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A comprehensive analysis of bone mineral density in general population of Pondicherry

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Abstract: *Bone mineral density is measured with dual-energy X-ray absorptiometry (DEXA). Ideally, the bone density is measured in the spine, distal radius and hip with bone mineral density reported in terms of two absolute values: T-score (units of standard deviation compared with the density of a healthy 30-yearold) and Z-score (units of standard deviation compared with age and sex-matched control subjects).*
The World Health Organization has defined osteoporosis in terms of the T-score: osteoporosis is said to occur when the T-score is more than 2.5 standard deviations below the peak. A 1-point decrease in standard deviation in the T-score is associated with a 2.5-fold increased risk of a spine fracture.
As the age rises the bone gets weaker and the predominant risk factors are age >65,factures at 50 years, smoking, menopause <45 years, amenorrhea, low calcium intake, excessive alcohol consumption, vitamin D deficiency, certain diseases like rheumatoid arthritis, chronic renal failure, thyroid disorders, steroid therapy ect.
In this study we have analysed bone mineral density scan in general population. And our results are osteoporosis is found in good number of cases in men as well. and osteoporosis is seen in your group of people compared to the geriatric age.

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I. Introduction

Osteoporosis is characterized by a decreased amount of normally mineralized bone per unit volume, resulting in skeletal fragility and an increased risk of fracture. Osteoporosis may be classified into primary or secondary types.

Primary osteoporosis is further subdivided Type I due to oestrogen deficiency occurring in females, 5–10 years after the menopause. It is associated with Intertrochantric hip fractures and distal radial fractures. Type II due to result of ageing and calcium deficiency. It is associated femoral neck fractures and pelvic fractures. And secondary osteoporosis is due to endocrine deficiency such as Cushing's disease.

II. Material And Methods

It's a descriptive study of voluntary camps conducted at various places of Pondicherry.
All patients detailed history and examination done.
And using a bone density scanner and ultrasonic device the value was obtained
Study Design: observational study
Study Location: various places of Pondicherry
Study Duration: November 2016 to November 2017.
Sample size: 224 patients.
Subjects & selection method: A T-Score is generated with the device and interpreted based on the WHO Criteria

Inclusion criteria:
1. all patient attending the Bone marrow density camp
2. age group 30-81 years

Exclusion criteria:
1. patient not willing for study

Procedure methodology
a bone density scanner used and the density of the tibial shaft noted.

Statistical analysis
Data was analyzed using SPSS and charts generated using Microsoft excel

III. Result

A T-Score is generated with the device and interpreted based on the WHO Criteria (Image 1)

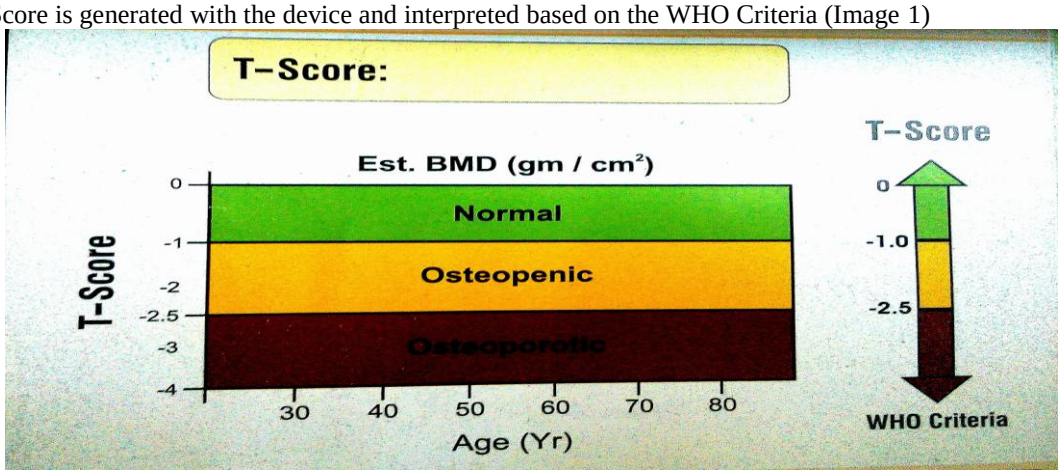
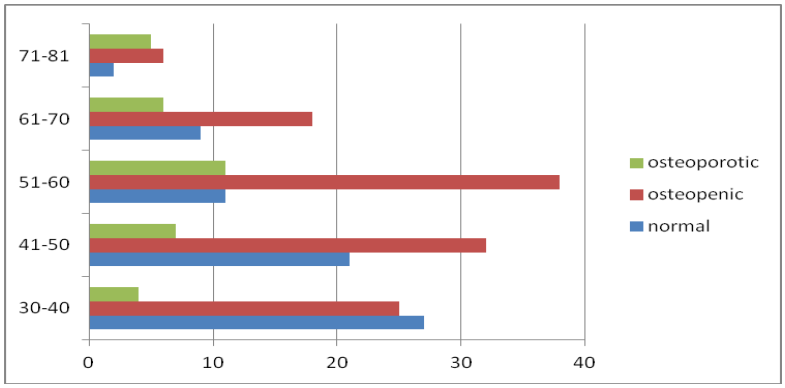


Image 1 WHO Criteria

Results
SEX DISTRIBUTION across the ages

Chart 1 sex distribution
Age related prevalence of osteopenia and osteoporosis about 54% of the population was found to be osteopenic, 15% was osteoporotic and only a 30% of the population was normal

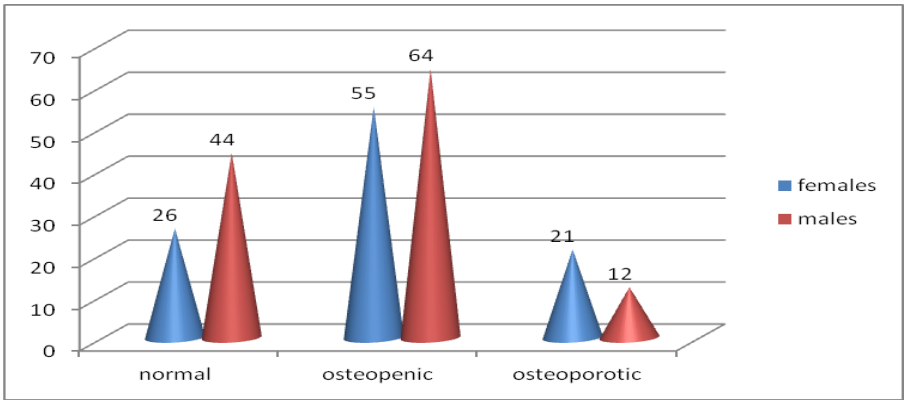
Chart 1



Comparision of females to males the study population had a 54% of males and 46 % females. The female population showed normal 25%, osteopenic 54%, osteoporotic 21%. The male population showed normal 37%, osteopenic 53%, osteoporotic 10%

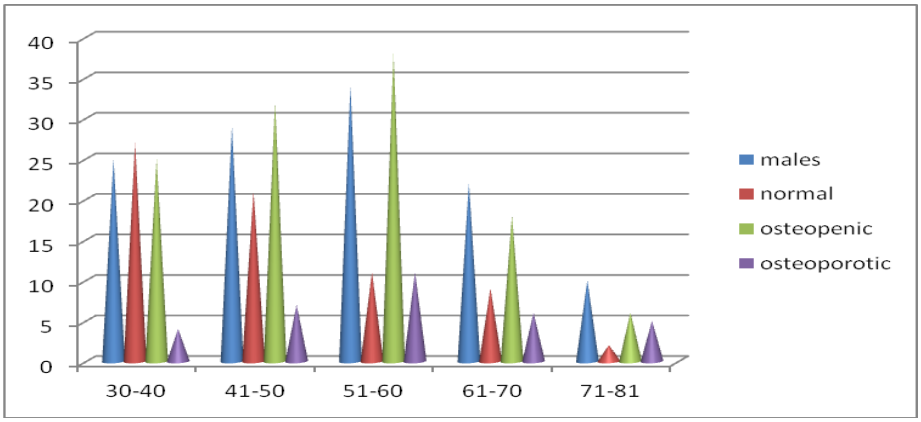
The comparision shows a females are more osteoporotic but the findings suggest that even men are osteoporotic. That is a 36% of men in the study population are prone for osteoporosis.

Chart 2



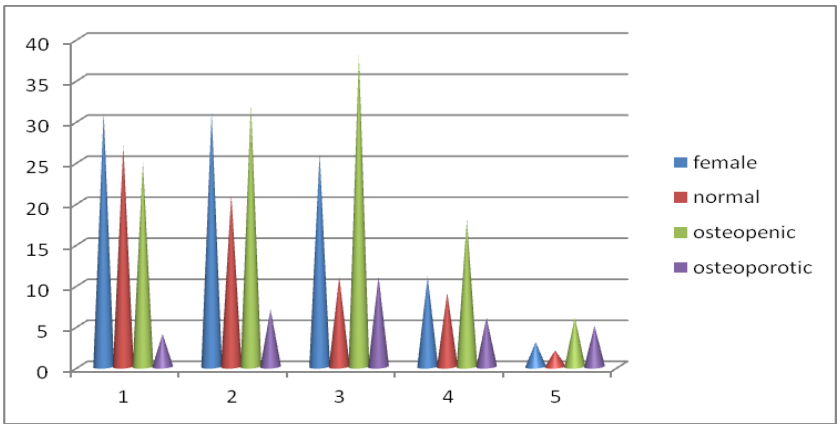
Distribution of osteopenia and osteoporosis in Males

Chart 3



Distribution of osteopenia and osteoporosis in Females

Chart 4



IV. Discussion

In osteoporosis there is a decrease in bone mass and strength with is the main cause of fractures in the elderly. Various studies of osteoporosis in postmenopausal women[1] there is a relation between body composition and biochemical markers of bone turnover among early postmenopausal women[2, 3, 4]. Hence the postmenopausal women are more commonly prone for osteoporosis. In our study more of osteopenia was present in the women population than osteoporosis and men had a chance of 36% osteoporosis.

The role of bone turnover in the pathophysiology of osteoporosis[4] is a established entity, Prevalence and significance of low 25(OH) D concentration in healthy subjects is demonstrated in a study done in Delhi[5]. And studies are there on evaluation of bone marrow density of women above 40 years of age[6] and Digital X-ray

radiogrammetry[7] we also had a similar pattern but men and women had almost equal percentage of osteopenic behavior.

Prevalence of osteoporosis in women: variation with skeletal site of measurement of bone mineral density [8, 9] as per the Consensus Development Conference. Diagnosis, prophylaxis and treatment of osteoporosis[10] are recommended. And Sex steroids, Hormonal determinants and disorders and the acquisition of bone mass[11, 12]. Calcium retention estimated for indicator of skeletal status in adolescent girls and adult women[13] ·There are comparative studies also of BMD Measurement of bone mineral content (BMC) of the lumbar spine, Correlation between forearm BMC and lumbar spine BMC[14].

V. Conclusion

To conclude bone marrow density and the it usefulness is established in our study osteopenic is a important factor and have to be taken care of by both the sexes since the existing myth is women have osteoporosis and men are not. The present day world and life style people are most of the time indoors and exposure to sunlight is lacking. Soon the prevalence of osteoporosis in men will be at par with women.

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