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**RESEARCH ARTICLE**

# EPIDEMIOLOGY OF HIP FRACTURES IN THE KASHMIR VALLEY

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**ABSTRACT**

**Purpose;** Observational study in tertiary care bone and joint surgery hospital in Indian subcontinent for variables associated with hip fractures and measures to control them.

**Method;** This observational study was conducted in lone tertiary care orthopedic centre of Kashmir valley, where peripheral/ district hospital rarely manage fracture cases especially hip fractures , so all fractures are referred to our department of orthopedics, total admission in one year were 660 which is a very good number to consider.

**Results;** A total of 660 hip fractures got admitted during 2012 - 2013, with majority being elderly above 55 years age and male female ratio being 2/3. As per Singh's criteria for osteoporosis most of fractures were graded as osteoporotic grade 3, all fractures were evaluated in terms of age, sex mode of trauma, associated co morbidity and medication, which showed lot of associated co morbidities usually the cause of trivial trauma leading to fracture. Smoking and steroids were also considered as risk factors for fall and fracture besides cardiovascular, metabolic and neurological co morbidities.

**Conclusion;** Hip fractures in elderly are a source of morbidity and mortality, though a preventable factors are cause of fall. hip fracture incidence don't follow secular trend Worldwide and as aged population accumulates hip fractures are expected to increase very rapidly



## INTRODUCTION

Hip fractures are relatively common injuries and epidemiological studies have suggested increasing incidence of these fractures because of increasing life expectancy. The future incidence of hip fractures is expected to double to 2.6 million by 2025 and to 4.5 million by 2050[21]. Similarly in Asia incidence share is expected to change from 26% of total world incidence in 1990 to 37% by 2025 and to 45% by 2050[1]. Despite much research, hip fractures continue to pose a serious health care problem for both health policy makers and public health care organizations. Even though there are some evidence of declining hip fracture rates [8, 18], these fractures remain a persistent cause of excessive morbidity, reduced quality of life, and premature mortality among older adults [5,6]. As the reversal of the hip fracture secular trend may not apply universally [4], it is obvious that the annual incidence of hip fractures will increase, rather than decrease over the next few decades [20]. Moreover, since there is an exponential increase in hip fracture prevalence with age [14], as populations ages and longevity increases worldwide, these injuries are likely to appear at accelerated rates [21]. This is important because among the survivors, an increasing number will continue to experience various degrees of subsequent disability, pertinent to mention the painful disabling hip joint osteoarthritis, a high risk for falls and further hip fractures. As a result, increasingly excessive monetary costs of care for this debilitating injury, which include disability cost, nursing care, rehabilitation care, and surgical costs that are predicted as well [21]. likely chances of increase rather than a universal decrease in hip fracture prevalence rates, along with their immense social, physical and economic costs has recently resulted in continued vigilance plus the implementation of effective preventive strategies against hip fractures[5,21]. Indeed, with a better understanding of how such fractures occur, how debilitating these injuries are, what subsequent treatment is needed for these injuries to reduce their complications and to restore optimal function to the affected individual and joints, progress in this area is likely to be very promising.

## METHODS

Our study is hospital based study including patients, admitted during 2012 -2013. We recorded clinical and radiological aspects of each hip fractures admitted in that academic year,

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which included type of fracture, gender, age , mechanism of injury and associated medical/ nonmedical conditions. Our hospital is lone tertiary care and independent bone and joint surgery hospital in Kashmir valley, so we received patients from other district hospitals as well. After admission in hospital, patients were evaluated in terms of above mentioned characteristics and for surgical treatment which needed optimization of their general medical condition. Specific questions were asked for reasons of injury (fall) and associated major medical problems. Due to non availability of DEXA scan in our hospital we graded osteoporosis based on SINGH′S INDEX for quantifying osteoporosis [16]. Patients were operated at an average of 1 week after trauma, in routine theatre days by usual methods of fixation as per type of fracture and classifications [1].

## RESULTS

There were Total of 21951 admissions in our hospital during 2012 -2013; patients with Hip fractures were 660 with 46.76% males and 53.23% females. Total population as per 2011 census for Kashmir division dependent on our institute was 5,350,811 which included male population about 2833272 and rest being females, however we could not get age adjusted population data from census records . Fracture categorization was neck of femur 31.8%, intertrochanteric fractures 45.77% and subtrochanteric fractures 22.38% , indicating that most of fractures were intertrochanteric followed by neck of femur. Highest numbers of fractures were observed in age group of 60 -79 years (39.80%) followed by 40 – 59 years (24.80%). Females were predominant in higher age group fractures of intertrochnteric fractures (59.78%) and neck of femur fractures (57.81%) while females were less in subtrochanteric fractures (33.33%) as such male female ratio for hip fractures was about 2/3.

**Table 1** showing percentage of fractures and female ratio.

| % of hip fractures | % of females |
|---|---|
| Fracture neck femur (31.8%) | 57.81% |
| Intertrochanteric fracture (45.77%) | 59.78% |
| Subtrochanteric fracture (22.38%) | 33.33% |

**Table 2** age wise distribution of fractures

| AGE | % of hip fractures |
|---|---|
| 0-19 | 6.96% |
| 20-39 | 19.90% |
| 40-59 | 24.80% |
| 60-79 | 39.80% |
| 80 & above | 8.45% |

Interms of Mechanism of injury, 2/3rd had low energy trauma (slip in bathroom, fall from bed, missing stair steps, fall onto ground) and 1/3rd had high energy trauma (road traffic accident, fall from height) mostly in subtrochanteric group. Average Singh's index for neck femur and intertrochanteric group was 3 indicating significant osteoporosis, while for subtrochanteric fractures it was around 5. Pathological fracture excluding osteoporosis represented 5% of fractures which included lytic lesions either primary and secondaries at proximal femur from other sites. Fifty-five percent patients were on treatment for associated medical conditions like cardiovascular and hypertension 25%. diabetes mellitus 20%, diabetes plus hypertension 15%, old stroke 10%, parkinsonism 4%, dementia 5% , 7% on steroids 14 % miscellaneous medication for other conditions associated, with hypertension being commonest followed by diabetes mellitus. Smoking history present or past was applicable in 90% of men and 36%women which included either hukka or cigarette. Others associated features were as;

## DISCUSSION

Hip fractures are serious fall injuries which are associated with long-term functional impairment, nursing home admission and increased mortality [9, 10]. As the population ages, the number of hip fractures is likely to increase which will increase the health care costs related to these injuries. More than 95% of hip fractures are caused due to fall [13], most often by sideways low energy fall with impact onto the hip [7].

Out of those who fall, 20% to 30% suffer moderate to severe injuries such as hip fractures or head traumas that reduce mobility and independence, and increase the risk of premature death mostly caused due to complications of fractures [17]. Usually cause of fall is associated comarbidity in every patient which range from cardiovascular dysfunction to visual abnormality which was as reported in literature[6,10,21]. More than 60% of people with mortality from fall related injuries are above 75 years and older [12]. With 4 to 5 times more likely to be admitted for a long-term care facility for about a year or longer [2]. In both men and women, hip fracture rates increase exponentially with age [14], persons aged 85 and older are 10 to 15 times more likely to sustain hip fractures than are those aged 60 to 65[15]. Women are reported to sustain about 80% of all hip fractures [19] but in present study we had 3:2 ratio the reason being geographical variation and in Indian subcontinent men are equally osteoporotic as women due to nutritional causes and lack of awareness about bone and mineral health.

**Table 3** associated fracture characteristics and comorbidities

| Average Singh's index | Type of fracture | Associated trauma | | Smoking history | | Drug history | | |
|---|---|---|---|---|---|---|---|---|
| 3 | Fracture intertrochanter/ NOF | Fracture distal radius | 4% | Males | 90% | | Antihypertensive | 25% |
| | | | | | | | Antihyperglycemics/ hypoglycaemic | 20% (70%oral) |
| | | Proximal humerus | 1% | | | | Hypertension + diabetes mellitus | 15% |
| | | | | | | | Steroid | 3% |
| 5 | fracture subtrochanter | Other injuries | 7% | Females | 36% | Neurological | Old stoke | 10% |
| | | | | | | | Parkinsonism | 3 |
| | | | | | | | Dementia | 7% |
| | | | | | | Other causes | And their medication | Rest 12% |

Out of all fall-related injuries, hip fractures cause the greatest number of deaths and lead to the most severe health problems

and reduced quality of life [6, 22], 25% of community-dwelling older adults sustaining hip fractures remain institutionalized for at least a year [9] and significant challenge and burden on economy. With such a grave morbidity and hospital burden, it is important to have measures to decrease incidence of hip fracture. Hip fractures can be prevented by preventing falls, elderly can stay independent and reduce their chances of falling [3, 11].

***To help prevent falls, older adults can: [10,19,21]***

- Exercise regularly. It is important that the exercises focus on increasing leg strength and improving balance, and that they get more challenging over time. Tai Chi programs are especially good.
- Ask their doctor or pharmacist to review their medicines—both prescription and over-the counter—to identify medicines that may cause side effects or interactions such as dizziness or drowsiness.
- Have their eyes checked by an eye doctor at least once a year and update their eyeglasses to maximize their vision. Consider getting a pair with single vision distance lenses for some activities such as walking outside.
- Make their homes safer by reducing tripping hazards, adding grab bars inside and outside the tub or shower and next to the toilet, adding railings on both sides of stairways, and improving the lighting in their homes.
- To lower their hip fracture risk, older adults can:
- Get adequate calcium and vitamin D—from food and/or from supplements.
- Do weight bearing exercise.
- Get screened and, if needed, treated for osteoporosis.

## CONCLUSION

Hip fractures need special consideration in terms of morbidity and mortality associated with them. Most of these fractures result due to trivial trauma to already weakened bone due to mineral imbalance in the bone making bones fragile and brittle. Almost 20 t0 25% orthopaedic admissions with lot of economical burden on health budget, so preventive measures for fall can be rewarding in future.

Fracture fixation 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 health care programmes. Majority of hip fractures above age 50 years in Kashmir valley have underlying osteoporosis, the reason being hilly temperate climate with harsh winters and geographical location in Northern Himalayan mountaneous region. As majority of population takes non-vegetable diet on regular basis unlike other Indian states where majority of people are pure vegetarians, overall conclusion for whole Indian population may be difficult to be made.

***Conflict of Interest***

All the authors declare that there is no any conflict of interest with regard to the publication of this study.

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