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# Screening of postmenopausal osteoporosis using Singh's index

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**Abstract**
**Background and Objectives:** Early evaluation of risk factors and menopause symptoms and consequences. Long-term osteoporosis complications prevention. The Singh index is a cheap, straightforward approach that used measure osteoporosis depending on the radiological aspect of the proximal femur's trabecular bone over an AP radiograph. Osteoporosis graded by singh index.
**Methods:** 52 postmenopausal women who were randomly chosen from the Gynecology OPD at the Kamineni Institute of Medical Sciences in Narketpally participated in the current study. Women who were postmenopausal and went to the gynaecology OPD were included. Women having a confirmed case of endometrial cancer, endometriosis, genital cancer, breast cancer, or a history of fractures were not included.
**Results:** Average women's age was 64. Mean menopausal age is 49.71 years. 69% (n=52) of postmenopausal women in the study group had osteoporosis using Singh's index. Of 36 osteoporotic patients, 41.6% are in Singh's grade 2 and 58.33% are in grade 3. None of the osteoporotic patients are in singh's grade 1.Utilizing singh's index, menopausal years correlate with menopause grades. Menopausal years correlate with symptoms. Symptomatic osteoporosis patients make about 55% of the total. Backache was reported by 60% of study participants. Over 50% of women complain of musculoskeletal issues, suggesting they have bone loss following menopause.
**Conclusion:** An X-ray for Singh's grading together with questionnaires to analyse high-risk cases can be a start toward early screening in those women who stand to benefit from these preventative measures.

**Keywords:** Singh's index, postmenopausal osteoporosis

## Introduction
The process of ageing is a physiological one. Fragility, senile kyphosis, and osteoarthritis of the knee joint, hip joint, number and cervical spine, as well as a variety of other painful illnesses, are all signs that your bones and joints are getting older. The menopause is a significant turning point in a woman's life that is also connected with increased levels of weariness, weakness, and bone mass loss at a rate that is approximately 3 to 5 percent per year of the woman's total bone mass [1, 2, 3]. The majority of people who are affected by this condition are unaware that their bones are weakening until they suffer a break or become aware of indications that develop more subtly over time, such as a loss of height or a curvature of the spine. The process of ageing is a physiological one. Osteoporosis not only represents the natural ageing process of bones but also equates to brittleness. Early detection of osteoporosis is an essential component of an effective prevention strategy. Osteoporosis is a metabolic bone disease that is widely prevalent in India. Osteoporotic fractures are a significant cause of morbidity and death in adult Indian men and women. Osteoporosis has become a serious health and mutely progressing metabolic bone disease that is widely prevalent in India [4, 5].
The spine, the wrist, and the hip are frequently broken places in the body. On a plain anteroposterior (AP) radiograph, the Singh index is based on the radiological appearance of the trabecular bone structure of the proximal femur. This index is used to evaluate bone density and is a common method for diagnosing osteoporosis. The Singh index is a simple and inexpensive method of determining bone density [5, 6]. The current investigation was carried out with the purpose of identifying postmenopausal women as having osteoporosis using Singh's index and correlating this finding with clinical symptoms.

## Material and Methods
The current research was carried out on 52 postmenopausal female who were chosen at random Department at the Kamineni Institute of Medical Sciences in Narketpally.

**Inclusion criteria**

1. Postmenopausal women visiting Gynecology OPD.

**Exclusion criteria**

1. Women having a confirmed instance or a background of endometrial carcinoma or a history of probable endometrial cancer.
2. Endometriosis.
3. Genital cancer.
4. Breast carcinoma.
5. Thromboembolic incidents in the veins.
6. Diseases such as pulmonary embolism, deep vein thrombosis, and retinal vein thrombosis are examples.
7. Bone disorders.
8. History of fractures in the same location.

## Results

**Table 1:** Distribution of patients according to age

| Age group (years) | Number(n=52) | Percentage (%) |
|---|---|---|
| 50-60 | 22 | 42.3 |
| 61-70 | 18 | 34.6 |
| 71-80 | 10 | 19.2 |
| >80 | 2 | 3.8 |

Women were 64 years old on average. In research participants, the average age of menopause is 49.71 years

**Table 2:** Distribution of patients according to menopausal years

| Menopausal years | Number (n=52) | Percentage (%) |
|---|---|---|
| <10 years | 19 | 36.53 |
| 10-20 years | 22 | 42.3 |
| 21-30 years | 8 | 11.5 |
| >30 years | 3 | 5.7 |

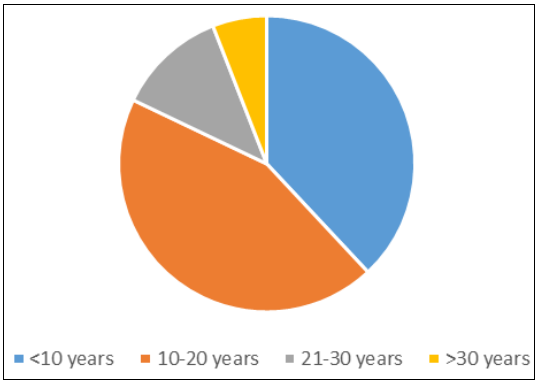


**Fig 1:** Distribution of patients according to menopausal years

**Table 3:** Distribution of patients according to presence of osteoporosis

| Osteoporosis | Number (n=52) | Percentage (%) |
|---|---|---|
| Yes | 36 | 69.23 |
| No | 16 | 30.7 |

Using Singh's measure, it was determined that 69% (n=52) of postmenopausal ladies in the study group had osteoporosis.

**Table 4:** Grading of osteoporotic patients using singh's index

| Singh's Grade | Number(n=36) | Percentage (%) |
|---|---|---|
| Grade 3 | 21 | 58.33 |
| Grade 2 | 15 | 41.66 |
| Grade 1 | 0 | 0 |

Of the 36 osteoporotic patients, 41.66 percent are in Singh's Grade 2 and 57.3 percent are in Singh's Grade 3.

**Table 5:** Association of menopausal years with osteoporosis and its grades

| Menopausal years | No. Osteoporosis | Grade 3 Osteoporosis | Grade 2 Osteoporosis | P value |
|---|---|---|---|---|
| <10 years | 16 | 3 | 0 | <0.001 |
| 10-20 years | 0 | 17 | 5 | |
| 21-30 years | 0 | 0 | 8 | |
| >30 years | 0 | 0 | 3 | |

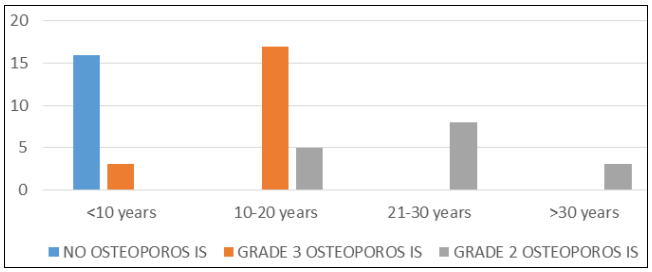


**Fig 2:** Association of menopausal years with osteoporosis and its grades

**Table 6:** Distribution of osteoporotic patients according to symptoms

| Symptoms | Number(n=36) | Percentage (%) |
|---|---|---|
| Yes | 20 | 55.55 |
| No | 16 | 44.44 |

Of the osteoporosis patients, 55% have symptoms, and 45% do not.

**Table 7:** Association of menopausal years with symptoms

| Menopausal years | Symptomatic | Asymptomatic | P value |
|---|---|---|---|
| <10 years | 2 | 17 | 0.001 |
| 10-20 years | 11 | 11 | |
| 21-30 years | 6 | 2 | |
| >30 years | 3 | 0 | |

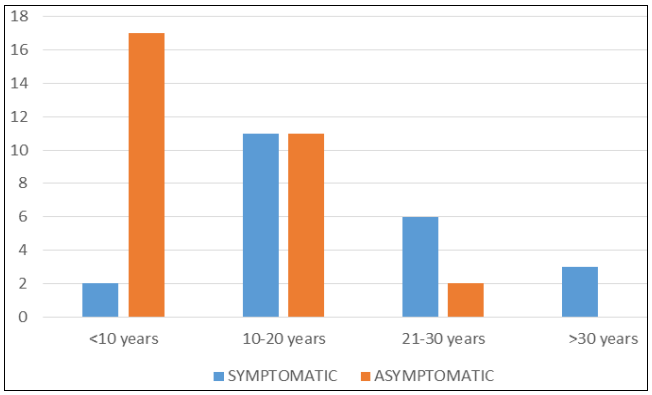


**Fig 3:** Association of menopausal years with symptoms

Menopausal years are significantly associated with menopausal symptoms. Employing Singh's measure, there is a substantial correlation between menopausal years and grades of menopause. 60% of the report's female participants reported having backaches frequently. More than 50% of women report having musculoskeletal discomfort like climbing stairs, rising from sitting, standing, weight bearing which suggests that postmenopausal women would undoubtedly experience bone loss once menopause occurs.

## Discussion

The menopause is a biological phenomenon that occurs during the process of ovarian ageing. It typically takes place around the age of 50 in half of all females. However, in about half of all females who have premature ovulation failure or who have had their ovaries surgically removed, the menopause takes place at an earlier age, and these women suffer from a lack of the hormone oestrogen [5, 6].

Because the average longevity of women is increasing at a faster rate than that of men, the majority of women will spend more than one-third of their whole lives after menopause. As a result, an early assessment of risk factors and detection of menopausal symptoms and long-term problems, such as osteoporosis, should receive a lot of attention. The term "silent disease" has been used to refer to osteoporosis [6, 7].

The majority of persons who are afflicted are unaware that they have the condition until their bones begin to thin, they suffer a break, or they become aware of indications that develop more subtly over time, such as a loss of height or a curvature of the spine.

The first grade on Singh's index denotes the presence of just very thin primary compression trabeculae. The fundamental compression trabeculae are present in grade 2, while the other trabeculae have nearly resorbed. The fundamental tensile trabeculae have begun to thin out and there is breakage in continuity evident in grade 3 [8, 9]. Fourth grade: the primary tensile trabeculae have become thinner while maintaining their continuity. The primary tensile and compressive trabeculae are plainly visible in grade 5, together with the prominence of the Ward triangle. A grade of 6 indicates that all trabeculae are visible and are of a normal thickness. If patient have a grade of 3 or lower, you definitely have osteoporosis [9].

## Conclusion

Diagnosing and measuring the severity of osteoporosis in postmenopausal women by Singh's index is the method that is most straightforward, non-invasive, semi-quantitative, and cost-effective. Early screening in women who will benefit from these preventative actions might begin with an X-ray for Singh's grading and questionnaires to analyse high-risk instances.

## Conflict of Interest

Not available

## Financial Support

Not available

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