calculated to be 142.85 injuries per thousand persons per year. Fall was most common type of domestic injury. According to the consequence of injury, impairment was found in 13 cases out of them two injured cases were suffered from permanent disability.

Conclusions: Incidence was estimated to be higher than what was found in other studies**.** Fall was the most common type of domestic injury. Marital status, use of central nervous system depressant drugs and co-morbidities were found to have positive association with injury.

Keywords: Domestic injury, Geriatric people, Rural geriatric population

INTRODUCTION

Domestic injury is an injury that takes place at home or in its immediate surroundings, and, more generally, all injuries not connected with traffic, vehicles or sports.[1] Domestic injury is worldwide public health problem. In some European countries, injury at home kills more people than road injury, in spite of strict safety regulations and laws regarding buildings and living areas.[2] Recent progress in industrialization forced increased number of people living in crowded and unsafe area.[3] The problem is graver in developing countries, particularly in rural areas.[4] Geriatric population is more vulnerable to domestic injury due to unplanned home

arrangement. The growth rate of the older population (1.9 percent) is significantly higher than that of the total population (1.2 percent).[5] Between 1996 and 2016, Indian population above 60 years of age will increase from 62.3 million to 112.9 million.[6] Every domestic injury brings a varying degree of distress to the victim as well as the family members. With this backdrop, the present study was conducted to assess the incidence of domestic injury and related risk factors in a rural community.[7] The study was conducted to achieve the following objectives were to estimate the incidence of domestic injuries among geriatric population in rural community of Bankura district and to identify the correlates of domestic injuries. Also study the consequences of domestic injuries among study subjects.

METHODS

A community-based descriptive study with longitudinal design was conducted in Gangajalghati Block of Bankura District, West Bengal. The population of Gangajalghati block was 186937 (2011 census) under the jurisdiction of ten Gram Panchayats (GPs) and catered by 30 sub centers, two Primary Health Centers and one Community Health Center. Total duration of the study was of 1 year from 1st January 2014 to 31st January 2015. Three cross-sectional surveys were conducted in study period with two follow ups in the form of cross-sectional survey were done in six-month interval. First cross-sectional survey was conducted on July 2014, the second on first week of January 2015 and third on last week of January 2015. Information was collected through six-month recall. People in the age group of 60 years and above are taken as study population as on 1st January 2014. People in the age group of 60 years and above on 1st January 2014 who was residing in the area for more than one year and given consent were included in the study. Critically ill and bed ridden patient were excluded from the study. In Gangajalghati block there were 171 villages. Cluster sampling method was used considering village as cluster. From each of 30 clusters 7 study subjects were selected. The sample size estimation was done by $N=Z\alpha^2/l^2$, where Z_α at 95 percent Confidence Interval (CI) is 1.96 and allowable error l=20 percent.[8] Then, N=1.96*1.96/ 0.2*0.2=96. Considering design effect of 2 the sample size N was 96*2=192. After allowing 10 percent dropout the sample size was estimated to be 211. For a 30 cluster sampling the number per cluster was calculated to: 30/7 cluster sampling procedure, the final sample size was 210. Pre-designed, pre-tested, Semi-structured schedule were used as study tools. Semi-structured schedule was used to collect information on socio-demographic profile of study subjects and Economic dependency. Time of occurrence of injuries, Place of injury, Co-morbidities, if any, use of hypnotic drugs and Care seeking behavior information were collected by medical records and recall method. Types of domestic injuries, frequency of injuries, and nature of injury and its consequences were taken as outcome variables in our study.

Personal Interview by using predesigned, pretested semi structured schedule through house to house visit and review of medical records were used as study techniques.

Methods of data collection

Ethical clearance was obtained from Institutional Ethics Committee. Informed consent was taken from all participants before conducting interview. In each selected cluster, a random direction was chosen from the mid-point of the village and households were chosen consecutively along the road from the centre to the edge of the village until seven eligible study subjects were found. If seven eligible study subjects could not be found in a road then the road in another direction was selected randomly again from the mid-point of the village. The information pertaining to socio-demographics, injuries sustained during last six months was gathered through interview of the study subjects and relevant medical records were also examined using the pre-designed questionnaire by paying house-to-house visits. In the second visit consequences of domestic injury of previous visit and information regarding the occurrence of domestic injury in last six months was collected. In third visit information regarding consequences of domestic injury was collected only. In second visit all domestic injuries were minor in type so information regarding consequences of domestic injury was collected after one month.

Statistical framework

After collection, the data were entered in excel spread sheet and then analyzed by standard statistical techniques like percentage, mean, standard deviation; different charts e.g., bar diagram, pie-chart etc. along with chi-square test for statistical inference. For this purpose, free SPSS software version 20.0 was utilized.

Operational definition

Domestic injury is an injury, which takes place in the home or in its immediate surroundings and more generally, all injury not connected with traffic, vehicles or sports.[1]

Geriatric age group: people in the age group of 60 years and above was consider as geriatric age group

Recall period for domestic injuries in this study was considered as six months from the date on which the interview was conducted.

RESULTS

The subjects under study comprised of 210 elderly individuals, out of which 120 (57.1%) were male and 90 (42.9%) were female. Majority of study participants was in age group of 60-69 years with average age of 68.8±6.7 (mean±SD) and a range of 60-92 years (Table 1).

Among the participants 60% were illiterate; 23% had primary education and remaining 17% studied up to secondary level and above. Analysis showed 94.3% of respondents were Hindu and rest was Muslim. Majority of the study subjects were married (58%) and most of them lived in joint family (82%). 60% of the study population were APL category and 40% were BPL. Among the participants 10.5% were retired, 39.5% were housewife and 40.5% were farmer (Table 2).

Out of 210 subjects 27 faced domestic injuries. Three study subjects faced injury twice in study period. So, total number of injuries was 30. Incidence rate was calculated to be 142.85 injuries per thousand persons per year. Females (14.3%) met with more domestic accidents as compared to males (11.7%) and this difference was not significant statistically.

According to mode of injury fall was maximum (70.0%) followed by burn (10.0%), cut (10.0%), blunt trauma (6.67%) and animal bite (3.33%). As per the place of occurrence of injury, maximum number of accidents (43.33%) occurred in the yard followed by 23.33% in the living room. Twenty percent accidents occurred in the kitchen whereas only 13.33% accident occurred in the bathroom. The most frequent type of injury observed in victims was laceration (33.33%) followed by fracture (26.67%), abrasion (20.0%), cut injury (10.0%) and burn (10.0%). As per time of occurrence of injury, maximum injury occurred (43.33%) at afternoon then morning (30.0%), noon (16.67%) and evening (10.0%) (Table 3).

So far as the care seeking behavior is concerned it was revealed that home remedy, care from formal health facility and care from unauthorized health care provider were utilized by 10%, 55.3% and 36.7% of respondents respectively. More than half (56.25%) attended government health facility. 50.0% reached health facility within 1 day and 75% was treated at OPD (Table 4).

Almost two-third of study subjects was free from any co-morbidity. According to the consequence of injury, impairment was found in 13 cases out of them two injured cases were suffered from permanent disability.

Proportion of domestic injury among respondents age group 60-69 years was significantly more than the people of other age groups (Table 5).

Domestic injury was significantly associated with marital status, use of hypnotic drugs and co-morbidity but was not found to be associated with gender, socio economic status and type of family (Table 6).

Table 1: Distribution of study population according to age and gender (n=210).

Age (in years)	Sex		Total
	Male	Female	
	N (%)	N (%)	N (%)
60-69	53 (25.2)	55 (26.1)	108 (51.3)
70-79	55 (26.1)	28 (13.3)	83 (39.4)
≥80	12 (5.7)	7 (3.3)	19 (9.0)
Total	120 (57.1)	90 (42.9)	210

Table 2: Distribution of study population according to socio-demographic profile (n=210).

Attribute		Frequency	%
Religion	Hindu	198	94.30
	Muslim	12	05.7
Caste	General	121	57.6
	Scheduled caste	36	17.1
	Scheduled tribe	23	11.0
	Other backward	30	14.3
Educational status	Illiterate	126	60.0
	Primary	49	23.3
	Secondary	21	10.0
	Higher secondary	11	5.2
	Graduate and above	3	1.4
Occupation	Retired	22	10.5
	House wife	83	39.5
	Business-man	11	5.2
	Labourer	6	2.9
	Farmer	85	40.5
	Other	3	1.4
Socio-economic class	APL	125	59.5
	BPL	85	40.5

Continued.

Attribute		Frequency	%
Type of family	Nuclear	37	17.6
	Joint	173	82.4
Marital status	Married	122	58.1
	Single	88	42.9

Table 3: Distribution of domestic injury events according to mode, nature, place and time of injury (n=30).

Attributes	Number	%
Mode of injury		
Fall	21	70.0
Burn	3	10.0
Cut	3	10.0
Blunt trauma	2	6.67
Animal bite	1	3.33
Nature of injury		
Abrasion and bruise	6	20.0
Laceration	10	33.33
Fracture	8	26.67
Cut	3	10.0
Burn	3	10.0
Place of injury		
Yard	13	43.33
Kitchen	6	20.0
Living room	7	23.33
Bathroom	4	13.33
Time of injury		
Morning	9	30.0
Noon	5	16.67
Afternoon	13	43.33
Evening	3	10.0

Table 4: Distribution of domestic injury events according to care seeking behaviour (n=30).

Attributes	Frequency	%
First treatment received		
Home remedy	3	10.0
Formal health facility	16	53.3
Unauthorized health care provider	11	36.7
Treatment from formal health facility		
Government	09	56.2
Private	07	43.8
Time interval (day) of care seeking		
0	17	56.7
1-7	10	33.3
From formal facility		
OPD	12	75.0
Indoor	04	25.0

Table 5: Distribution of study participants according to their age and history of domestic injury (n=210).

Age (yrs)	H/O domestic injury		Total, N (%)	Statistics, p value	RR at 95% CI
	Present N (%)	**Absent, N (%)**			
60-69	23 (21.3)	85 (78.7)	108(100.0)	χ^2=12.48,0.000	5.89 (1.83-18.96)
70-79*	3 (3.6)	80 (96.4)	83(100.0)	*	1
≥80	1 (5.3)	18(94.7)	19(100.0)	0.56 (Fisher exact)	1.48(0.16-13.29)
Total	27	183	210(100.0)	-----------	--------------

* Reference group.

Table 6: Distribution of study subjects according to history of domestic injury and few socio-demographics and co-morbidity (n=210).

Attributes	H/o domestic injury		Total N (%)	Df	P value
	Present (n$_1$=27) N (%)	Absent (n$_2$=183) N (%)			
Marital status					
Married	21(17.2)	101 (82.8)	122 (100)	1	0.02
Single	6 (6.8)	82 (93.2)	88 (100)		
Type of family					
Joint	22 (12.7)	151 (87.3)	173 (100)	1	0.89
Nuclear	5 (13.5)	32 (86.5)	37 (100)		
Socio-economic status					
BPL Category	10 (11.8)	75 (88.2)	85 (100)	1	
APL Category	17 (13.6)	108 (86.4)	125 (100)		0.83
Consumption of CNS depressant					
Consumed	14 (33.3)	28 (66.6)	42 (100)	1	
Not consumed	13 (7.7)	155 (92.3)	168 9100)		0.00
Presence of co-morbidity					
Yes	21 (28.4)	53 (71.6)	74 (100)	1	
No	6 (4.4)	130 (95.6)	135 (100)		0.00

Df=degree of freedom.

DISCUSSION

Present study revealed an overall incidence of 142.85 domestic accidents /1000 elderly population /year in the study area, which was comparable to the study in an air force community in India where incidence was estimated to be 110/1000/ per year and also in a study in Delhi where the incidence was found 111 events/1000 population at risk/year.[9,10] But Thein et al observed higher incidence of 195 events/1000 population at risk/year in a study in Singapore.[11]

Lower incidence of domestic injury was found in Pakistan (45) [12], Tanzania (32)[13], Vietnam (76) [14] and Sri-Lanka (82) [15]. This can be explained by the fact that in this study all injuries regardless their severities were included. In this study, females (14.3%) came across more domestic accidents as compared to males (11.7%) but the difference was not statistically robust. Bhanderi et al. mentioned that female gender was found to be a significant predictor of domestic accidents.[16] This might be because in our study females in the rural study area spent more time at home and are actively involved in household and kitchen work. It was also observed in the present study that maximum number of domestic accidents occurred in the 60-69 year age-group than other age groups and the difference was statistically significant (P 0.001). This could be explained by the fact that this age group was relatively active than other.

Fall was found to be the commonest type of domestic accidents (70.0%) followed by cut injuries and burns. This was consistent findings of Bhanderi et al. [16] Other studies carried out in India and abroad also reported falls as the commonest mode of injury.[9,13,17,18] Chaurasia et al observed a higher proportion of burns and scalds in their study.[19] In the present study, it was observed that majority 43.3% of the injuries occurred in the yard. Similar pattern has been reported by Mukhopadhya at el.[9] and Aggarwal at el.[12] in their study. About 43.3% accidents occurred at afternoon in contrast to the observation made by Bhanderi et al that 46.4% of accidents occurred during the morning hours.[16] Most frequent nature of domestic injury was laceration (33.3%) followed by fracture. But Misthi et al reported abrasion was most common type and fracture only 3.0%.[20]

As far as treatment-seeking pattern was concerned, (53.3%) received first treatment from formal health facility and 56.7% reached health facility within the day of injury. Slightly higher than half (56.3%) utilized government health facility and almost three-forth (75.0%) of them got OPD services. This result corroborated with Bhanderi et al.[16] Impairment was observed in 48.1% cases of domestic injury cases and out of them almost 15.0% suffered from permanent disability. Similar result was found in the study conducted by Bhanderi et al.[16] Domestic injury was significantly found to be associated with marital status, use of hypnotic drugs and co-morbidity but was not with gender, socio economic status and type of family in present study.

CONCLUSION

Incidence was estimated to be higher than what was found in other studies. Domestic accidents are more common in 60-69 age groups i.e., amongst the young old who were comparatively more mobile. Fall was the most common type of domestic injury. Marital status, use of CNS depressant drugs and co-morbidities were found to have positive association with injury.

Limitations

The follow up period was long and thereby recall bias especially in geriatric population with reference to minor injuries could not be ruled out. As only one block was chosen, the findings had limited external validity for the whole Bankura district.

Recommendations

Increasing awareness of family members is to be emphasized through IEC so that each member of the family may play a proactive role to reduce the incidence and its consequences (e.g., proper designing, lighting arrangement of house, early care seeking after injury etc.). The senior citizens may also be sensitized to take precautionary measure to avoid injuries.

ACKNOWLEDGEMENTS

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