

## Original Research Article

# Hip fractures in elderly with evaluation of risk factors

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### ABSTRACT

**Background:** Fractures in the neck and Peritrochanteric region of hip contribute significantly to health problem globally. Primary occurrence in elderly osteoporotic people and create a major socioeconomical and public health problem. Almost every such fractures require surgery, hospitalization, and prolonged rehabilitation. The objective of the study was to evaluate the risk factors of hip fractures among the elderly population.

**Methods:** This observational study was conducted among the elderly patients admitted in the department of orthopedics Government Medical College Jammu. Elderly patients regardless of sex and education admitted with hip fractures from August 2019 to July 2020 were included in the study.

**Results:** There were 330 patients admitted with hip injuries. Among these 330 patients admitted with hip fractures, 205 (62.12%) were females and 125 (37.88%) males, mean age was 72.8 years. Age limit was >60 and <100 years. Majority of the patients i.e., 192 (58.18%) were in between the age group of 60 to 79 years.

**Conclusions:** Increasing age is directly proportional to increasing incidence of hip fractures. This proportional rise can be reduced with early steps for prevention of osteoporosis and hence ultimately alleviate the disability and burden of the disease.

**Keywords:** Hip fracture, Elderly population, Public health problem

### INTRODUCTION

Osteoporosis and hip fractures are very common in elderly and especially in females. In tertiary care hospitals like ours fractures around hip are most common reason for admissions. Osteoporosis and other associated systemic comorbidities result in unstable and fragmented fractures and hence exponentially increased mortality in this age group. Patients sustaining a hip fracture in old age and even after treating it promptly there are 2-10% chances of sustaining a second fracture in near future. In United Kingdom around 75000 patients with hip fractures are admitted annually and treated, by 2050 this number is projected to be doubled considering the aging population and increasing life expectancy.<sup>1,2</sup> Children suffer from hip

fractures less commonly as compared with adults due to plasticity of their bones and less muscle mass and it covers only less than 1% of pediatric fractures around hip region. Hip fracture in children and young adults often results from high energy trauma but in elderly the hip fractures usually results from trivial trauma. It is difficult to treat and manage hip fractures in children and young adults and avascular necrosis of the femoral head is a serious complication contributing to significant morbidity.<sup>3,4</sup> Elderly population usually sustains hip fractures as a result of trivial fall on the ground or by direct blow to the hip area. Some of the diseases for example: diabetes, rheumatoid arthritis (RA), osteoporosis, malignancy, steroid intake, smoking and alcoholism cause osteoporosis leading to insufficiency fractures in the older people.<sup>5</sup> Hip fractures cause lot of burden to the patient party and to the

government also. Intimate area care is significantly compromised when there is a fracture around hip area that causes difficulty in self care of the elderly population and also hinders their day to day activities. Although hip fractures in elderly are not an orthopaedic emergency but its treatments is urgently desired by the patients and their families due to significant restriction in activity of patient even at the basic level. Urgent treatment is supposed to have positive psychological impact and prevents the patients from the pulmonary and associated complications.<sup>6</sup> Among inter-trochanteric fractures femoral neck fractures are most common injuries in elderly people and almost 90% of the fractures around hip fall in 2 categories. Stress fractures i.e. very rare in the elderly population but can be a diagnostic dilemma in young active patients mimicking muscle spasm and tendinitis.<sup>7</sup> Osteoporosis is a silent killer and hidden till fracture occur and hence poses high morbidity to elderly patients.<sup>8</sup> Hip fractures in the elderly population account for mortality of 20% in the patients above 60 years hence major health care expenditure.<sup>9,10</sup> In developing countries like ours major portion of hip fractures are mismanaged by local quacks. Osteoporosis and falls in the home are the major contributors for fractures around hip in the elderly population. Every year 30 to 60% of the people above 60 years of age suffer from falls leading to 90% of the hip fractures in this particular age group and mostly the falls are from a sitting place. In females life time risk of fractures around hip is 17.5% and 6% for male.<sup>11</sup> Also Socio economic status and educational level affects the incidence of hip fracture inversely.<sup>12,13</sup> Comorbidities for example cardiovascular, rheumatic and pulmonary diseases increase the risk of hip fracture in patients above 60 years of age.<sup>14</sup> This study was planned to evaluate the risk factors of hip fractures in the older people and will help at national, international, personal, economical and social level to prevent the incidence of fractures and reducing the socio economic burden on national resources.

**METHODS**

This study was conducted in Department of Orthopedics, Government Medical College Jammu among the patients admitted for hip fracture during the period of August 2019 to July 2020. Irrespective to sex and educational level etc all patients above 60 years of age with hip fracture were included. Data regarding age, sex, educational level, socio economic status, involved side and mechanism of the injury was retrieved from the department. A total of 330 patients were included in the study. Patients below 60 years and above 100 years of age, patients who died or the patients who were unwilling for the study were excluded. The age was divided in four groups with difference of ten. Sex was defined as male and female education level was defined as illiterate or literate. Ability of a patient to read or write some words was considered as literate. Socioeconomic status was divided as low and high. Side of the hip was left and right or both. Mechanism of injury was road traffic accident, fall on ground and homicidal. Type of operation, surgical approach, implants used and

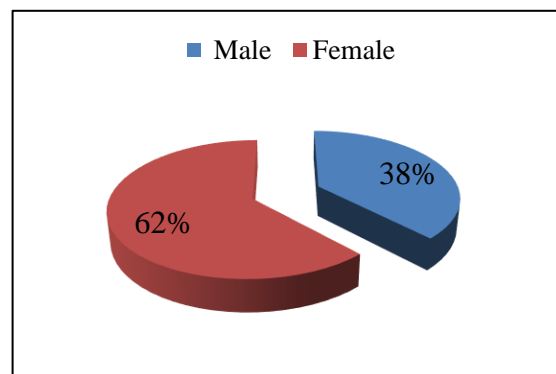
post-operative events including union rate and even rehabilitation was not part of study. The written informed consent was taken from the patients. Ethical clearance from the hospital ethical committee was taken. The data was analyzed in frequencies.

**RESULTS**

There were total 330 patients admitted in the Orthopaedic Department of Government Medical College Jammu. Among these 330 patients who were admitted for hip fracture, there were 205 (62.12%) female and 125 (37.88%) male patients. The mean age of the patients was 72.8 years. The lower limit of age was 60 years and upper limit was 100 years. The majority of the patients 58.18% were in between the age group of 60 to 79 years. The less common number of patients was in extremes of age groups i.e. only 8.48% above the age of 90 years.

**Table 1: Sex distribution.**

Sex	No. of patients	%
Male	125	37.88
Female	205	62.12

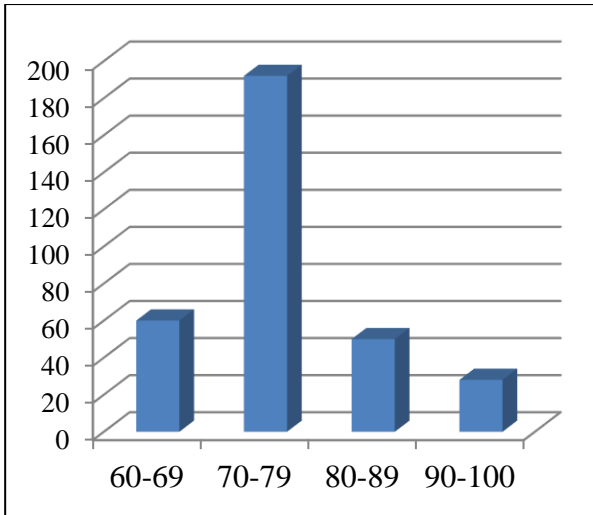


**Figure 1: Sex distribution.**

**Table 2: Age distribution.**

Age group (in years)	No. of patients	%
60-69	60	18.18
70-79	192	58.18
80-89	50	15.15
90-100	28	8.48

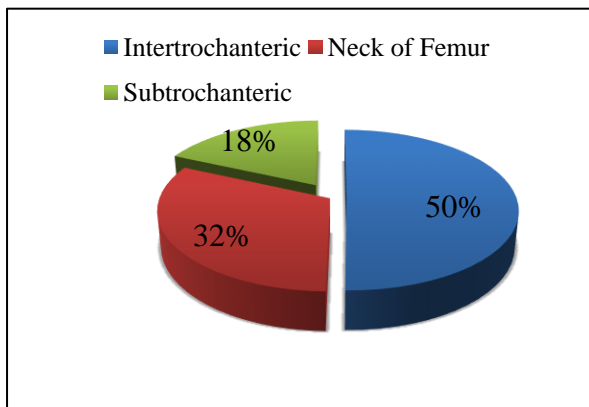
Depending upon mode of trauma in these 330 patients, 2/3rd sustained low energy trauma, and 1/3rd sustained high energy trauma with most of them in intertrochanteric group. Excluding osteoporosis pathological fractures represented 4% of fractures. 59% patients were on treatment for associated comorbidities like cardiovascular (22%), diabetes (18%), old stroke (8%), COPD 7%, dementia 4%, and miscellaneous medication 7%.



**Figure 2: Age distribution.**

**Table 3: Location of fracture.**

Fracture	No. of patients	%
Intertrochanteric	166	50.30
Neck of Femur	104	31.51
Subtrochanteric	60	18.18



**Figure 3: Location of fracture.**

Precautions to be taken by this high-risk population: regular exercise for increasing leg strength and balance improvement, reviewed medication in view of dizziness or drowsiness and ophthalmological consultation yearly in view of vision defects and if needed for timely intervention.

Measures for reducing hip fractures in older adults: supplementation example- vitamin D etc and weight bearing exercises and screening for osteoporosis and timely interventions etc.

**DISCUSSION**

With the increasing cases of fractures in elderly population the treatment options available are also increasing and to

utilize these treatments in a cost-effective way we require careful treatment targeting to the most deserving patients who will be benefited the most. In this study we have addressed the risk factor prevalence and there measures to be taken to prevent them. Most of these patients had associated comorbidities among which diabetes had a major share. Our study showed the similar results as already mentioned by Cokolic according to which diabetes mellitus effects all of the body tissues example- bone and it has a direct relation with high risk of fragility fractures.<sup>15</sup> In our study most of the cases of fracture had associated cardiovascular diseases i.e. 22% hence our study is showing the similar observations as shown by Magnus who stated that there is a inversely proportional relationship between heart problems and bone density.<sup>16</sup> Our study has shown that there were 7% of cases with associated COPD which is similar to the study already done in China that shows a strong relation between respiratory comorbidities and osteoporosis.<sup>17</sup>

In his study Arizon et al stated that patients in the age group of around 70 years are less functionally dependent than the patients who are more than 80 years of age.<sup>18</sup> Total of 192 i.e., 58.18% of patients in our study were in the age group of 70-79 years and 23.63% of total patients were above the age of 80 years. Thorngren et al stated that age is the most important factor affecting the outcome of fracture treatment and rehabilitation.<sup>19</sup>

However, in our study we did not considered any previous history of fractures in these patients at the same or other location, family history and steroid intake history was also not taken into the consideration.

**CONCLUSION**

Increasing age is associated with increased incidence of hip fractures. Nutrition supplementation for osteoporosis can reduce this temporal rise and hence associated burden and disability. Addressing the factors causing falls in elderly population can reduce the hip fracture associated mortality and morbidity significantly as these fractures are most of the times associated with already weakened bone in this age group which predisposes them to these fractures. Fixation of fractures is not the final treatment but actually it is beginning of treatment which includes decreasing the incidence of hip fractures, educate elderly about bone health and healthcare programmes.

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