



FRACTURES IN ELDERLY PATIENTS: AN OBSERVATIONAL STUDY FROM NORTHWEST RAJASTHAN

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ABSTRACT

Background: Fractures among elderly individuals represent a growing public health concern worldwide due to increasing life expectancy, osteoporosis, and fall-related injuries. In India, rapid demographic ageing has led to a rising burden of fragility fractures, contributing significantly to morbidity, mortality, and healthcare costs. However, hospital-based data from tertiary care settings remain limited. **Methods:** This hospital-based observational study was conducted at Department of Orthopaedics, Sardar Patel Medical College, Bikaner, Rajasthan over a period of 18 months. Elderly patients aged ≥ 60 years presenting with radiologically confirmed fractures were included. Demographic details, clinical characteristics, mechanism and type of fracture, comorbidities, and treatment modalities were recorded using a structured proforma. Data were analyzed using descriptive and inferential statistics. **Results:** A total of 240 elderly patients were included, with a mean age of 71.4 ± 8.2 years. Females constituted 58.3% of cases. Low-energy falls were the most common mechanism of injury (67.5%). Hip fractures were the most frequent (41.7%), followed by distal radius (18.3%) and vertebral fractures (15.8%). Osteoporosis was documented in 62.9% of patients, and hypertension (48.7%) and diabetes mellitus (36.2%) were the most common comorbidities. Surgical management was required in 64.6% of cases. **Conclusion:** Fragility fractures, particularly hip fractures, constitute the majority of fractures among elderly patients presenting to tertiary care hospitals. Early identification of osteoporosis, fall prevention strategies, and multidisciplinary management are essential to reduce the burden of fractures in this vulnerable population.

KEYWORDS : Fractures, Bone; Osteoporosis**INTRODUCTION**

Population ageing is a global phenomenon, with the proportion of individuals aged 60 years and above projected to double from 12% in 2015 to 22% by 2050. Age-related physiological changes, reduced bone mineral density, and increased risk of falls predispose elderly individuals to fractures, particularly fragility fractures. Globally, it is estimated that over 9 million osteoporotic fractures occur annually, with hip fractures accounting for a substantial proportion and being associated with high mortality and long-term disability¹.

India is undergoing a rapid demographic transition. According to the Census of India and United Nations projections, the elderly population in India is expected to rise from 10.1% in 2021 to nearly 19% by 2050. Studies from India report a rising incidence of osteoporotic fractures, with hip fracture incidence estimated at 159–200 per 100,000 population in individuals aged above 50 years^{2,3}. Despite this, osteoporosis remains underdiagnosed and undertreated in the Indian elderly population.

Fractures in elderly patients are associated with prolonged hospitalization, loss of independence, increased risk of institutionalization, and excess mortality. Hip fractures, in particular, carry a one-year mortality rate ranging from 15% to 30% globally⁴. Understanding fracture patterns and associated factors is essential for planning preventive and therapeutic strategies.

Generating region-specific data on fractures in the elderly can help in identifying high-risk groups, optimizing resource allocation, and implementing effective preventive strategies at the hospital and community levels.

MATERIALS AND METHODS:**Study Design and Setting:**

This was a hospital-based observational study conducted in the Department of Orthopaedics, Trauma Center, Sardar Patel Medical College & Associated Group of Hospitals, Bikaner, Rajasthan over a period of 18 months (January 2023 to June 2024).

Study Population And Sample Size:

All consecutive elderly patients aged 60 years and above presenting with fractures during the study period were considered. A total of 240 patients fulfilling the inclusion criteria were enrolled using a

convenience sampling method.

Inclusion And Exclusion Criteria:

Patients aged ≥ 60 years with radiologically confirmed fractures who consented to participate were included. Patients with pathological fractures due to malignancy, polytrauma requiring referral, and those unwilling to participate were excluded.

Data Collection Tools:

Data were collected using a pre-tested structured proforma that included demographic details, mechanism of injury, fracture site, comorbidities, osteoporosis status, and treatment modality. Radiological investigations were reviewed for fracture confirmation.

Statistical Analysis:

Data were entered into Microsoft Excel and analyzed using SPSS version 25.0. Continuous variables were expressed as mean $\pm$ standard deviation, while categorical variables were expressed as frequencies and percentages. Associations were assessed using the chi-square test, with a p-value < 0.05 considered statistically significant.

RESULTS:

The mean age of the study population was 71.4 ± 8.2 years. The majority of patients were in the 60–69 years age group (45.8%). Females constituted 58.3% of cases, resulting in a female-to-male ratio of 1.4:1. (Table 1)

Low-energy falls were the predominant mechanism of injury, observed in 162 patients (67.5%). Road traffic accidents accounted for 20.4% of fractures, while other causes constituted 12.1%. (Table 2)

Hip fractures were the most common fracture type (41.7%), followed by distal radius fractures (18.3%) and vertebral fractures (15.8%). (Table 3)

Osteoporosis was documented in 151 patients (62.9%). Surgical intervention was performed in 155 patients (64.6%), while the remainder were managed conservatively. (Table 4)

DISCUSSION:

The present study highlights the predominance of fragility fractures among elderly patients presenting to a tertiary care hospital. The mean age and female predominance observed are consistent with global and

Indian studies, reflecting postmenopausal bone loss and longer life expectancy in women^{5,6}.

Low-energy falls emerged as the leading cause of fractures, similar to findings reported by Dhanwal et al. and Johnell and Kanis, emphasizing the role of fall prevention in fracture reduction strategies^{3,7}. Hip fractures constituted the largest proportion of fractures, aligning with studies from India and other low- and middle-income countries where hip fractures account for 30–45% of elderly fractures^{8,9}.

The high prevalence of osteoporosis in this study corroborates previous Indian studies reporting osteoporosis rates ranging from 50% to 70% among elderly fracture patients¹⁰. The coexistence of comorbidities such as hypertension and diabetes reflects the multimorbidity burden in geriatric populations and complicates fracture management.

The proportion of patients undergoing surgical management was comparable to reports from tertiary centers in Asia, where improved surgical facilities have increased operative management of geriatric fractures¹¹. Early surgical intervention is known to improve functional outcomes and reduce mortality, although outcome assessment was beyond the scope of the present study.

CONCLUSION:

Fractures in elderly patients presenting to tertiary care hospitals are predominantly due to low-energy falls and are commonly associated with osteoporosis. Hip fractures remain the most frequent and clinically significant injury. Strengthening osteoporosis screening, fall prevention programs, and multidisciplinary geriatric fracture care pathways is essential to reduce the growing burden of fractures among the ageing Indian population.

Table 1: Age And Gender Distribution Of Study Participants

Age group (years)	Male n (%)	Female n (%)	Total n (%)
60–69	52 (21.7)	58 (24.1)	110 (45.8)
70–79	34 (14.2)	46 (19.2)	80 (33.4)
≥80	14 (5.8)	36 (15.0)	50 (20.8)
Total	100	140	240

Table 2: Mechanism Of Injury

Mechanism of injury	No.	%
Low-energy fall	162	67.5
Road traffic accident	49	20.4
Others	29	12.1

Table 3: Distribution Of Fracture Types

Fracture site	Number (%)
Hip	100 (41.7)
Distal radius	44 (18.3)
Vertebral	38 (15.8)
Proximal humerus	32 (13.3)
Others	26 (10.9)

Table 4: Treatment Modalities

Treatment modality	Number (%)
Surgical	155 (64.6)
Conservative	85 (35.4)

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