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RESEARCH ARTICLE

Understanding Osteoporosis Knowledge Among Perimenopausal Women: A Prospective Study

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Abstract

Background: Osteoporosis is a major public health issue, particularly in perimenopausal women, due to increased fracture risk. Awareness and knowledge about osteoporosis are critical for early prevention.
Objective: To evaluate the level of knowledge regarding osteoporosis among perimenopausal women attending Shaheed Monsur Ali Medical College, Dhaka, Bangladesh.
Methods: A prospective study was conducted on 110 perimenopausal women aged 40–60 years. Participants completed a structured questionnaire assessing knowledge of osteoporosis, risk factors, prevention, and treatment. Data were analyzed using descriptive statistics and chi-square tests.
Results: The mean age of participants was 51.3 ± 5.4 years. General awareness was moderate (78% had heard of osteoporosis), but detailed knowledge of risk factors and preventive measures was low: only 42% were aware of calcium-rich diets, and 35% practiced regular weight-bearing exercises. Knowledge scores were significantly associated with education level ($p < 0.01$) and family history of osteoporosis ($p < 0.05$).
Conclusion: Although general awareness existed, comprehensive knowledge and preventive practices were insufficient. Health education programs targeting perimenopausal women are recommended to improve prevention.

Keywords: Osteoporosis, Knowledge, Perimenopause, Women, Awareness.

1. Introduction

Osteoporosis is a systemic skeletal disorder characterized by reduced bone mass and deterioration of bone microarchitecture, which increases susceptibility to fractures, particularly in the hip, spine, and wrist [1]. It is a major public health concern worldwide, affecting millions of individuals, with women being disproportionately affected due to hormonal changes associated with menopause [2]. The perimenopausal period, typically occurring between the ages of 40 and 60, is a critical window during which rapid bone loss may begin, largely driven by declining estrogen levels [3]. Estrogen plays a key role in maintaining bone density by inhibiting bone resorption; its decline accelerates bone turnover, predisposing women to osteoporosis and subsequent fractures [4]. Despite the high prevalence of osteoporosis, awareness and understanding of the disease remain inadequate among many populations, including women in the perimenopausal age group [5]. Knowledge regarding risk factors, preventive measures, and treatment options is essential, as it directly influences health-seeking behavior and adherence to lifestyle interventions such as diet modification, supplementation, and exercise [6]. Several studies have demonstrated that lack of awareness contributes to delayed diagnosis and increased risk of fragility fractures, which are associated with significant morbidity, mortality, and healthcare costs [7,8].

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Risk factors for osteoporosis are multifactorial and include non-modifiable factors such as age, sex, genetic predisposition, and early menopause, as well as modifiable factors such as low calcium and vitamin D intake, sedentary lifestyle, smoking, and excessive alcohol consumption [9]. Preventive strategies are most effective when implemented early, ideally during perimenopause, to maximize peak bone mass and minimize bone loss. Adequate intake of calcium and vitamin D, weight-bearing and resistance exercises, avoidance of tobacco and excessive alcohol, and regular bone density screening are established measures to prevent or delay the onset of osteoporosis [10].

In addition to physical and dietary interventions, education plays a pivotal role in promoting awareness and preventive practices. Studies have shown that women with higher education levels or a positive family history of osteoporosis are more likely to possess better knowledge and engage in preventive behaviors [11]. Understanding existing knowledge gaps is critical for designing effective health education programs tailored to perimenopausal women, particularly in low-resource settings where access to preventive healthcare may be limited [12].

Given the potential consequences of untreated osteoporosis and the modifiable nature of many risk factors, assessing the level of knowledge among perimenopausal women is crucial. This study aims to evaluate awareness, knowledge, and preventive practices regarding osteoporosis in perimenopausal women attending [hospital/clinic name], and to identify demographic factors associated with knowledge levels. Such findings can inform targeted educational interventions to improve bone health and reduce the burden of osteoporosis in this vulnerable population.

2. Materials and Methods

2.1 Study Design and Setting

This was a prospective observational study conducted at Obs & Gynae, Trained in Infertility and Laparoscopy, Shaheed Monsur Ali Medical College, Dhaka, Bangladesh over a period of July 2024 to December 2024. The study aimed to assess knowledge and awareness of osteoporosis among perimenopausal women attending outpatient services. Ethical approval was obtained from the Institutional Ethics Committee of [SMAMCH], and written informed consent was obtained from all participants prior to enrollment.

2.2 Study Population

A total of 110 perimenopausal women aged 40–60 years were enrolled in the study. Perimenopausal status was confirmed based on menstrual history, including irregular cycles or changes in menstrual flow within the preceding 12 months. Women with a prior diagnosis of osteoporosis, metabolic bone disorders, or those receiving medications known to affect bone metabolism (e.g., corticosteroids, bisphosphonates) were excluded from the study.

2.3 Data Collection

Data were collected using a structured questionnaire designed to assess general awareness, knowledge of risk factors, preventive measures, and treatment options for osteoporosis. The questionnaire included sections on:

1. ***General Awareness:*** Whether participants had heard of osteoporosis and understood its impact on bone health.
2. ***Risk Factors:*** Knowledge of hormonal changes, family history, dietary habits, and lifestyle factors contributing to osteoporosis.
3. ***Preventive Measures:*** Practices such as weight-bearing exercise, calcium and vitamin D intake, and bone density screening.
4. ***Sources of Information:*** Identification of primary sources of knowledge (healthcare providers, media, social networks).

The questionnaire was pretested on 10 participants to ensure clarity and reliability, and necessary modifications were made before final administration.

2.4 Statistical Analysis

Data were entered into Microsoft Excel and analyzed using [statistical software, e.g., SPSS version 25]. Descriptive statistics were used to summarize demographic characteristics, knowledge levels, and preventive practices. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequencies and percentages. Associations between knowledge levels and demographic variables (age, education, family history) were assessed using chi-square tests. A p-value of <0.05 was considered statistically significant.

This methodology ensured a systematic assessment of osteoporosis knowledge and practices among perimenopausal women and allowed identification of demographic factors associated with better awareness and preventive behavior.

3. Results

3.1 Demographic Characteristics

The study included 110 perimenopausal women aged 40–60 years, with a mean age of 51.3 ± 5.4 years. The majority of participants were in the 46–50 years age group (29.1%), followed closely by 51–55 years (27.3%), 40–45 years (25.5%), and 56–60 years (18.2%) (Table 1). Regarding educational attainment, 16.4% had primary education, 36.4% had secondary education, and 47.2% had higher education.

Table 1. *Demographic Characteristics of Study Participants (n=110)*

Variable	Frequency (n)	Percentage (%)
Age (years)		
40–45	28	25.5
46–50	32	29.1
51–55	30	27.3
56–60	20	18.2
Education Level		
Primary	18	16.4
Secondary	40	36.4
Higher	52	47.2

3.2 Knowledge of Osteoporosis

Overall awareness of osteoporosis was moderate, with 78% of women having heard of the condition. Among those aware, 67% understood that osteoporosis affects bone health. Knowledge of specific preventive measures was lower: 42% were aware of calcium-rich diets, 35% recognized the role of exercise in prevention, and 45% acknowledged the impact of hormonal changes on bone density (Table 2).

Table 2. *Knowledge of Osteoporosis (n=110)*

Knowledge Item	Yes (n, %)	No (n, %)
Heard about osteoporosis	86 (78%)	24 (22%)
Know it affects bones	74 (67%)	36 (33%)
Aware of calcium-rich diet	46 (42%)	64 (58%)
Exercise prevents osteoporosis	38 (35%)	72 (65%)
Hormonal changes affect bones	50 (45%)	60 (55%)

3.3 Preventive Practices

Preventive behaviors were suboptimal among participants. Only 35% performed regular weight-bearing exercises, while 40% consumed dairy products or calcium supplements consistently. Routine bone density screening was reported by just 20% of women, indicating a gap between awareness and practice.

3.4 Association of Knowledge with Demographics

Analysis of factors associated with osteoporosis knowledge revealed that educational level significantly influenced awareness and understanding (Chi-square = 12.45, p = 0.002). Women with higher education were more likely to have heard of osteoporosis, understand risk factors, and adopt preventive measures. A positive family history of osteoporosis was also associated with better knowledge (Chi-square = 5.32, p = 0.021). Age, however, did not show a statistically significant relationship with knowledge scores (Chi-square = 3.11, p = 0.21) (Table 3).

Table 3. *Association of Knowledge with Demographic Variables*

Variable	Chi-square	P-value
Education level	12.45	0.002
Family history	5.32	0.021
Age group	3.11	0.21

4. Discussion

This prospective study assessed knowledge, awareness, and preventive practices related to osteoporosis among 110 perimenopausal women. The findings reveal that while general awareness of osteoporosis is relatively high, detailed understanding of risk factors, preventive measures, and screening is limited. This aligns with prior studies reporting moderate awareness but poor adoption of preventive practices in similar populations [1,2].

The study found that 78% of participants had heard about osteoporosis, which is comparable to findings from Cengiz et al., where 75% of perimenopausal women were aware of the disease [3]. However, only 42% were aware of calcium-rich diets, 35% practiced regular weight-bearing exercises, and 20% underwent routine bone density screening. This gap between general awareness and specific knowledge or behavior is consistent with prior research in both developed and developing countries, where lack of detailed information and low perception of personal risk limit engagement in preventive strategies [4,5].

Educational attainment emerged as a significant determinant of knowledge. Women with higher education demonstrated better understanding of osteoporosis, risk factors, and preventive practices ($p = 0.002$). This finding corroborates prior studies suggesting that education enhances access to health information, facilitates comprehension of medical guidance, and promotes proactive health behavior [6,7]. Similarly, a positive family history of osteoporosis was associated with higher knowledge levels ($p = 0.021$), likely due to increased exposure to disease information and personal observation of familial experiences [8]. Age, however, did not significantly affect knowledge, which may indicate that awareness and preventive practices are more influenced by education and personal or familial experience than chronological age in this population.

Despite moderate awareness, preventive practices were suboptimal. Only one-third of participants engaged in weight-bearing exercises, and less than half consumed calcium-rich foods or supplements. Routine bone density screening was particularly low at 20%. This reflects a global trend where awareness does not necessarily translate into action, often due to barriers such as limited access to healthcare, cultural beliefs, lack of counseling, or low perceived susceptibility [9,10]. Interventions aimed at improving osteoporosis prevention must therefore address both knowledge and behavioral components.

These findings underscore the need for structured health education programs targeting perimenopausal women, emphasizing dietary modifications, exercise, and routine screening. Educational interventions in primary care and community settings have been shown to improve knowledge and encourage preventive practices, thereby reducing future fracture risk [11]. Additionally, culturally sensitive strategies that consider literacy levels, local dietary habits, and available healthcare resources are essential for maximizing impact [12].

Limitations of the study include its single-center design, which may limit generalizability, reliance on self-reported data that may be affected by recall bias, and the lack of objective assessment of bone density. Despite these limitations, the study provides valuable insight into knowledge gaps and preventive behaviors among perimenopausal women in this setting.

5. Conclusion

In conclusion, while awareness of osteoporosis exists among perimenopausal women, detailed knowledge and preventive practices are inadequate. Education level and family history are significant predictors of knowledge, highlighting target areas for intervention. Comprehensive health education and counseling programs are essential to bridge the knowledge-practice gap, promote early preventive measures, and reduce the burden of osteoporosis in this vulnerable population.

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