

Original Research Article

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Epidemiology of injuries and its impact among elderly: a descriptive community based cross-sectional study from central rural India

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ABSTRACT

Background: This study was to enlighten the prevalence, different types & impact of injuries in elderly population in rural area of middle income country (India).

Methods: It was a community based descriptive cross-sectional study, conducted in all 24 villages under one Primary Health Centre of central India. The study was carried out from June 2009 to May 2011.

Results: In the present study, prevalence of injury was 17.1%, which was highest among elderly ageing 65-69 years (36.8%) followed by elderly ageing 60-64 years (27.4%). Prevalence of injury was higher (20%) among males as compared to females (14%). Association of age, gender and injury was not statistically significant. Fall was the most common cause (34.7%) of injury followed by occupational (34.0%) and road traffic accidents (15.8%). Superficial injuries were the most common (32.6%) type of injuries followed by fracture (27.3%). Hospital admission required by 24.2% of elderly. We found 34.7% elderly was physically impaired and 26.3% physically disabled due to various injuries.

Conclusions: In the present study we found injuries pose a major public health problem in elderly. Therefore there is a need of community based assessment on impact of injury among elderly in various parts of country to formulate appropriate health initiatives for prevention and optimum treatment of injuries in elderly.

Keywords: Injury, Impact, Elderly, Community, Rural and cross-sectional

INTRODUCTION

‘Senior citizen’ or ‘Elderly’ is a person who is of age 60 years or above.¹ Percentage of elderly in world has increased from 8.2% in 1950 to 8.9% in 2000. This population is expected to rise further and reach over 20% by 2050. It means every fifth person will be more than 60 years old in 2050.² In India, along with the increases in life expectancy, the number of older persons in the

population is expected to increase by more than double from 71 million in 2001 to 173 million in 2026 - an increase in their share to the total population from 6.9 to 12.4 percent.³ India has thus acquired the label of an ageing nation.⁴

Injury is defined as “external force or non-contagious substance striking the body or entering into the body and causing anatomical discontinuity of tissue or derange

physiological function of the body".⁵ As per National Crime Record Bureau report of India (2008), 33672 elderly individuals lost their life due to an injury. In which 11409, 1567 and 1082 deaths were due to traffic injuries, poisoning and fall, respectively.⁶ Due to the ageing process vision, hearing, loco motor abilities, ability to respond, reflex actions, concentration and coping abilities begin to decline, it increases the risk of injuries among elderly and the elderly are one of the most vulnerable and high-risk groups in terms of health status in any society. Many injuries are linked to social, environmental, cultural and biological issues in causation.⁷

Seneca, in his letter to Lucilius said that "old age is an incurable disease". But more recently, Sir James Sterling Ross commented: "You do not heal old age. You protect it, you promote it, and you extend it".⁸

Injuries are a major public health problem among elderly in India. Lack of good quality national or regional data has thwarted their recognition. Most of the studies are hospital based and from urban areas. There is paucity of data related to injury from rural areas in spite of fact that most of population resides in rural areas. Therefore, this study was conducted with the objectives to study the prevalence, distribution and impact of injuries in elderly population in rural area.

METHODS

Study design

The present study was community based descriptive cross-sectional study and conducted in all 24 villages under randomly selected Primary Health Centre, Kharangana (Gode), district Wardha with a population of 34,940 situated in central part of India. The study was carried out from June 2009 to May 2011.

Sample size and sampling technique

Considering 33% as the expected prevalence of injury and 5% alpha error, 5% allowable error in the estimate of prevalence and design effect of 1.5 (because of multistage sampling), sample size came out to be 510.⁹ Probability proportionate to size (PPS) of the village was used to decide the number of elderly to be sampled from each of

the 24 villages. All the elderly were enlisted and required numbers of elderly were selected by systematic random sampling in each village.

Ethical approval and informed consent

Ethical approval for the study was granted by the Ethics Committee of Mahatma Gandhi Institute of Medical Sciences, Sevagram District Wardha (Maharashtra, India). Verbal & written informed consent was obtained from the each participant in study.

Data collection

Questionnaire was designed using Injury surveillance guidelines published by World Health Organization in 2002.¹⁰ Data was collected by using pre-tested & structured interview schedule through house to house visits. Appropriate rapport was established before administering the questionnaire. Data was collected on socio-demographic characteristics, proportion and different types of injury in elderly and its impact. Recall period of one year was used.

Statistical analysis

The data entry and analysis was done using EPI-INFO version 6.04. We expressed magnitude in terms of percentages. Chi-square test was used to test the association. For studying epidemiological correlates we used odds ratio as a measure of association. 95% Confidence interval (95% CI) was also calculated for odds ratio. p value <0.05 was taken as significant.

RESULTS

In the present study, total 553 elderly of age 60 & above were studied. Majority of the elderly 186 (33.6%) belonged to 60-64 years of age, 313 (56.6%) were male (Table 1) and 161 (30%) were below poverty level. Majority of the population 317 (57.3%) belonged to other backward caste (OBC) and more than forty percent 224 (40.5%) were from schedule tribe (ST), schedule caste (SC) and nomadic tribes (NT/VJ). Most of the study participants 220 (39.72%) were educated up to middle and secondary level (5th to 10th). Majority of the population 224 (40.5%) were agricultural labourer.

Table 1: Distribution of injuries in elderly according to age and gender.

Age groups (in years)	Number of elderly (n=553)	Prevalence of injury		P value
		N (%)	OR (95%CI)	
60-64	186	26 (13.9)	1	
65-69	174	35 (20.1)	1.44 (0.80-2.44)	0.19
70-74	96	19 (19.7)	1.42 (0.71-2.81)	0.28
75-79	70	11(15.7)	1.12 (0.49-2.53)	0.76
>80	27	4 (14.2)	1.06 (0.29-3.54)	0.91

Continued.

	Number of elderly (n=553)	Prevalence of injury N (%)	OR (95%CI)	P value
Gender				
Male	313	62 (20.0)	1.5 (0.9-2.5)	0.06
Female	240	33 (14.0)	1	
Total	553	95 (17.1)		

Table 2: Hospital admission, physical impairment and disability in different types of injury.

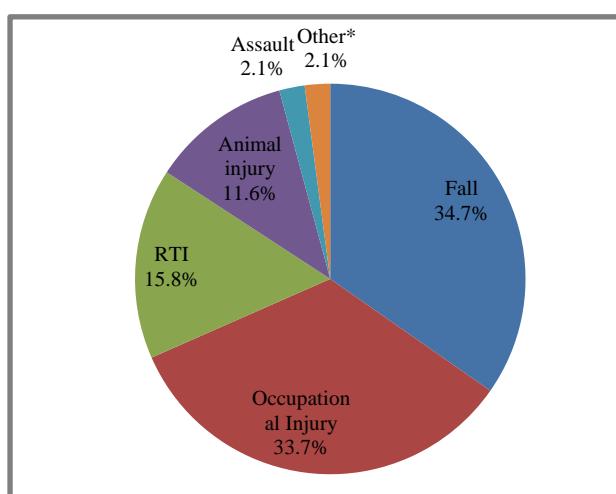
	Hospital admission N (%)	Physical impairment N (%)	Physical disability N (%)
Road traffic injury	8 (34.8)	12 (36.4)	9 (36.0)
Fall	9 (39.0)	14 (42.4)	12 (48)
Assault	1 (4.3)	2 (6.1)	2 (8.8)
Injury by animal	5 (21.7)	3 (9.1)	1 (4.0)
Occupational injury	--	2 (6.1)	1 (4.0)
Total (n=95)	23 (24.2)	33 (34.7)	25 (26.3)

Magnitude and different types of injuries

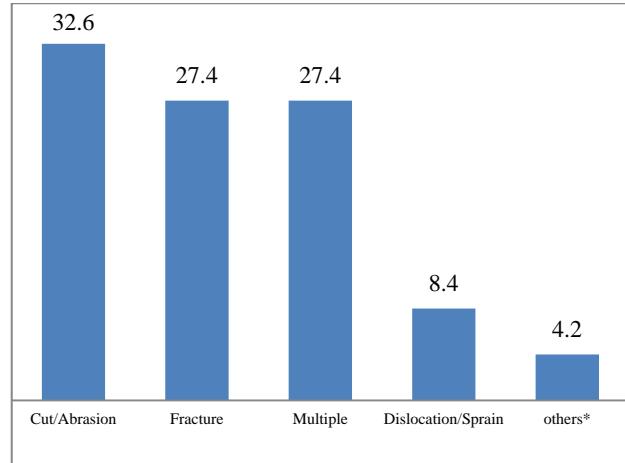
In the present study prevalence of injury was 17.1%. Highest proportion (20.1%) of injury was in 65-69 years of age, followed by 19.7% in 70-74 years of age. Proportion of injury was higher (20%) among males as compared to females (14%). However, the odds of getting injured did not significantly change with age & gender (Table 1).

Majority of injuries were unintentional due to fall (34.7%) followed by occupational injuries (33.7%). Detail of distribution of different types of injuries shown in Figure 1.

On studying nature of injury, superficial injuries (Cut or abrasion) were the most common (32.6%) nature of injuries followed by fracture (27.4%) and sprain or dislocation (8.4%), etc. However it was observed that more than a quarter (27.4%) of times injuries were multiple in natures (Figure 2).

**Figure 1: Distribution of different types of injuries.**

*Drowning, poisoning, burns.

**Figure 2: Nature of injury.**

*Head injury, internal organ injury and burn.

Impact of injuries

Impact assessed in terms of Hospital admission, impairment and disability. Out of 95 injured elderly, 23 (24.2%) were admitted in hospital for their further treatment. This may be reflection of severity of their injuries. Among the admitted elderly due to injury, majority (39.0%) were due to fall, followed by road traffic (34.8%) and animal injuries (21.7%). Again, physical impairment was mainly caused by fall (42.2%) followed by road traffic injury (36.4%) and injury by animal (9.1%). Similarly physical disability was also mainly caused by fall (48.0%), followed by road traffic injury (36.0%) and assault related injury (8.0%). This shows that fall was most common cause for hospital admission, physical impairment and disability (Table 2).

DISCUSSION

Socio-demographic characteristics of the study population were similar to that of Wardha district as per

Census 2001 report.¹¹ In the present study, we found that 17.1% of the study participants had at least one injury during last one year. Similar (19%) prevalence of injuries had also reported from rural area of Nigeria while high prevalence (33.1%) has been reported from rural Pondicherry.^{9,12} This shows variation in prevalence of injury in elderly which can be attributed to different study settings and geographical variation in study population.

In the present study, majority (96.0%) of the injuries were unintentional. Studies from rural area of Pondicherry, Andhra Pradesh have also reported 96.5% of the injuries as unintentional.^{9,13} Which reiterate that majority of injuries are unintentional.

In this study, majority (34.7%) of the injuries were due to fall followed by occupational (34.0%) and road traffic injuries (15.8%). Remaining injuries were animal related injuries (11%), assault (2%) and others (2%). A study from rural Pondicherry also showed that most common causes of injuries were fall (30%) followed by road traffic accidents (16%) and others were agriculture related injuries (16%) and bites by scorpion or insect or snake or dog (27.3%).⁹ A study from Andhra Pradesh also reported that the leading causes of injury was falls (34%) followed by mechanicals (15.2%), road traffic crashes (13.8), bites (11.8%) and others (10.3%).¹³ The differences may be attributed to difference in study setting, occupation and differences in lifestyle of study population but most common causes of injuries were fall and road traffic accidents all over.

In the present study, we showed that the impact of injuries was high in terms of hospital admission (24.2%), physical impairment (34.7%) and disability (26.3%).

CONCLUSION

This study showed that the burden of injury and its impact on health (in terms of hospital admission, physical impairment and physical disability) was high among elderly. Superficial injuries and fractures were most common nature of injury. Majority of injuries were unintentional in current study like most of the similar studies. Two major causes of injuries in elderly we found were fall and road traffic injury. High burden of injury, physical impairment, and disabilities due to injuries which leads to limit the ability of elderly people to fully participate in their societies may further worsen quality of their life. Therefore for efficient planning and better preventive strategies and improved health care services further community based studies are required to have population specific data to improve the lives of elderly people living with injury prone lives.

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Conflict of interest: None declared

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