# Original Article

## Assessment of osteoporosis in post- menopausal women

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**ABSTRACT**
**Background:** The present study was conducted to assess osteoporosis in post- menopausal women. **Materials & Methods:** 64 post- menopausal women underwent BMD measurement using Achilles ultrasound bone densitometer. Calcium level was also calculated. **Results:** Out of 86 women, 24 (27.9%) had osteoporosis. The mean serum calcium level in osteoporosis women was 3.28 µg/ml and in non- osteoporosis women was 7.12 µg/ml. **Conclusion:** There was high prevalence of osteoporosis in post- menopausal women.
**Key words:** Calcium, Osteoporosis, Post- menopausal women

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## INTRODUCTION

Osteoporosis literally means "porous bones" and is characterized by a decreased mineral density of the bones. It is seen in aging population and is considered as a modern epidemic. Osteoporosis makes the bones weak and fragile, increasing the chances of them getting fractured even with trivial trauma. Such fractures may lead to pain, deformity, and disability.[1]
Women with osteoporosis are more likely to experience fractures. Demographic trends for hip fracture parallel those for osteoporosis.[2] Hip-fracture incidence in white women rises from 50 per 100,000 at age 50 years to 237 per 100,000 at age 65 years. White women are generally two to three times more likely than non white women to suffer a hip fracture. Hip fractures are associated with high rates of mortality and loss of independence. Wrist fracture incidence tends to increase at earlier ages than does that of hip fractures.[3]
Vertebral fractures have also been associated with significant morbidity. Sixteen percent of postmenopausal women have osteoporosis of the lumbar spine; furthermore, five percent of 50-year-old white women and 25 percent of 80-year-old women have had at least one vertebral fracture. Vertebral fractures can cause severe pain and are associated

with more than five million days of restricted activity in those age 45 years or older.[4]
Many methods of objective evaluation of bone mineral density (BMD) are available. The most widely used method is dual energy X-ray absorptiometry (DEXA) which is considered as the gold standard test as it is cheap, easily available, and easy to use and provides a sufficiently accurate estimation of the BMD.[5] The present study was conducted to assess osteoporosis in post- menopausal women.

## MATERIALS & METHODS

The present study was conducted in the department of Obstetrics & gynaecology. It comprised of 64 post-menopausal women. TH ethical clearance was obtained before starting the study. All patients were made aware of the study and their consent was obtained.
Data such as name, age, gender etc. was recorded. All patients underwent BMD measurement using Achilles ultrasound bone densitometer. Calcium level was also calculated. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

**Table I Distribution of patients**

| Age group (Years) | Number | P value |
|---|---|---|
| 45-55 | 18 | 0.05 |
| 55-65 | 26 | |
| 65-75 | 20 | |

Table I shows that age group 45-55 years had 18, 55-65 years had 26 and 65-75 years had 20 patients.

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**Table II Prevalence of osteoporosis**
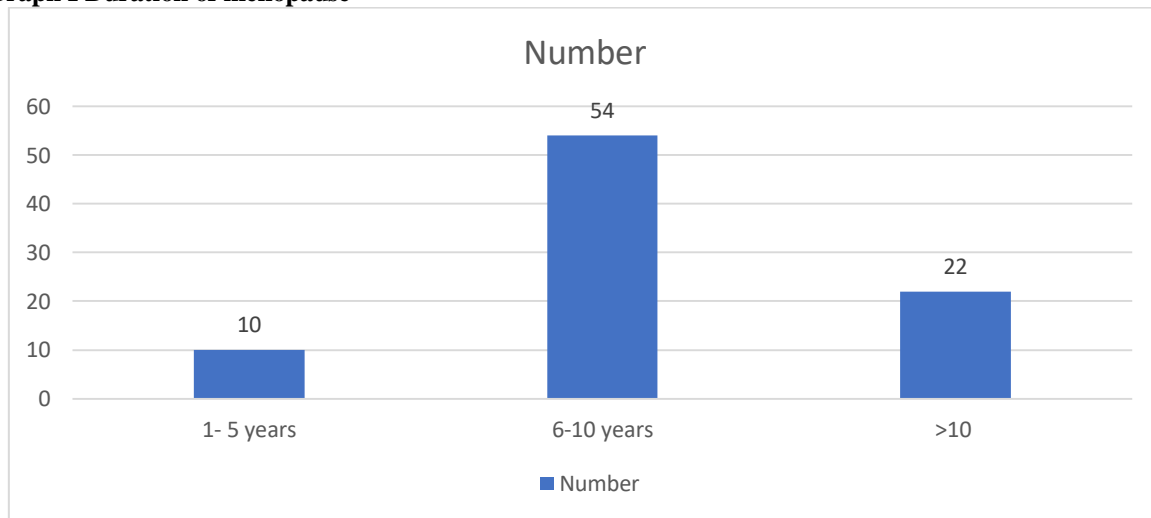
| Total | Osteoporosis | Percentage |
|-------|--------------|------------|
| 86 | 24 | 27.9 |

Table II shows that out of 86 women, 24 (27.9%) had osteoporosis.

**Table III Duration of menopause**

| Duration (Years) | Number | P value |
|------------------|--------|---------|
| 1-5 | 10 | 0.012 |
| 6-10 | 54 | |
| >10 | 22 | |

Table III, graph I shows that duration of menopause was 1-5 years in 10, 6-10 years in 54 and >10 years in 22 women. The difference was significant (P< 0.05).
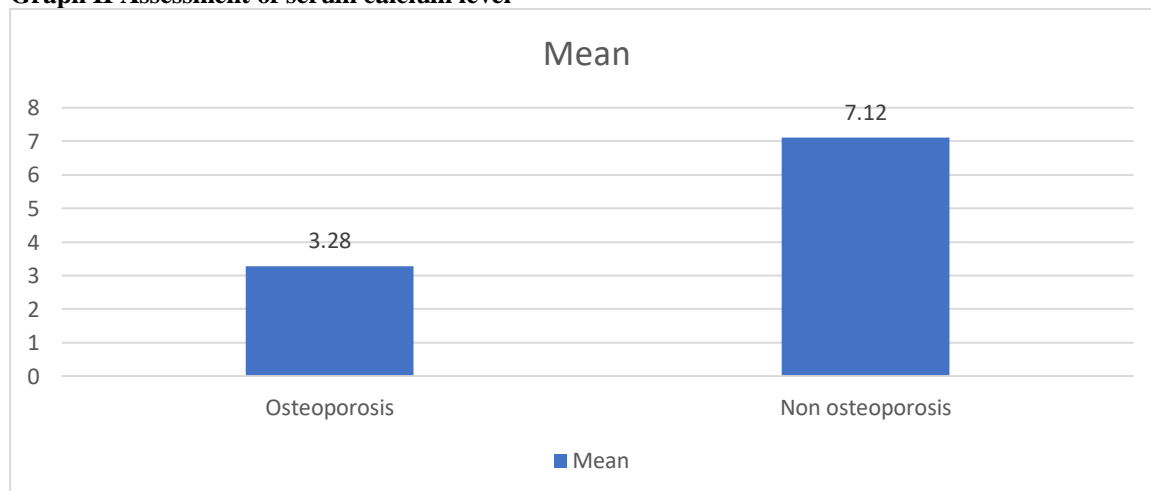
**Graph I Duration of menopause**



**Table IV Assessment of serum calcium level**

| Status | Mean | P value |
|--------|------|---------|
| Osteoporosis | 3.28 | 0.001 |
| Non osteoporosis | 7.12 | |

Table IV, graph II shows that mean serum calcium level in osteoporosis women was 3.28 µg/ml and in non-osteoporosis women was 7.12 µg/ml. The difference was significant (P< 0.05).

**Graph II Assessment of serum calcium level**

## DISCUSSION

The basic requirement for managing any health disorder starts with the evaluation of the current awareness of the disorder among the target subjects residing in a region. The prevention and management of osteoporosis require understanding and commitment from the vulnerable population, i.e., postmenopausal women and elderly men. Postmenopausal women, especially those with age more than 65 years are prone to develop complications of osteoporosis like fragility fractures.[6] Using effective bone sparing and bone formation promoting medications, osteoporosis can be managed effectively. Moreover, healthy lifestyle practices such as regular exercises and adequate calcium intake can promote the maintenance of BMD. However, unfortunately, the majority of postmenopausal women who would actually benefit from such measures are not identified. Furthermore, the awareness on the part of such women with regards to osteoporosis and its management is considerably inadequate. By being proactive orthopedic surgeons and allied health personnel can reduce the significant morbidity induced by hip and spine fractures among geriatric population.[7] The present study was conducted to assess osteoporosis in post- menopausal women.

In present study, age group 45-55 years had 18, 55-65 years had 26 and 65-75 years had 20 patients. Out of 86 women, 24 (27.9%) had osteoporosis. Malik et al[8] assessed salivary calcium level in 60 post menopausal women. Patients were divided into 3 groups of 20 each. In group I, healthy women were included, in group II, pregnant women and in group III, postmenopausal women were included. Two milliliters of unstimulated whole saliva was collected in 50 ml sterile plastic sample containers. The samples were then subjected to biochemical estimation of calcium. In group I, mean calcium level was 3.14 µg/ml, in group II was 3.18 µg/ml and in group III was 7.15 µg/ml. The difference was significant (P< 0.05). Salivary calcium has important role in the detection of early bone changes in postmenopausal women.

We found that duration of menopause was 1-5 years in 10, 6-10 years in 54 and >10 years in 22 women. The mean serum calcium level in osteoporosis women was 3.28 µg/ml and in non- osteoporosis women was 7.12 µg/ml. Factors that are consistently associated with increased risks of low bone density and fractures in postmenopausal women include increasing age, white race, low weight or weight loss, non-use of estrogen replacement, history of previous fracture, family history of fracture, history of falls, and low scores on one or more measures of physical activity or function.[9] Other factors are less consistent predictors across studies, but also have statistically significant associations with low bone density and fractures. These include smoking, alcohol use, caffeine use, low calcium and vitamin D intake, and use of certain drugs. Predictors of low bone density are similar to those for fracture, except for those factors related to physical function and falls. Some clinical risk factors, especially those related to physical function and falls, are as powerful as bone density in the prediction of hip fracture.[10]

Gopinathan et al[11] evaluated the level of awareness in postmenopausal women using the Osteoporosis Health Belief Scale (OHBS). A questionnaire (OHBS)-based study in 100 postmenopausal women in Chandigarh was conducted. The bone mineral density (BMD) was measured in each case by dual energy X-ray absorptiometry. Height, weight, and body mass index (BMI) of the participants were noted. No statistically significant difference was noted in the seven component parameters of OHBS among the normal, osteopenic and osteoporotic women suggesting that the health belief regarding susceptibility is not much different between the three groups of the study population. A statistically significant difference between the mean BMI of normal and osteoporotic population was noted.

Saha et al[12] conducted a case-control study in 40 postmenopausal women with osteoporosis and 40 women without osteoporosis were considered. Salivary calcium concentrations were measured and expressed as mg/dL. Receiver operating characteristic curve analyses was used to determine the optimal cut-off thresholds for salivary calcium in healthy postmenopausal women. The cut-off point for salivary calcium was 6.1 mg/dL. The sensitivity and specificity, respectively, for identifying women with osteoporosis, were 67.5 and 60%. The area under curve (AUC) was 0.678, the positive predictive value (PPV) was 62.79 and negative predictive value (NPV) was 64.86%. The positive likelihood ratio was 1.688 and the negative likelihood ratio was 0.542.

The shortcoming of the study is small sample size.

## CONCLUSION

Authors found that there was high prevalence of osteoporosis in post- menopausal women. There is need of regular assessment of bone mineral density in post- menopausal women.

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