To Assess the Prevalence of Osteoporosis Among Patients in a Tertiary Care Hospital

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ABSTRACT

Background: Osteoporosis is a global public health problem affecting over 200 million people worldwide. It is a disease characterized by reduction in the bone mass and disruption of bone architecture leading to impaired skeletal strength and an increased predisposition for fractures. The present study conducted to assess the prevalence of osteoporosis among patients in a tertiary care hospital.

Materials and Methods: This was a descriptive cross-sectional study conducted over a period of 6 months to assess the prevalence of osteoporosis among patients in a tertiary care hospital. The sample size for the study was 580. Complete history and demographic detail were collected. T score was calculated. According to the T score, the participants were divided into three groups, namely normal, Osteopenia and Osteoporosis. The recorded data was compiled, and data analysis was done using SPSS (SPSS Inc., Chicago, Illinois, USA).

Results: In the present study a total participant were 580 in which 76.89% participants were normal, 15.34% participants were osteopenic and 7.7% participants had osteoporosis. In this study osteoporosis was more common in females (64.44%) than males.

Conclusion: The present study concluded that 7.7% participants had osteoporosis and it was more common in females than males.

Keywords: Osteoporosis, Osteopenia, Fractures.

INTRODUCTION

Osteoporosis manifests when the rate of bone resorption exceeds that of bone formation, resulting in a loss of bone mass and disruption in bone quality, leading to reduced bone strength and increased propensity to fracture. Osteoporotic fractures occur as a consequence of a triad of factors: osteoporosis, falls and the interface/impact. Notably, the strongest single risk factor for fracture is falling.[1]

The definition of Osteoporosis based on World Health Organization (WHO) criteria is reduction in bone mineral density (BMD) of 2.5 standard deviations or more below that of the mean peak BMD of young adults when measured by dual-energy x-ray absorptiometry (DEXA). This condition is influenced by different risk factors in terms of sex and age.[2]

Osteoporosis is often called a silent disease because bone loss occurs without symptoms. People may not know that they have osteoporosis until their bones become so weak that a sudden strain, bump, or fall causes a hip to fracture or a vertebra to collapse. Collapsed vertebrae may initially be felt or seen in the form of severe back pain, loss of height, or spinal deformities such as kyphosis.[3]

Although exact numbers are not available, based on available data and clinical experience, an estimated 50 million Indians may be affected, as reported by Malhotra et al.[4]

The greatest bone loss occurs in women during perimenopause and is associated with estrogen insufficiency, a condition of menopause.[5] It is estimated that by 2050, half of the world's fractures will occur in Asia.[6,7]

The lifetime risk for osteoporotic fractures of hip, spine, and wrist is reported to be 40%,[6] with one in three women over 45 years of age likely to suffer a fracture due to osteoporosis.[7] In India expert groups say the numbers of osteoporosis in patients is approximately 36 million.[8]

Various observational studies show poor knowledge of osteoporosis in general population.[9,10] The present study conducted to assess the prevalence of osteoporosis among patients in a tertiary care hospital.

MATERIALS AND METHODS

This was a descriptive cross-sectional study conducted in Department of Orthopaedics, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh (India) over a period of 6 months. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute and written consent was taken from the patient after explaining the study. The sample size for the study was 580. The participants aged 20 years and above who were willing to give consent for the study with or without orthopedic problems were included in the study. Participants with old or recent calcaneum fractures or any pathology in the form of tumor or osteomyelitis of right calcaneum were excluded from the study. Complete history and demographic detail were collected. The participants were made to sit in a chair comfortably. Jelly applied on the medial and lateral aspect of the right heel which was then placed in the machine (Furuno CM-200) with the probes attached so that the scan was performed at the level of the mid-calcaneum. This technique uses the ultrasound waves and measures the broadband ultrasound attenuation (BUA) (dB/MHz) and the speed of sound (SOS) (m/sec) in the center of the bone. The device then combines the values of BUA and SOS to yield a parameter known as the "quantitative ultrasound "(QUS) index, which is expressed as T score.[11] A T score was calculated.[12] According to the T score, the participants were divided into three groups, namely normal (T score ≥-1.0), Osteopenia (T score between -1.0 and -2.5) and Osteoporosis (T score ≤ -2.5).[13] The recorded data was compiled and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). P-value less than 0.05 was considered statistically significant.

RESULTS

In the present study a total participant were 580 in which 76.89% participants were normal, 15.34% participants were osteopenic and 7.7% participants had osteoporosis. In this study osteoporosis was more common in females (64.44%) than males.

Table 1: Distribution of patients according to classification

Classification	N (%)
Normal	446(76.89%)
Osteopenia	89(15.34%)
Osteoporosis	45(7.7%)
Total	580(100%)

Table 2: Distribution according to gender

Gender	N (%)
Male	16(35.55%)
Female	29(64.44%)
Total	45(100%)

DISCUSSION

Although osteoporosis occurs in all populations, not all populations are at equal risk.[14] Studies have reported that Asian women have higher predisposition for osteoporosis than their Caucasian counterparts.[15] Reasons attributed for lower bone mineral density (BMD) in Indians include possible genetic differences, nutritional deficiency, and smaller skeletal size.[16]

In the present study a total participant were 580 in which 76.89% participants were normal, 15.34% participants were osteopenic and 7.7% participants had osteoporosis. In this study osteoporosis was more common in females (64.44%) than males.

Osteoporosis is generally regarded as a disease most prevalent in women, but up to 30% of hip fractures and 20% of vertebral fractures occur in men.[17] Nine percent prevalence of osteoporosis has been reported in northern India.[15]

Another study done by Wright N.C, et al. found 10.3% of adults above 50 years residing in the United States to be osteoporotic.[18]

A study in 158 females (mean age, 42.5 years) reported osteoporosis and osteopenia rates as 13.3% and 48.1% respectively. Increasing age of the women, higher gravida status and menopausal status, low body weight and lesser physically active status were identified as risk factor.[19]

A Srilankan study on the prevalence of osteoporosis in the urban population aged more than 50 years showed osteoporosis in 27% of women and 7% of men and in subjects less than 50 years osteoporosis was seen in just 9% of women and 3% of men.[20]

An IOF survey, conducted in 11 countries, showed a denial of personal risk by postmenopausal women, lack of dialogue about osteoporosis with their doctor, and restricted access to diagnosis and treatment before the first fracture result in underdiagnosis and undertreatment of the disease.[21]

A study carried out by Hernlund E, et al. found out 21% of females and 6% of males residing in Sweden to be osteoporotic. This study showed 3-4 times more osteoporosis in the female population than in the male.[22]

In contrast to the above study, Chitten JJ, et al. from India showed a prevalence of 8.6% and 5.8% osteoporosis in men and women respectively, in the age group of 40-59years.[23]

CONCLUSION

The present study concluded that 7.7% participants had osteoporosis and it was more common in females than males.

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