Original Article

OSTEOPOROSIS, OSTEOPENIA IN MEN OF MARDAN REGION K.P.K PAKISTAN

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ABSTRACT

Objectives: *Finding out how common Osteo-penia and Osteo-porosis are among men in the Mardan region of K.P.K. Pakistan is the goal.*

Methods: *A total of 1726 male participants between the ages of 40 and 70 were randomly selected for this study. sufferers under the age of 40 and above the age of 70, long-term steroid users, sufferers of rheumatoid arthritis, and bedridden patients all met the exclusion criteria.*

Results: *With a total of 1726 people, 61 (3.5%) had Osteo-porosis, and 858 (49.7%) had Osteo-penia, with a mean age of 52.70(7.71) years and a range of 40-70 years. Men (n=874) between the ages of 50 and 59 showed a significant frequency of Osteo-penia (446; 52%) and Osteo-porosis (30; 49.2%). men (n=[528]) in the 40-49 age group had 250 (16.4%) osteoporotic and 250 (29.1%) osteopenic individuals, whereas men (n=[324]) in the 60-70 age group had 21 (34.4%) Osteo-porosis and 162 (18.9%) Osteo-penia individuals.*

Conclusions*: Osteo-porosis was discovered to be a widespread occurrence, affecting men between the ages of 50 and 59.*

Keywords: *Bone mineral density, prevalence, and Osteo-porosis*

INTRODUCTION

Osteo-porosis literally means "porous bone." A condition characterised by bone tissue thinness and loss, ultimately leading to bone density reduction and an increased susceptibility to fractures.[1] There is a widespread myth that women are disproportionately affected by Osteo-porosis. A research article estimates that 6 percent of men over 50 have Osteo-porosis, and that percentage rises with age. An estimated 2 million American males developed Osteo-porosis in 2002, while another 12 million had Osteo-penia.[2] With an estimated 11.3 million cases in 2020 and 12.9 million cases in 2050, the prevalence of Osteo-porosis in Pakistan is predicted to rise in the coming years.[3] One Australian study found that Osteo-porosis causes fractures in one out of every three men over the age of 60.4 Men's bone mineral density used to decrease by about 1% annually as they got older.[5]

40 percent of men and postmenopausal women suffer from type I Osteo-porosis. The second kind of Osteo-porosis, often called senile Osteo-porosis, generally affects adults over the age of 75. There were twice as many female casualties as male ones.

Men are more likely to develop Osteo-porosis due to chronic steroid usage, hormonal imbalance, smoking, inactivity, heredity, hypogonadism, and vitamin D insufficiency than women. Because oestrogen and testosterone impact bone tissue through aromatization to oestrogen, mutations of aromatase enzymes or oestrogen receptors have been associated to severe Osteo-porosis in males.[6,7,8]

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Male Osteo-porosis has a number of proposed mechanisms, one of which is a drop in sex steroid hormone production and/or sensitivity. Bone loss in both sexes is thought to result from hypogonadism. Although males do not go through a process analogous to menopause, at the ages of 50 and 60, both oestrogen and androgen levels, and more especially their bioavailable fractions, decline, leading to complex abnormalities in reproductive physiology.[9-12] Prolonged use of anabolic steroids, smoking cigarettes, hormonal disruptions, insufficient physical activity, hypogonadism, and a lack of vitamin D are all known to induce Osteo-porosis in men.Aromatization of bone tissue is influenced by both oestrogen and progesterone.[13-15]

Back pain, short stature, and fragility fractures are the most typical early symptoms of Osteo-porosis in men. There is substantial debate over what constitutes an acceptable bone mineral density cutoff in men. While more information is gathered, it is acceptable to use gender-specific criteria (a T score that is 2.5 standard deviations below the young male advertence mean) to diagnose Osteo-porosis in men.[16,17]

To diagnose Osteo-porosis, bone mineral density may be assessed by ultrasonography (calcaneal), DXA scan (dual X-ray absorption), SPA (single photon absorption), and QCT (quantitative computerised tomography). Strong correlations between the values of bone mineral density determined by a DXA scan and ultrasonography have been found in prior studies.18,19 Compared to DXA, ultrasound measurements of bone mineral density are less intrusive, more inexpensive, and more accessible. Ultrasound is used to evaluate the heel bone mineral density, which is then converted to T-scores by comparing the results to those of the general adult population. The World Health Organisation defines Osteo-penia as a T-score of 2.5 or above.[20-21]

Our study seeks to ascertain the prevalence of Osteo-penia and Osteo-porosis in men in the Mardan region of K.P.K. Pakistan.

MATERIAL & METHODS

Ethical Review Committee blessing allowed us to begin the project. From May through October of 2014, researchers at the Mardan Medical Complex Hospital gathered data in a prospective cross-sectional study. All patients who came via the hospital's outpatient clinic (OPD) throughout the study's enrolment period were considered participants. After participants were briefed on the study's goals, informed consent was collected from them. Non-probabilistic convenience sampling was used to collect data. Males aged 40-70 made up the bulk of the study's 1726 participants. People who were chronic steroid users, had rheumatoid arthritis, or were bedridden were also not allowed to participate. Participants' ages were used to create three groups: those aged 40-49, 50-59, and 60-70. Participants were briefed beforehand and given the opportunity to consent to the experiment. Bone mineral density was assessed using the SONOSOT 3000 (Software Version: 3.03.06) bone densitometer by Calcaneal, Inc. After bone mineral density measurements were automatically converted, the T-score suggested by the World Health Organisation was used to assess bone fragility. SPSS (20.0) was used to generate descriptive statistics..

RESULTS

Mean age was 52.70(7.71) years, and the age range of the 1726 participants was 40–70 years old. Of these, 60 (03.05% were osteoporotic, and [858] (48%) were osteopenic. (Figure 1 of Table 1)

Out of a total of [528] people, 10 (16.4%) were diagnosed with Osteo-porosis between the ages of 40 and 49; out of a total of 874, 30 (49.5%) were diagnosed between the ages of 50 and 59; and out of a total of 324, 21 (34.4%) were diagnosed between the ages of 60 and 70. Osteo-penia was found in 162 (18.9%) of those aged 60-70, 446 (52.1%) of those aged 50-59, and 250 (29.1%) of those aged 40-49. (Table 2)

DISCUSSION

Metabolic Osteo-porosis reduces bone density and microarchitectural architecture, causing fragility fractures.[22] Osteo-porosis will certainly become the most common age-related bone disease as the global elderly population grows. Hip fractures are expected to increase sixfold by 2050 due to this age change.23

Meier et al.[24], Jones et al.[25], and Hannan et al. discover a statistically significant relationship between age and Osteo-porosis prevalence in multivariate and univariate analysis.[26] Age significantly affected bone mineral density, and men's bone mass dynamically reduced with age, especially in older men.

Our study found 30.9% of men aged 50–59 had Osteo-porosis, and 19.8% of those aged 60–70 had. A study in Lahore, Pakistan, found 20.6% of males over 45 had Osteo-porosis and 10.7% of men under

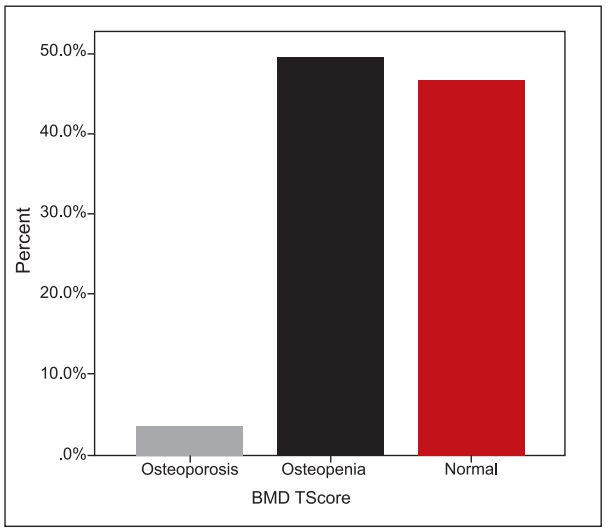

Figure 1: Bone mineral density of total population

Table 1: BMD of total population n=1726

BMD T-Score	Male
Osteoporosis	61-(03.5%)
Osteopenia	858 -(48.7%)
Normal	806 -(45.8%)
Total	1727- (39.2%)

Table 2: T-score, sex, and age ranges for BMD

Age range	BMD T-Score	Male
40-49 years	Osteoporosis	11(15.4%)
	Osteopenia	251(28.1%)
	Normal	267(23.2%)
	Total	528
50-59 years	Osteoporosis	31(48.2%)
	Osteopenia	445(51%)
	Normal	397(48.3%)
	Total	875
60-70 years	Osteoporosis	21(36%)
	Osteopenia	163(19%)
	Normal	141(18%)
	Total	324

45.27 In Saudi Arabia, 23% of men over 50 have Osteo-porosis, according to El-Desouki[28]. According to Garg N et al.[29], 60 (66.8%) of 170 males aged 50 and older in Muzaffarnagar district had Osteo-penia and 10 (11.1%) had Osteo-porosis. Older Brazilian men had 6.4%-16.1% Osteo-porosis and 33.5%-57.4% Osteo-penia.[30] Westegaard et al.[31] found 17.7% of Danish men over 50 had Osteo-porosis. A British study found Osteo-porosis in 6% of males over 50.32 Canada had 4.8% femoral neck and 2.9% lumbar spine Osteo-porosis.[33]

Our 40-49-year-old subjects also had osteopenic and osteoporotic bone density. This suggests that bone mineral density loss in men begins sooner than previously assumed, emphasising the need for early prevention. Calcium intake and absorption are worse in the elderly. Circumlocutory oestrogens help women absorb calcium from their guts and kidneys.

Calcium and vitamin D deficiency affects many Pakistanis. A Karachi hospital reported that 92% of its "Out Door Patients" had vitamin D deficiency, with a 5:1 female-to-male ratio.[33] Another study indicated that the average Pakistani adult ingested 400–600 milligrammes of calcium per day, significantly less than the recommended 1,000–1,200.34 Pakistanis ingested much less calcium than African-Caribbean, Pakistani, and European adults in another study.[35]

Early diagnosis and treatment of Osteo-porosis reduces fracture risk. Due to the difficulty of restoring bone mass after Osteo-porosis, prevention is as important as treatment. Giving up smoking and drinking, exercising more, and eating a balanced diet rich in calcium and vitamin D can improve health. Calcium and vitamin D-rich foods strengthen bones.

There were limitations to our investigation. It was a hospital study, which may have overestimated Osteo-porosis prevalence. Bone mineral density was measured using quantitative calcaneus ultrasonography. Quantitative ultrasonography of the calcaneus produces bone mineral density indices that match DXA scans, however DXA is the gold standard and should be used whenever possible. The high cost of DXA and our lack of funds prevented us from proceeding. However, quantitative ultrasonography is reliable and has been used in Osteo-porosis studies. Large-scale DXA scan population studies are needed to estimate local Osteo-porosis prevalence.

CONCLUSION

It's possible that the low BMD is an ethnic variation. In the Mardan region of K.P.K. Pakistan, males in their 50s and 60s are disproportionately affected by Osteo-penia and Osteo-porosis. Adequate calcium intake and physical activity are particularly important in reducing the risk of fracture in this population.

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