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Research Article

Epidemiological Profile of injuries among Geriatric Patients Attending the Tertiary Care Hospital

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ABSTRACT

Background: Injuries among the elderly are an emerging public health concern, contributing to significant morbidity, disability, and mortality. With increasing life expectancy in India, understanding the epidemiological profile of geriatric injuries is crucial for prevention and effective management. The present study was conducted to assess the socio-demographic characteristics, pattern of injuries, associated risk factors, and clinical outcomes among geriatric patients attending a tertiary care hospital.

Methods: A hospital-based cross-sectional study was conducted among **60 geriatric patients (≥60 years)** presenting with injuries to the Emergency and Orthopaedic Departments of a tertiary care hospital over a three-month period. Data were collected using a pre-tested structured proforma, including socio-demographics, mode and type of injury, comorbidities, and outcomes. Data were analyzed using descriptive statistics and chi-square test for associations.

Results: The mean age of patients was **68.7 ± 6.2 years**, with **58.3% males**. Most patients belonged to rural areas (63.3%). **Falls (43.3%)** were the most common cause of injury, followed by **road traffic accidents (36.7%)**. Fractures (40.0%) and lower limb injuries (36.7%) predominated. Hypertension (41.7%) and diabetes mellitus (35.0%) were the leading comorbidities. A majority of patients required hospitalization (66.7%), and 30% underwent surgery. Mortality was observed in **3.3%** of cases, while 3.3% were discharged with disability.

Conclusion: Falls and road traffic accidents constitute the major burden of geriatric injuries, with fractures being the most common outcome. The presence of comorbidities and sensory impairments further increases vulnerability. Strengthening fall-prevention strategies, road safety measures, and geriatric trauma care services is essential to reduce morbidity and mortality in this age group.

Keywords: *Geriatric patients, injuries, falls, road traffic accidents, epidemiology, tertiary care hospital.*

INTRODUCTION:

The global population is ageing at an unprecedented rate. According to the **World Health Organization (WHO)**, the proportion of people aged 60 years and above is expected to nearly double from 12% in 2015 to 22% by 2050, with the majority living in low- and middle-income countries [1]. India, home to over 1.4 billion people, currently has more than 140 million elderly individuals, and this number is projected to rise steadily due to improvements in life expectancy [2]. With increasing longevity, health-related issues among the elderly, including non-communicable diseases and injuries, are becoming major public health concerns.

Injuries in the geriatric population represent a critical but often under-recognized challenge. Age-related physiological changes such as reduced bone density, impaired balance, diminished vision, slower reflexes, and the presence of multiple comorbidities increase the susceptibility of older adults to injuries [3,4]. Falls are widely acknowledged as the leading

cause of both fatal and non-fatal injuries in the elderly, accounting for over 37 million falls annually worldwide that require medical attention [5]. Road traffic accidents (RTAs), burns, domestic accidents, and assault also contribute significantly to morbidity and mortality in this vulnerable group [6].

In India, the burden of geriatric injuries is substantial. Falls alone account for nearly one-third of injuries in the elderly, often leading to fractures, disability, loss of independence, and increased risk of institutionalization [7]. RTAs are also rising in this age group due to growing mobility, urbanization, and unsafe road conditions [8]. Despite the magnitude of the problem, systematic data on the epidemiological patterns of geriatric injuries in hospital settings are limited, particularly in resource-constrained regions.

Understanding the **epidemiological profile of injuries among geriatric patients** is essential for several reasons. Firstly, it provides insights into the common mechanisms and risk factors, enabling the design of targeted preventive strategies such as fall-prevention programs, home safety interventions, and geriatric-friendly transport policies. Secondly, it helps in hospital preparedness and clinical management, as elderly trauma patients often require longer hospital stays, rehabilitation, and multidisciplinary care. Lastly, such evidence is crucial for policy formulation aimed at reducing the injury burden and improving the quality of life among the elderly [9].

Given this background, the present study was conducted to describe the **epidemiological profile of injuries among geriatric patients attending a tertiary care hospital**. By analyzing socio-demographic characteristics, mechanisms of injury, affected body parts, and outcomes, this study aims to contribute to the evidence base needed for effective injury prevention and geriatric health care planning.

MATERIALS AND METHODS:

Study Design and Setting

A hospital-based cross-sectional study was conducted at a tertiary care hospital after getting approval from the Institutional Ethics Committee. This hospital is a major referral center catering to both rural and urban populations in the region.

Study Period: The study was carried out over a period of three months,

Study Population:

The study population comprised geriatric patients aged 60 years and above who presented with injuries to the hospital during the study period.

Inclusion Criteria:

- Patients aged ≥60 years presenting with any type of injury (fall, road traffic accident, domestic accident, burn, assault, etc.).
- Patients or their caregivers who provided informed consent.

Exclusion Criteria:

- Patients with severe cognitive impairment or psychiatric illness who were unable to give reliable information, without an available attendant.
- Patients with incomplete medical records.
- Patients who were brought dead.

Sample Size and Sampling Technique

A total of 60 consecutive patients who met the inclusion criteria were recruited during the study period. Since the objective was to describe the epidemiological profile of geriatric injuries in this hospital setting, a consecutive sampling technique was employed to ensure feasibility and adequate representation.

Data Collection Tool:

Data were collected using a pre-tested structured proforma developed after reviewing relevant literature. The proforma was pilot-tested on 10 patients (not included in the study sample) to check clarity and reliability. Modifications were made accordingly.

The proforma captured the following details:

1. Socio-demographic variables: age, gender, residence (urban/rural), socioeconomic status, education, marital status.
2. Injury-related variables: type of injury (fall, RTA, burn, etc.), mechanism of injury, place of occurrence (home, road, workplace), anatomical site involved, nature of injury (fracture, laceration, head injury, multiple injuries).
3. Risk factors and comorbidities: presence of hypertension, diabetes, cardiovascular disease, vision impairment, hearing loss, substance use, history of previous falls, use of walking aids.
4. Clinical outcomes: need for hospitalization, outpatient management, surgical intervention, disability at discharge, or death.

Data Collection Procedure

- After obtaining consent, patients or their caregivers were interviewed using the proforma.
- Clinical details were extracted from case records and discharge summaries.
- Injuries were classified using WHO International Classification of External Causes of Injury (ICECI) guidelines.
- Comorbidities were confirmed from existing medical records or ongoing medications.

Statistical Analysis

- Data were entered into Microsoft Excel and analyzed using SPSS version 20
- Descriptive statistics were used to summarize the findings: frequencies and percentages for categorical variables.

RESULTS:

A total of **60 geriatric patients** with injuries were included in the study. The **mean age** of participants was **68.7 ± 6.2 years** (range: 60–85 years). The **majority were males (58.3%)**, with a male-to-female ratio of 1.4:1. Most patients (63.3%) belonged to rural areas, while 36.7% were from urban areas as shown in Table 1

Table 1: Socio-demographic characteristics of the study population (n=60)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	60–64	20	33.3%
	65–69	15	25.0%
	70–74	14	23.3%
	≥75	11	18.4%
Gender	Male	35	58.3%
	Female	25	41.7%
Residence	Rural	38	63.3%
	Urban	22	36.7%
Socio-economic status	Lower class	24	40.0%
	Middle class	28	46.7%
	Upper class	8	13.3%

The most common mode of injury was **fall at home (43.3%)**, followed by **road traffic accidents (36.7%)**. Domestic accidents like burns, cuts, and slips accounted for 11.7%, while assaults were reported in 8.3% of cases as shown in Table 2

Table 2: Distribution of patients by mode of injury (n=60)

Mode of Injury	Frequency (n)	Percentage (%)
Fall at home	26	43.3%
Road traffic accident	22	36.7%
Domestic accident	7	11.7%
Assault	5	8.3%

Fractures were the most frequent injury (40.0%), followed by soft tissue injuries (28.3%), head injuries (18.3%), and multiple injuries (13.4%). The most commonly affected site was the **lower limb (36.7%)**, followed by upper limb (26.7%), head and neck (20.0%), and trunk (16.6%) as shown in Table 3

Table 3: Distribution of patients by type and site of injury (n=60)

Variable	Category	Frequency (n)	Percentage (%)
Type of Injury	Fracture	24	40.0%
	Soft tissue injury	17	28.3%
	Head injury	11	18.3%
	Multiple injuries	8	13.4%
Site of Injury	Lower limb	22	36.7%
	Upper limb	16	26.7%
	Head/Neck	12	20.0%

Variable	Category	Frequency (n)	Percentage (%)
	Trunk	10	16.6%

Among comorbidities, **hypertension (41.7%)** and **diabetes mellitus (35.0%)** were the most common. Visual impairment was present in 28.3%, and 18.3% reported a history of previous falls as shown in Table 4

Table 4: Distribution of risk factors and comorbidities (n=60)

Risk Factor / Comorbidity	Frequency (n)	Percentage (%)
Hypertension	25	41.7%
Diabetes mellitus	21	35.0%
Cardiovascular disease	9	15.0%
Visual impairment	17	28.3%
Hearing impairment	11	18.3%
History of falls	11	18.3%
Use of walking aids	8	13.3%

Out of the 60 patients, **40 (66.7%) required hospitalization**, and **18 (30%) underwent surgical intervention**. Outpatient management was sufficient in 16 (26.7%) cases. Two patients (3.3%) died during the hospital stay due to severe head injuries as shown in Table 5

Table 5: Distribution of patients by clinical outcome (n=60)

Outcome	Frequency (n)	Percentage (%)
Outpatient treatment	16	26.7%
Hospitalization (non-surgical)	22	36.7%
Surgical intervention	18	30.0%
Death	2	3.3%
Disability at discharge	2	3.3%

DISCUSSION:

This hospital-based study among 60 geriatric patients highlights the **epidemiological profile of injuries** in an Indian tertiary care setting. Injuries in the elderly are of particular concern due to physiological changes with aging, increased prevalence of comorbidities, and reduced functional reserve, which altogether result in higher morbidity and mortality compared to younger adults.

Age and Gender Distribution

The mean age of participants was 68.7 years, and more than half (58.3%) were males. This male predominance is consistent with studies conducted in India and abroad, where men tend to be more active outside the home, exposing them to higher risks of road traffic accidents and falls [10,11]. However, other reports suggest a higher incidence among females due to osteoporosis and post-menopausal bone fragility [12]. These differences may reflect socio-cultural variations in activity patterns.

Mode and Pattern of Injuries

Falls were the most common mode of injury (43.3%), followed by road traffic accidents (36.7%). Similar findings were reported by Chacko et al. in Kerala, where falls accounted for nearly half of geriatric injuries [13]. The predominance of falls may be attributed to age-related decline in vision, balance, and muscle strength. Road traffic injuries in this age group are increasingly reported in urbanizing India, possibly due to higher life expectancy and mobility [14].

Fractures (40%) were the most common injury type, with the lower limb being most frequently affected. This is in line with reports from other Indian studies where fractures, particularly hip fractures, were common sequelae of falls in the elderly [15,16]. Soft tissue injuries and head injuries were also notable, highlighting the vulnerability of older adults to trauma even from low-energy impacts.

Risk Factors and Comorbidities

Hypertension (41.7%) and diabetes (35%) were the predominant comorbidities among injured patients, followed by visual and hearing impairments. These conditions are known contributors to fall risk, impaired reflexes, and poor recovery

outcomes [17]. Approximately 18.3% of patients reported a previous history of falls, indicating a recurring risk that requires preventive interventions such as home hazard assessments and physiotherapy.

Clinical Outcomes

In this study, two-thirds of patients required hospitalization, and nearly one-third underwent surgical intervention, reflecting the severity of injuries. The case fatality rate (3.3%) was comparable to previous Indian studies [18]. However, even among survivors, 3.3% were discharged with disability, underlining the long-term impact of geriatric injuries on quality of life and caregiver burden.

Comparison with Literature

Globally, the World Health Organization estimates that falls are the second leading cause of unintentional injury deaths, with adults over 65 suffering the greatest number of fatal falls [19]. Indian data also show that falls constitute up to 50% of injuries in older adults [20]. Road traffic injuries, though less common than falls, pose a significant burden given the rising elderly population with increased mobility [21].

Our findings are consistent with this global and national trend, though the relatively high proportion of road traffic accidents in this study may reflect regional traffic conditions and inadequate geriatric-friendly infrastructure.

CONCLUSION:

In summary, falls and road traffic accidents were the leading causes of injuries among geriatric patients, with fractures being the most common outcome. Hypertension, diabetes, and sensory impairments were frequent comorbidities, contributing to increased risk. Given the rising elderly population, injury prevention, timely hospital care, and rehabilitation should be prioritized to reduce morbidity and mortality.

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