

## TO STUDY THE OSTEOPOROSIS IN PRE AND POST MENOPAUSAL WOMEN

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### Abstract

**Background:** In India and surrounding Asian countries, osteoporosis is becoming a public health issue. The study was aimed to assess the risk factors for osteoporosis in preterm and postmenopausal women because the risk factors for natural osteoporosis in women in these nations are similar. Osteoporosis is a major public health concern around the world. In the United States, an estimated 10 million persons aged 50 and over had osteoporosis, with more than 5 million women, including 4.5 million women and 800,000 men, suffering from the disease. The highest rate of osteopenia and osteoporosis among Arab women was recorded in Kuwaiti women 50 years or older, with even higher rates reported in the Saudi Arabian State (KSA) among women of the same age, with 31% having osteopenia and 40% having lumbar spine osteoporosis.

**Aim:** The purpose of the study was to determine the risk factors for developing osteopenia and osteoporosis in pre- and postmenopausal women, to assess pre- and postmenopausal women's knowledge of osteoporosis prevention, and to assess the relationship between osteoporosis knowledge and selected demographic variables.

**Material and Method:** In December 2020, a systematic literature search was conducted. This search included the months of January 2018 through December 2020. The key terms "osteoporosis," "menopause," and "risk factor" were used to conduct a literature search in Pub Med and Google Scholar.

**Results:** The overall prevalence of osteoporosis in postmenopausal women is 41 percent, while it is 53 percent in India alone. In comparison to other countries, China is studying a variety of risk factors. The maximum risk variables were investigated in China, but not in India, Korea, or Japan. As a result, age, height, postmenopausal status, and exercise were taken into account in the final study. Age was investigated as a non-modifiable risk factor for osteoporosis in all four countries: India, China, Korea, and Japan. Calcium consumption and a variety of workouts were discovered to be useful modifiable factors. Other characteristics, such as age, height, and postmenopausal status, are unchangeable. All four countries evaluated age as a non-modifiable risk factor for osteoporosis: India, China, Korea, and Japan.

**Conclusion:** The current study discovered a link between osteoporosis awareness and marital status, previous osteoporosis knowledge, and health information source. In postmenopausal women, adequate calcium and vitamin D intake, as well as a variety of workouts, might be considered preventive strategies for osteoporosis.

**Keywords:** Menopause, osteoporosis, risk factor, early detection, prevention of osteoporosis.

### Introduction

Osteoporosis is a rheumatoid arthritis characterized by reduced bone density and a growing tendency for bone loss and the risk of fractures. Risks of such an event include those that are irreversible such as gender, age, premature menopause, thin or thin body, race, and genetics while the other variables are calcium deficiency, lack of exercise, alcohol and smoking.<sup>1,2</sup> The prevalence of osteoporosis is very high in women, due to changes in hormones that regulate metabolic processes in the body. A major

challenge in combating this disease lies in early diagnosis before clinical outcomes. Osteoporosis is a major public health concern around the world.<sup>3</sup> In the United States, an estimated 10 million persons aged 50 and over had osteoporosis, with more than 5 million women, including 4.5 million women and 800,000 men, suffering from the disease.<sup>4</sup> Among Arab countries, the highest increase osteopenia and osteoporosis have been reported in Kuwaiti women 50 years of age or older (26.8% and 9.9%,

respectively), with the highest rates being reported in the Saudi Arabian State (KSA) among similar women. age, of which 31% had osteopenia, and 40% had osteoporosis in the lumbar spine.<sup>5</sup> These high levels in the KSA indicate the importance of early detection of a silent disease and its subtle risk factors to plan measures to prevent and control its progression.<sup>6</sup>

Women have had a period of accelerated bone loss during menopause, as they may lose 3% to 5% of their bone mass every year for the next 5 to 7 years after menopause. Estrogen insufficiency in old age is thought to be responsible for roughly 75% of bone loss in the postmenopausal period.<sup>7</sup> In Indian and Iranian women, low education and parenthood have been identified as risk factors for osteoporosis. The impact of education on lifestyle, diet, and economic status is most likely the reason. The majority of prior osteoporosis research has focused on postmenopausal women, and further research is needed to determine the frequency and associated features in premenstrual women. If osteoporosis is to be avoided, proper bone health must be maintained at all phases of life.<sup>8</sup>

In densely populated countries such as China and India, most people live in rural areas, where hip fractures are often treated appropriately at home. Because double energy X-ray absorptiometry (DEXA) scans are not frequently available in rural areas of Asian countries, diagnosing osteoporosis using them is also impossible. Preventing osteoporotic fractures in high-risk groups is challenging in such circumstances because early detection is impossible. Osteoporosis has predictable and preventable (variable) risk factors. Age, height, weight, body mass index (BMI), and avoidable menstruation abnormalities are all flexible risk factors. Calcium intake, sun exposure, smoking, alcohol use, exercise, a chronic disease such as rheumatoid arthritis, systemic lupus erythematosus, and other autoimmune diseases, steroid use, hormone replacement treatment, and other autoimmune disorders are all preventable risk factors. The BMD rate should identify the requirement for pharmacological therapy in low-risk categories. In the absence of a DEXA scan, recognising other risk variables besides age and weight is critical for early diagnosis and treatment of osteoporosis.<sup>9</sup>

We provide an overview of the most essential clinical concerns in premenopausal osteoporosis with the goal of raising awareness of high-risk individuals who are regularly seen by primary care physicians. This study looks at bone mass measurement, normal bone accretion, risk factors for premature bone loss, clinical outcomes, and management challenges in premenopausal women.

### Material and Methods

In August of 2020, a comprehensive literature review was conducted. This search included the months of January

2018 through December 2020. The key terms "osteoporosis," "menopause," and "risk factor" were used to conduct a literature search in Pub Med and Google Scholar. For additional investigation, articles from India and adjacent Asian nations like China, Korea, Japan, Hong Kong, Sri Lanka, Nepal, Singapore, and Pakistan were considered. Abstracts were screened, and papers relevant to the goal were found for the entire paper. The analysis was omitted from duplicate studies.

### Eligibility of the studies

Researchers have selected studies that looked at women's risk factors before and after menopause. Observation studies such as different categories, case management, and case studies were included for further analysis. Reporting levels in the included subjects were assessed using the Epidemiology Review Reporting Statement.<sup>10</sup>

### Inclusion criteria

The study includes observational studies conducted in the hospital and/or community. The studies' goal was to determine the risk of osteoporosis in premenopausal and postmenopausal women. The study comprised women from India and adjacent Asian countries.

### Exclusion criteria

This study did not include reviews, case reports, editorials, commentaries, letters to the editor, or unpublished material. The analysis excluded articles in which the data was not reported in terms of odds ratio (OR).

### Data Collection Tool

The researcher utilised a three-part independent questionnaire to obtain data from participants on their characteristics and risk factors for osteoporosis. Age, education level, family income, marital status, whether or not they had previously received information regarding osteoporosis, and a source of health information were all factors in the study. The type of work; the number of children; eating habits; daily milk content; consumption of dairy products; frequency of exercise; family history of osteoporosis; sun exposure; whether you are taking any medications such as thyroid medication, chemotherapy, anticoagulants, steroids, and hormone therapy; and fertility history, including estimates, gestational age (time from premenstrual period to menopause); and whether you are taking any medications such as thyroid medication, chemotherapy, anticoagulants, steroids, and hormone therapy; and whether you are

Data was collected at the University from January 2018 to December 2019 in accordance with the same law. Respondents were given a clear explanation of their rights, the nature and dangers of the study, the study's benefits, and

the study's voluntary participation prior to data collection. The GE Lunar Achilles Insight Bone Densitometer was used to measure BMD first. After establishing their social profile, they were given the Risk Assessment Questionnaire. Third, they were given the OKAT Questionnaire to test their awareness of osteoporosis. Fourth, individuals were subjected to a medical examination, which included weight and height measurements in order to determine their body mass index (BMI). Respondents' informed written consent is preserved prior to the submission of a questionnaire. They were eventually transferred to the University's Medical Laboratory, where they were given 5 mL of venous blood to assess their serum calcium levels. They should also see a doctor if they have been diagnosed with osteoporosis and have low serum calcium levels.

#### Result:-

The first literature search yielded a total of 1000 published publications. Following the evaluation of these papers, a total of 145 articles were chosen (10 articles from India, 40 from China, 43 from Korea, and 41 from Japan). A total of 80 people had their data examined. Thirty-five full-text papers were evaluated for inclusion in the study. There were a total of 5 subjects with complete text available for analysis (76,897 participants).

All of the subjects were divided into separate groups. One study came from India, while the others came from China, Japan, and Korea. Three studies were both hospital and

community-based, and one study was both hospital and community-based. Four of the studies included both pre- and postmenopausal women, while two of the Chinese studies exclusively included postmenopausal individuals. In five investigations, bone marrow transplantation (BMD) was examined, and in one study from Japan, the speed of sound in the calcaneus bone was evaluated. The average age of the participants was 48–66 years old. The frequency ranged from 15% to 68%. A total of 43.2 percent of the population was covered.

The most harmful characteristics were evaluated in China, but not in India, Korea, or Japan. As a result, age, height, postmenopausal status, and exercise were taken into account in the final study. All four countries, namely India, China, Korea, and Japan, looked into age as a static risk factor for osteoporosis. In the focused effect model, the combined age range was 1.25 (98 percent), heterogeneity Chi square = 80.51, and  $I^2 = 95.8\%$ . The combined ratings in the random outcome model were 1.25 (98%) and the heterogeneity Chi square 82,  $I^2 = 95.8\%$ .

Age and height are dangerous factors in osteoporosis. These features cannot be altered to prevent osteoporosis. In the focused outcome model, the combined postmenopausal status was 3.41 (98%), Heterogeneity Chi Square 3.80; in the random outcome model, the combined ratings were 3.43 (98%). This means that in postmenopausal women there are 2-folds that increase the risk of osteoporosis.<sup>11-17</sup>

**Table 1: Risk factors studied in Asian countries**

Risk factors	Name of country where risk factor was studied			
	India	China	Korea	Japan
Age	√	√	√	√
Height		√	√	√
Weight		√	√	√
BMI		√	√	√
Age at menarche		√		
Age at menopause		√		
Post menopause	√	√		√
Years since menopause		√		
Exercise		√		
Higher education	√	√		
Calcium supplements	√	√		
Low calcium intake		√		
Hypertension		√		
Total cholesterol level			√	
Diabetes mellitus		√		
Smoking		√		
Alcohol intake		√		
Previous history of fractures		√		

## Discussion

According to these studies, the prevalence of osteoporosis in India and adjacent Asian nations is 41%, but it is high in India alone, at 53%, and may soon become a public health issue. Before it becomes a big health issue for the elderly, several preventative steps are required.<sup>18</sup> There are several risk factors for osteoporosis in women that have been discovered. In elderly persons, age, height, weight, BMI, and postmenopausal status do not change.<sup>19</sup> As a result, new variables should be found in order to function as osteoporosis prevention methods. In India and surrounding Asian countries, exercise is the only preventive factor that has been well researched. Although the significance of exercise in preventing osteoporosis has been debated since the 1980s, there is currently a lack of Indian research to support which exercises are beneficial and for how long. Women's osteoporosis has been examined using several types of exercise.<sup>20</sup> These include resistance training, water exercise, aerobic exercise, total vibration exercise, and moderate exercise. Exercise 3-4 times a week showed strength of the posterior extensor muscles as well as a significant reduction in vertebral fractures and reduced falls. Exercise and easy walking improve a woman's bone marrow but have no effect on spinal cord flexion. Body vibration also has a balance and proper alignment that will reduce falls and fractures. An integrated exercise program should be designed to treat congestion in the femoral neck, hip, and spines. At the same time, strengthening the leg and back muscles should be considered to prevent falls.<sup>21-22</sup>

**Demir et al.**<sup>23</sup> who reported the prevalence of osteopenia among Turkish women aged  $52.9 \pm 4.7$  years to 39.2%. Those women who consumed large amounts of milk and dairy products, had a longer exposure to the sun, and had a longer reproductive life had higher BMD. **Pongchaiyakul et al.**<sup>24</sup> observed similar findings on rural Thai women, establishing a link between dietary calcium, BMD, and indicators of biochemical bone marrow transplantation, and reporting that women who consumed high levels of dietary calcium had higher BMD at all sites. As a result, health education for all women with osteopenia and osteoporosis should be organized, with a focus on the necessity of eating calcium-rich foods like milk and milk, as well as getting enough sun exposure to enhance their BMD. Another factor that is being studied in India is getting enough calcium. Calcium is a crucial mineral for bone development. Osteopenia and osteoporosis are caused by a calcium shortage. The Indian diet does not satisfy the daily calcium requirements of 600 mg per day, according to a report by the Indian Council of Medical Research.<sup>25</sup>

The average information about the condition among the study group was very low, according to a study on KAP osteoporosis testing among women over the age of 15 in

the Assir region of Saudi Arabia. The questionnaire test was 3.3 out of 12, which was very low.<sup>26</sup> Another study on osteoporosis awareness among Saudi adults in the city of Riyadh found that just 25.33 percent of women had a good general understanding of the disease.<sup>27</sup> Participants' ability to identify risk factors ranged from low to fair.<sup>28</sup>

Several studies in India have revealed that the majority of Indians, young and old, women and men, are Vitamin D deficient. Calcium supplementation, Vitamin D, and bisphosphonate are the most widely prescribed medications in India to prevent osteoporosis in women. To prevent osteoporosis, a diet rich in calcium and vitamin D, as well as a variety of workouts, should be considered.<sup>29-30</sup>

## Conclusion:

A link was established between awareness of osteoporosis and marital status, prior knowledge of osteoporosis, and the source of health information in current research. Without prior knowledge of osteoporosis, most of them did not have enough information about the disease and its prevention, according to data. Most of them knew enough about osteoporosis in the media, while others learned from both the media and health workers, among various sources of information. This shows how the media (newspapers, television, and magazines) play an important role in raising public awareness by preventing osteoporosis.

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