INTRODUCTION

Osteoporosis 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. There is a widespread myth that women are disproportionately affected by Osteoporosis. A research article estimates that 6 percent of men over 50 have Osteoporosis, and that percentage rises with age. An estimated 2 million American males developed Osteoporosis in 2002, while another 12 million had Osteopenia. With an estimated 11.3 million cases in 2020 and 12.9 million cases in 2050, the prevalence of Osteoporosis in Pakistan is predicted to rise in the coming years. One Australian study found that Osteoporosis 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.

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

Men are more likely to develop Osteoporosis 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 Osteoporosis in males.6,7,8
Male osteoporosis 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.\textsuperscript{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 osteoporosis in men. Aromatization of bone tissue is influenced by both oestrogen and progesterone.\textsuperscript{13-15}

Back pain, short stature, and fragility fractures are the most typical early symptoms of osteoporosis 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 average mean) to diagnose osteoporosis in men.\textsuperscript{16,17}

To diagnose osteoporosis, 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.\textsuperscript{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 osteopenia as a T-score of 2.5 or above.\textsuperscript{20-21}

Our study seeks to ascertain the prevalence of osteopenia and osteoporosis 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 osteoporosis 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. Osteopenia 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 osteoporosis reduces bone density and microarchitectural architecture, causing fragility fractures.\textsuperscript{22} Osteoporosis 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.\textsuperscript{23} Meier et al., Jones et al., and Hannan et al. discover a statistically significant relationship between age and osteoporosis prevalence in multivariate and univariate analysis.\textsuperscript{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 osteoporosis, and 19.8% of those aged 60–70 had. A study in Lahore, Pakistan, found 20.6% of males over 45 had osteoporosis and 10.7% of men under
Osteoporosis, osteopenia in men of Mardan

A study found osteoporosis in 6% of males over 50. In Canada, 4.8% had femoral neck and 2.9% lumbar spine osteoporosis.

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, emphasizing 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. Another study indicated that the average Pakistani adult ingested 400–600 milligrams of calcium per day, significantly less than the recommended 1,000–1,200. Pakistanis ingested much less calcium than African-Caribbean, Pakistani, and European adults in another study.

Early diagnosis and treatment of osteoporosis reduces fracture risk. Due to the difficulty of restoring bone mass after osteoporosis, 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 osteoporosis 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 osteoporosis studies. Large-scale DXA scan population studies are needed to estimate local osteoporosis prevalence.

**CONCLUSION**

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


