ORIGINAL ARTICLE

Pattern of Injuries and Associated Behavioural Factors among Older Adults Attending an Urban Primary Health Care Facility in Delhi

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ABSTRACT

Background: Injuries among older adults represent an important but often under recognised public health problem, especially in low- and middle-income countries. **Aims & Objectives:** To examine the relationship between behavioural factors and the pattern of injuries among geriatric patients attending an urban health centre. **Methodology:** This community-based cross-sectional study was conducted among geriatric patients attending an urban health centre in East Delhi. A total of 150 elderly participants were interviewed using a pretested semi-structured questionnaire, and the data were analysed using SPSS version 25.0. **Results:** Smoking was reported by 8.67% of participants and alcohol consumption by 2.67%. A statistically significant association was observed between smoking and bruising injuries ($p < 0.0001$). However, alcohol consumption did not show a statistically significant association with the nature of injury ($p = 0.719$). **Conclusion:** The findings emphasise the need to include behavioural risk assessment, particularly smoking history, as part of routine geriatric evaluation and injury prevention strategies at the primary health care level.

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KEYWORDS

Geriatrics; Wounds and Injuries; Risk-Taking; Primary Health Care; Urban Population

INTRODUCTION

An injury may be described as physical damage to body tissues that occurs when the human body is exposed to energy such as mechanical, thermal, chemical, or radiant energy beyond the limits of physiological tolerance. In certain situations, injury may also occur due to deprivation of essential elements required for survival, such as oxygen in cases of drowning or strangulation.(2)

The term “accident” has gradually been replaced in scientific literature by the term “injury event.” The word accident often implies that the event is unavoidable or random, whereas injury events are considered predictable and preventable through appropriate interventions and safety measures.(3)

Globally, injuries represent a significant cause of mortality and disability. Each year, more than 1.2 million individuals die as a result of road traffic incidents, while nearly 50 million people sustain non-fatal injuries. According to the World Health Organization (WHO), the burden of road traffic injuries is considerably higher in low- and middle-income countries compared with high-income nations. Nearly half of all fatal road traffic injuries involve vulnerable road users such as pedestrians, cyclists, and users of two-wheelers. It has been projected that road traffic injuries may become the fifth leading cause of death worldwide by 2030.(4)

Apart from road traffic incidents, other forms of injuries often receive less attention despite their considerable contribution to morbidity and mortality. Estimates from WHO indicate that unintentional injuries accounted for approximately 3.9 million deaths and over 138 million disability-adjusted life years globally in 2004, with a disproportionately higher burden in developing countries.(5)

TYPES OF INJURIES: Injuries are broadly classified into two major categories: unintentional and intentional injuries.(6)

Unintentional injuries include events such as road traffic accidents, poisoning, falls, burns and fire-related injuries, drowning, and animal bites. These injuries usually occur without deliberate intent but may result from environmental hazards, unsafe behaviour, or inadequate safety measures.

Intentional injuries include harm resulting from deliberate actions such as interpersonal violence, self-harm, suicide, war-related injuries, and assault. These injuries often have complex social and behavioural

determinants and require both medical and social interventions.

Global Burden of Injuries: Injuries remain a leading cause of death and disability worldwide. Studies conducted in the United States have demonstrated that both intentional and unintentional injuries contribute substantially to mortality among certain population groups. Survivors of intentional injuries are also more likely to experience psychological trauma compared with those sustaining unintentional injuries. A qualitative study among urban Black men in the United States reported a median age of 33.5 years among injured participants. Gunshot injuries accounted for nearly 57.8% of intentional injuries, while falls represented a major proportion of unintentional injuries (48.3%).(7)

Evidence from low-income settings also highlights the magnitude of the problem. A nationwide cross-sectional survey conducted in Sierra Leone in 2012 reported that traffic-related injuries—including motor vehicle crashes, motorcycle injuries, and pedestrian injuries—accounted for a notable proportion of both urban and rural injuries. Animal bites and gunshot wounds were comparatively less frequent, representing about 3% and 2% of all injuries respectively.(8)

Objective: To evaluate the association between the nature of injuries and behavioural determinants among geriatric patients.

Material & Methods

Study design - It is a descriptive cross-Sectional Study. The study was registered with the Clinical Trials Registry of India (Registration Number: CTRI/2021/10/037345).

Study area - The study was conducted in the General Outpatient Department of the Urban Health Centre (UHC), Gokalpuri, East Delhi, which serves as an urban field practice area of the Department of Community Medicine, Maulana Azad Medical College, New Delhi.

Study Population - Geriatric patients aged 60 years and above, attending the general OPD, were considered in this study.

Study Period - study was done for a period of one year.

Sample size - All eligible subjects attending the study area during the study period were included in the study using a universal sampling technique, after obtaining written informed consent. A total of 150 eligible participants were enrolled

Inclusion criteria:

All newly registered persons with injury, aged 60 years and above, attending general OPD at UHC Gokalpuri during the study period residing in Gokulpuri for at least the last six months.

Exclusion criteria:

- Seriously ill patients needing hospitalisation.
- Patients admitted to a higher centre who could not be contacted at home on three attempts

Sampling Technique - The investigator visited the OPD twice weekly. During each visit, the addresses of all geriatric patients presenting with injuries since the previous visit were obtained from the OPD register. These individuals were subsequently approached at their residences for data collection. Prior to enrolment, the investigator explained the objectives and procedures of the study, and participant information sheets were provided. Written informed consent was obtained from all participants who agreed to take part in the study. In cases where a participant was unavailable during the initial visit, repeat visits were conducted on subsequent scheduled days. A maximum of three contact attempts were made; individuals who could not be contacted after three attempts were excluded from the study.

Study instrument - Data were collected using a pretested, semi-structured interview schedule adapted from the World Health Organization (WHO) injury surveillance data collection proforma, with modifications to suit the local context and the objectives of the present study. The interview schedule was initially developed in English, translated into the local language (Hindi), and subsequently back-translated into English to ensure linguistic validity. The schedule comprised sections on identification details, sociodemographic characteristics, injury profile, and behavioural factors.

Prescription of OPD of, UHC prescription and discharge slip of referral hospital in referred cases, as relevant and available.

STATISTICAL ANALYSIS

- Data was collected, compiled, processed and analysed by MS Excel and SPSS software version 25.0.
- The Proportion of new cases of injuries among all new patients attending the health centre was expressed in terms of percentages.
- Percentage distribution of various factors under study among the study population was expressed in terms of percentages.
- Association of various factors with mechanism and type of injury was tested using the Chi square test/Fischer test or Z test as applicable.
- All tests were two-tailed and p-value less than 0.05 was taken as statistically significant.

Ethical Approval - The study was reviewed and approved by the Institutional Ethics Committee, Maulana Azad Medical College and associated Lok Nayak Hospital, New Delhi (Approval No.: F.1/IEC/MAMC/(70/05/2019)/No 429).

Informed consent - Written informed consent was obtained from all participants prior to enrolment in the study.

Results

A total of 150 geriatric participants aged 60 years and above were included in the study. The majority of participants belonged to the younger elderly age group.

The socio-demographic characteristics of the study participants are presented in **Table 2**, which shows that males constituted a higher proportion of the study population and most participants resided in urban areas. A large proportion were married, belonged to joint families, and were not engaged in regular employment.

The behavioural characteristics of the participants are summarised in **Table 3**, indicating that only a small proportion reported a history of smoking or alcohol consumption.

Table 4 presents the distribution of injury cases according to age group and sex. Injury cases were more commonly observed among males across all age groups, with the

highest number of cases occurring in the younger elderly age group.

A statistically significant association was observed between a history of smoking and the nature of injury. However, no statistically significant association was found between alcohol consumption and the nature of injury among the study participants in **Table 5**.

Table 1: Distribution of study participants according to age (N=150)

Age group (years)	Number(n)	Percentage(%)
60-69	68	45.33
70-79	55	36.66
80-90	27	18
Mean age ±SD	65.76±6.86 years	
Minimum age	60 years	
Maximum age	90 years	

Table 2: Distribution of participants according to socio-demographic characteristics(N=150)

Participants characteristics	Number	Percentage
Gender		
Males	90	60.00
Females	60	40.00
Residence		
Rural	24	16.00
Urban	126	84.00
Domicile		
Delhi	77	51.33
Non-Delhi	73	48.67
Marital status		
Married	106	70.67
Unmarried	5	3.33
Divorced/Widow	39	26.00
Participants characteristics	**Number**	**Percentage**
Educational status		
Primary	63	42.00
Secondary	55	36.67
Graduate	26	17.33
Postgraduate	6	4.00
Employment status		
Employed	25	16.67
Unemployed	125	83.33
Type of family		
Nuclear	32	21.33
Joint	118	78.67
Socio economic Status		
I (7533 and above)	62	41.33
II (3766-7532)	55	36.67
III (2260-3765)	20	13.33
IV (1130-2259)	13	8.67
V (1129 and below)	0	

**Socio economic status- classification based on modified BG Prasad scale 2020.9*

Table 3: Distribution of participants according to behavioural characteristics (N=150)

History present	Number(n)	Percentage (%)
Smoking		
No	137	91.33
Yes	13	8.67
Alcohol		
No	146	97.33
Yes	4	2.67

Table 4: Injury cases reporting to the study site according to age

Age group (years)	Cases reporting to OPD No. (%)								
	Total new cases			Elderly new cases*			Elderly injury cases*		
	Male	female	Total	Male	Female	Total	Male	Female	Total
60-69	94	65	159	48 (69.56)	21 (30.43)	69	23 (74.91)	8 (25.80)	31
70-79	62	35	97	25 (65.78)	13 (34.21)	38	9 (69.23)	4 (30.76)	13
80-90	27	19	46	9 (75.00)	3 (25.00)	12	2 (66.66)	1 (33.33)	3
Total	**183**	**119**	**302**	**82**	**37**	**119**	**34**	**13**	**47**

**Figures in parenthesis indicate percentage with respect to new case*

Table 5: Association between nature of injury and behavioural factors (N=150)

Behavioural factors	Nature of injury				
Smoking	**Bruise n (%)**	**Concussion n (%)**	**Fracture n (%)**	**Sprain n (%)**	**P Value**
No	33 (73.33)	7 (100)	22 (100)	75 (98.68)	**<0.0001**
Yes	12 (26.67)	0	0	1 (1.32)	
Alcohol					
No	43 (95.55)	7 (100)	22 (100)	74 (97.36)	0.7190
Yes	2 (4.45)	0	0	2 (2.64)	

Figure 1. Behavioural characteristics of study participants

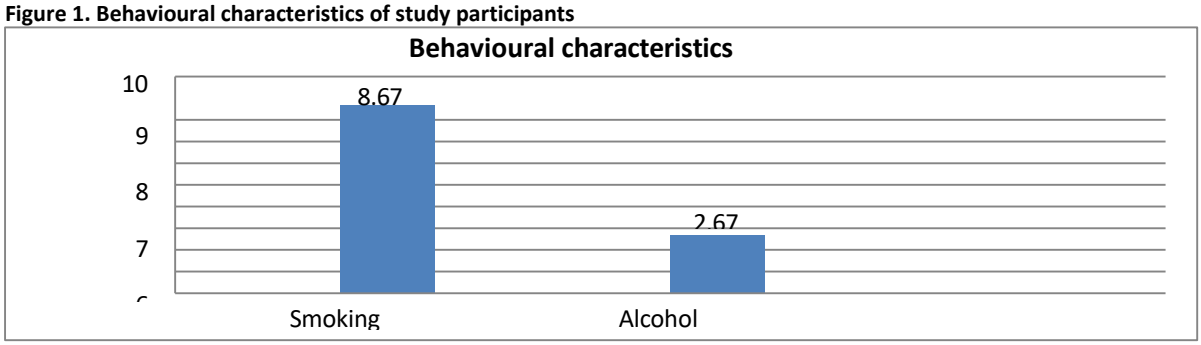
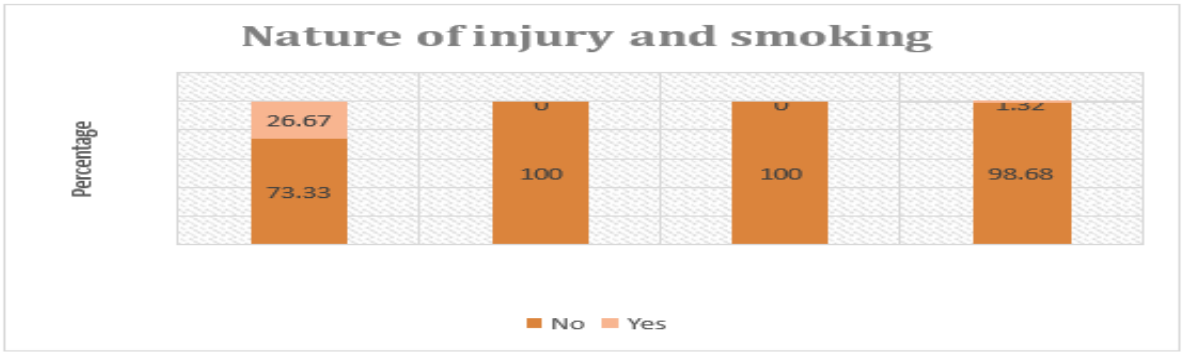


Figure 2. Nature of injury and behavioural factors



DISCUSSION

The present study assessed the pattern of injuries among the geriatric population attending a primary health care facility in an urban resettlement colony of Delhi, with a particular focus on behavioural determinants. A total of 150 elderly patients were included, with a mean age of 65.76 ± 6.86 years and a predominance of males, which is consistent with findings from other studies reporting higher injury-related health-care utilisation among elderly men.(10,11)

In the present study, a statistically significant association was observed between a history of smoking and injuries resulting in bruises. This finding aligns with earlier studies from Greece and India, which reported a higher prevalence of injuries among elderly smokers.(10,11) Smoking may increase injury risk by contributing to impaired balance, reduced bone density, delayed reaction times, and comorbid conditions, thereby increasing vulnerability to minor trauma.

No significant association was observed between alcohol consumption and the nature of injuries in the study population. This finding contrasts with several studies that have reported a positive association between alcohol use and injury risk among older adults.(12-15) The lack of association in the present study may be attributed to the relatively low prevalence of alcohol consumption among participants or potential underreporting due to social desirability bias, particularly in the geriatric age group.

Globally, injuries remain a major cause of morbidity and disability among older adults, especially in low- and middle-income countries.(5,7) Increasing longevity, continued physical activity, and age-related physiological changes contribute to heightened injury risk in this population. Despite this, behavioural risk factors among elderly individuals remain underexplored in primary care and community settings in India.

The findings of the present study highlight the importance of incorporating behavioural risk assessment, particularly smoking history, into routine geriatric care. Targeted health education and smoking cessation interventions may play a role in reducing injury burden among older adults.

CONCLUSION

This community-based cross-sectional study among geriatric patients attending a primary health care facility in an urban resettlement colony of Delhi highlights the pattern of injuries and selected behavioural determinants in this population. The majority of participants were males, belonged to urban areas, and were unemployed, reflecting the socio-demographic profile of elderly patients utilising primary care services. A significant association was observed between smoking and bruising injuries, whereas no significant association was found between alcohol consumption and the nature of injuries.

These findings underscore the importance of integrating behavioural risk assessment, particularly smoking history, into routine geriatric care. Strengthening injury prevention strategies through targeted health education and behavioural modification interventions at the primary care level may help reduce the burden of injuries among older adults.

RECOMMENDATION

Routine screening for behavioural risk factors, particularly smoking, should be incorporated into geriatric assessment at primary health care facilities. Health education sessions focusing on injury prevention, fall risk reduction, and behavioural modification may help

reduce minor and potentially preventable injuries among older adults. Primary care physicians should integrate counselling for tobacco cessation as part of comprehensive geriatric care. Community-based awareness programs targeting elderly populations in urban resettlement areas may further strengthen injury prevention efforts.

LIMITATION OF THE STUDY

The study was conducted at a single urban primary health care facility, which may limit the generalisability of findings to other settings. The cross-sectional design does not permit causal inference between behavioural factors and injury patterns. The relatively small number of participants reporting smoking and alcohol consumption may have influenced the strength of associations observed. Behavioural factors were self-reported and may be subject to recall or social desirability bias. Severity grading of injuries and long-term outcomes were not assessed.

RELEVANCE OF THE STUDY

This study contributes to limited evidence regarding injury patterns among older adults in urban primary care settings in India. It highlights the potential association between behavioural factors, particularly smoking, and specific injury types in the geriatric population. The findings underscore the need to integrate behavioural risk assessment into routine geriatric services at the primary care level. The study adds local data from an urban resettlement area, a setting that remains underrepresented in geriatric injury research.

AUTHORS CONTRIBUTION

RK, conceptualised the study, conducted data collection, performed data analysis, and drafted the manuscript; MMS, provided overall supervision, contributed to study design, and critically reviewed the manuscript; PP and MPK assisted in data interpretation and manuscript editing. All authors read and approved the final manuscript.

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Nil

CONFLICT OF INTEREST

There are no conflicts of interest.

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DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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