

Non-fatal Home Injuries among the Elderly in Tamil Nadu, India

Alex Joseph, M. Bagavandas¹

Division of Epidemiology, School of Public Health, SRM IST, ¹Division of Biostatistics, School of Public Health, SRM IST, Kancheepuram, Tamil Nadu, India

Abstract

Background: Injuries are considered as an emerging public health problem in India. Globally every year, injuries kill more than 5 million people, and by 2020, injuries will be the third-leading cause of death and disability worldwide. The study aimed to assess the prevalence and characteristics of nonfatal home injuries among the elderly in Tamil Nadu. **Methodology:** A cross-sectional analytical study was conducted among 1139 elderly (60 years and above), sampled from three districts of Tamil Nadu, India. Probability proportional to size sampling technique was used for sampling; a pretested questionnaire was used to collect the data. **Results:** Prevalence of nonfatal home injuries among elderly within the past 1 year was 14.6% (12.5–16.7 at 95% confidence interval), ($n = 1003$), among those injured, 94.5% were unintentionally injured and 5.5% were of intentional nature. When classified according to the types of injuries, majority of them had fall injuries (6.7%) followed by minor domestic injuries (5.4%), animal-related injury (0.2%), burn injuries (1.1%), road traffic injury (0.4%), and suicide attempt (0.8%). Majority of the respondents were in the age group of young-old, 60–69 years of age (84%), and there was more number of males (55%) in the study. **Conclusion:** The study reveals that nonfatal home injuries among elderly are an emerging public health problem, unintentional injuries contribute to the majority of the injuries, fall was the single largest contributor for all injuries among elderly.

Keywords: Elderly, Falls, Intentional injury, Unintentional injury

INTRODUCTION

Injury is one of the leading causes of death and ill-health. Every year, injuries kill more than 5 million people worldwide, and by 2020, injuries will be the third-leading cause of death and disability worldwide. They contribute to a significant number of deaths, hospitalizations for short and long periods, emergency room visits, physical, social and psychological disabilities, disfigurement, pain, amputations, and agony. Injuries among elderly are also related to age-related decelerations of the functional capacity where there are no interventions available.^[1,2] Apart from those non modifiable causes, there are many extrinsic factors which are largely modifiable and can prevent the occurrence of injuries among the elderly.^[3-5] The term “injury” by definition means that there is a body lesion due to an external cause, either intentional or unintentional, resulting from sudden exposure to energy (mechanical, electrical, thermal, chemical, or radiant) generated by the agent–host interaction. This leads to tissue damage when it exceeds the physiological tolerance of the individual. Respectively, unintentional and intentional injuries contributed to three-fourth and one-fourth of total Disability-Adjusted Life Year (DALY).^[6-8] Lack of reliable

and good quality national or regional data has thwarted the recognition of injury among the elderly as a public health concern. This aim of the work was to assess the prevalence and characteristics of nonfatal home injuries among the elderly in Tamil Nadu. Injury was defined as damage to the body produced by energy exchanges that have relatively sudden discernible effects.^[9]

METHODOLOGY

Study setting and design

A cross-sectional analytical study was conducted among 1139 elderly persons sampled from three districts of Tamil Nadu, India. Probability proportional to size sampling technique was used; the interview was conducted based on a pretested questionnaire to collect the data regarding injuries.

Address for correspondence: Dr. Alex Joseph,

Division of Epidemiology, School of Public Health, 3rd Floor Medical Building,
SRM IST, Kancheepuram - 603 203, Tamil Nadu, India.

E-mail: alexjosephdr@gmail.com

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Table 1: Sociodemographic characteristics of elderly (n=1139)

Sociodemographic characteristics of elderly	Frequency (%)	Injury rate per 100 for subgroups (n=1003)	P (n=1003)
Age category			
Young-old (60-69 years)	957 (84)	17.4	0.696
Old-old (70-79 years)	145 (12.7)	13.5	0.404
Oldest-old (>80 years)	37 (3.3)	18.5	0.906
Gender			
Male	627 (55)	17.5	0.708
Female	512 (45)	16.4	
Religion			
Hindu	1087 (95.4)	16.9	0.872
Christian	31 (2.7)	20.8	0.684
Muslim	21 (1.8)	13.3	0.749
Marital status			
Never married	2 (0.2)	0	0.119
Married	888 (78)	14.9	0.999
Separate/deserted	2 (0.2)	0	1.000
Divorced	3 (0.3)	0	1.000
Widowed	244 (21.4)	25.5	0.999
Education			
Illiterate	519 (45.6)	22.7	0.006
Can read only	49 (4.3)	28.5	0.544
Can read and write	99 (8.7)	17.3	0.403
Primary school	146 (12.8)	12.9	0.060
Middle school	131 (11.5)	8.1	0.008
High school	146 (12.8)	8.1	0.005
Graduate	49 (4.3)	10.0	0.127
Occupation			
Farmer	317 (27.8)	30.7	0.000
Housewife	97 (8.5)	7.2	0.001
Government/private employee	62 (5.4)	14.2	0.095
Causal laborer	171 (15)	11.1	0.001
Skilled laborer	24 (2.1)	6.2	0.126
Business	61 (5.3)	6.5	0.011
Not gainfully employed	407 (35.7)	15.5	0.001
Family type			
Nuclear family	714 (62.7)	13.5	0.001
Joint family	419 (36.8)	23.8	0.002
Three generations	6 (0.5)	0	0.029

Sample size

The study sample was calculated to be 1046 based on the following parameters: the prevalence of injury as 13%,^[1] 95% confidence interval (CI), relative precision of 16%, i.e. the margin of error 0.02, and about 10% of oversampling. A total of 1139 participants were selected from the three districts.

Ethical consideration

This study was approved by the Institutional Ethical Committee of SRM School of Public Health, Kattankulathur, Tamil Nadu. The purpose of this study was explained by the investigators, and informed consent was obtained from the respondents.

Statistical analysis

Analysis of the data was performed using the IBM SPSS Statistics for Windows, Trial Version 19.0. (Armonk, NY: IBM Corp). Descriptive analysis was performed; the

prevalence rates for various subgroups of the elderly were calculated.

RESULTS

The sociodemographic characteristics of the respondents was as described in Table 1. Majority of the respondents were residing in the pucca house and belonged to most backward class (MBC) followed by scheduled tribes (ST). Most of the elderly were reported to be on nonvegetarian diet (64.5%), and almost one-third were purely on vegetarian diet (35.5%), about one-third of the elderly had reported to have the habit of alcohol consumption (34.2%).

Table 2 shows that majority of the elderly perceived that their health status was good (91%) and only 5.6% of the respondents perceived that their health status was poor. Almost

half of the elderly reported to have a history of cardiovascular diseases (46%) and about one-third were reported to have diabetes (31.9%), almost all the elderly had reported to have aches and pains of joints (94.1%). Perceived dimness of vision was reported to be 68% and about one-fifth of the respondents reported to have impaired hearing (22.7%). Most of the elderly had walking difficulty (62%) and decreased the sensation of the foot was present for 50.5% of the respondents. About a quarter of the respondents was reported to have dizziness (25.8%), almost one-third of the elderly were on medications (32.7%). Most of the elderly have been involved in daily physical activities (81.7%).

Among 1003 eligible elderly, prevalence of injury in the past 1 year was found to be 14.6% (12.5–16.7 at 95% CI), among those injured 94.5% was unintentional injuries and 5.5% was intentional Injury. The study found out the prevalence of fall to be the highest of all injuries (6.67%), followed by minor domestic injury (5.4%), followed by burn injuries with a prevalence of (1.1%), road traffic injuries (0.4%), and animal-related injury (0.2%) [Table 3]. Among injured elderly, fall constitutes to majority (45.8%) of all injuries, followed by minor domestic injuries (37%), burns and attempted suicides [Figure 1].

This study calculated prevalence rates for various subgroups among elderly, when classified according to age, the study found oldest-old age group (above 80 and above) having the highest injuries (18.5/100). Comparison based on gender found males with a slightly higher rate of injury (17.5/100) compared to females (16.4/100). ST population were found to have the highest injury rates (44.8/100), which were about more than three times higher than in SC populations. Injury rates were found to be higher among widows/widowers (22.5/100) compared to married people (14.9/100). Elderly with low education was found to have higher injury rates, and the rates fall with an increase in the educational qualifications. Farmers were found to have the highest rate of injuries (30.7/100), about twice than those who were not gainfully employed (15.5/100). Elderly living in Kutcha houses were reported to have about 1.5 times higher injury rates (24.9/100) when compared to those living in pucca houses (10.8/100). Elderly who reported to have poor lighting at the house was having about four times higher rates of injury (45.4/100) compared to those reported to have adequate lighting. The injury rates were found to be higher among the elderly who had a habit of occasional alcohol consumption (25.3/100) compared to those who did not have the habit of alcohol consumption (13.4/100).

DISCUSSION

This study was conducted among the elderly in three districts of Tamil Nadu found an overall injury prevalence of 14.6% (12.5–16.7 at 95% CI). The injury rate was the highest in the oldest-old age group (80+) and among men compared to women similar to study by Saveman and Björnstig.^[10]

An incidence study by Gudnadottir *et al.* among 4469 elderly in Iceland found, falls to be the most common

type of injury (7.8%); our study found the majority of the elderly with fall injuries (6.7%).^[11] Study by DeGrauw *et al.*, in the US stated that 65% of the injuries were due to fall, which was similar to our study with 46% of injuries due to fall.^[12]

A study conducted among the elderly in China revealed that divorced and the widowed were found to have injury rates than married counterparts, which were in agreement with our study results.^[13]

A cross-sectional study by Kurume, in Japan, found older people who are working to have a high occurrence of injuries; the study found similar results with agricultural workers having higher injuries (30.7/100).^[14]

Table 2: History of health problems (n=1139)

Variables	Frequency (%)
Perceived health condition	
Excellent	39 (3.4)
Good	1036 (91.0)
Poor	64 (5.6)
Cardiovascular diseases	
Yes	524 (46.0)
No	615 (54.0)
Diabetes	
Yes	349 (30.6)
No	787 (69.1)
Refused	3 (0.3)
Pain, stiffness or swelling of joints	
Yes	1072 (94.1)
No	66 (5.8)
Refused	1 (0.1)
Increased frequency of urination at night	
Yes	213 (18.7)
No	921 (80.9)
Refused	5 (0.4)
Perceived dimness of vision	
Yes	776 (68.1)
No	363 (31.9)
Impaired hearing	
Yes	247 (21.7)
No	892 (78.3)
Difficulty in walking	
Yes	705 (61.9)
No	432 (37.9)
Refused	2 (0.2)
Decreased sensation on foot	
Yes	575 (50.5)
No	563 (49.4)
Refused	1 (0.1)
Dizziness	
Yes	294 (25.8)
No	845 (74.2)
Usage of multiple-medications	
Yes	372 (32.7)
No	766 (67.3)
Refused	1 (0.1)

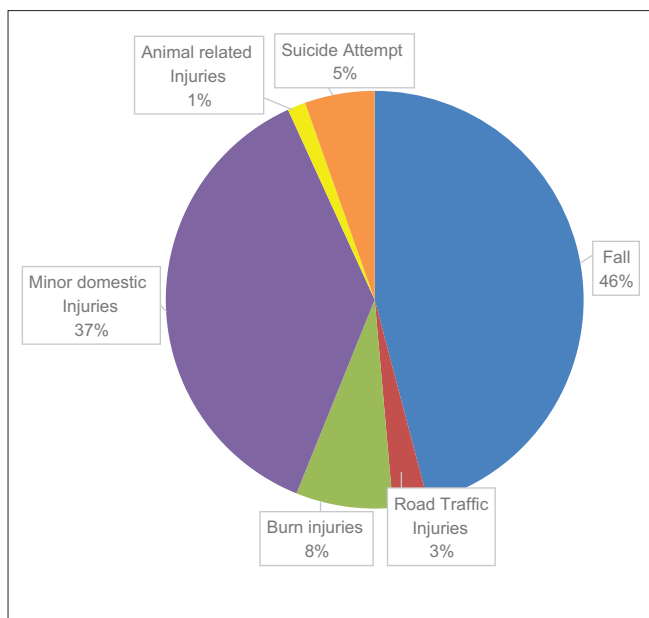


Figure 1: Distribution of injured elderly according to the type of injury ($n = 146$)

Table 3: Injury prevalence among elderly

Variables	Frequency (%)
Injury occurrence ($n=1139$)	
Yes	146 (12.8)
No	857 (75.2)
Refused	34 (3.0)
DK/CR	102 (9.0)
Nature of injury ($n=1003$)	
Road traffic injuries	4 (0.39)
Fall	67 (6.67)
Suicide attempt	8 (0.79)
Burn	11 (1.09)
Animal-related injury	2 (0.19)
Minor domestic injury	54 (5.38)

DK: Don't Know, CR: Can't Remember

Studies have found alcohol consumption associated with a higher risk for injury, our study found higher injury rates among occasional alcohol users.^[15,16]

The study found higher rates of injuries among the elderly in low-socioeconomic status, which was in line with other global studies where the disparities in socioeconomic status for injuries were well established.^[17,18]

CONCLUSION

The study identified that oldest-old and males having higher injuries and falls as the major cause for injury among the elderly population. The study might have recall bias, information regarding injuries were collected based on self reporting. The study shows the tip of the iceberg since trivial

and injuries with fatal outcome was not included. Further research is needed to identify the full spectrum of injuries of various severity and outcome and identify the risk factors for injuries among the elderly.

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Conflicts of interest

There are no conflicts of interest.

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