Awareness of Osteoporosis among Premenopausal Women in Bisha, Saudi Arabia

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ABSTRACT

Introduction: Osteoporosis is characterized by a gradual decrease in bone mass and increased fracture susceptibility This necessitates comprehensive awareness of the disease particularly among premenopausal women.

Objective: This study aims to assess osteoporosis awareness, investigating sociodemographic associations with level of knowledge, manifestations, screening, complications, understanding, and preventive osteoporosis methods.

Methods: A descriptive cross-sectional community-based study was conducted in Bisha City, Saudi Arabia, targeting premenopausal women aged 30-45 in the period from November 2023 to March 2024. Data collection involved interviews and online questionnaires utilizing the Osteoporosis Knowledge Assessment Tool (OKAT).

Results: The study included 363 premenopausal women. Demographic analysis revealed that the majority were aged 41-45, married, urban residents, and University graduates, with a significant portion employed. Knowledge assessment regarding osteoporosis indicated that 47.9%, 39.4%, and 12.7% exhibited poor, satisfactory, and good knowledge levels respectively. Age, marital status, and residence did not significantly correlate with knowledge levels, whereas educational attainment demonstrated a notable correlation. Awareness regarding osteoporosis varied among participants, with notable recognition of certain aspects such as fracture risk and gender predisposition. This study revealed a lack of knowledge concerning osteoporosis risk factors, symptoms, screening, and prevention among premenopausal women, with almost half of the participants demonstrating limited understanding. Significant associations between the participants' educational attainment and their level of osteoporosis knowledge proficiency were noted.

Conclusion: It is extremely important to create health educational initiatives to raise awareness about osteoporosis and methods to decrease its progress and mitigate the complications among premenopausal women in Bisha City.

Keywords: Osteoporosis, premenopausal, women, Bisha, OKAT.

INTRODUCTION

Osteoporosis is a medical condition characterized by the gradual weakening of bones and stands as a substantial global health concern with implications for individuals and public health. This silent progressive disorder often goes unnoticed until a fall or impact results in a bone fracture, emphasizing the need for heightened awareness and preventive measures [1]. The awareness of osteoporosis among premenopausal women is a critical area of concern for public health. Osteoporosis is often considered a disorder of postmenopausal women, but low bone mass and accelerated bone loss can also occur early in life, causing premenopausal osteoporosis [2]. The potential impact on the senior population is substantial, with estimates indicating a global prevalence that affects approximately 75 million people. Understanding the impending public health burden, many research endeavors seek to assess the level of awareness of osteoporosis among premenopausal women. A particular emphasis is placed on investigating sociodemographic characteristics that influence knowledge and awareness, recognizing the significance of early detection and prevention [3,4]. Studies have shown that premenopausal women with osteoporosis are an under-researched population [5].

As osteoporosis advances, individuals may experience symptoms such as back pain, gradual height loss, and an elevated risk of fractures beyond normal expectations, underscoring the multifaceted nature of this medical condition [6]. The intricacy of osteoporosis is magnified by a combination of controllable factors, including dietary deficiencies and lifestyle choices, and uncontrollable risk factors such as age, gender, and family history [7]. The diagnostic cornerstone for osteoporosis, dual-energy X-ray absorptiometry (DXA), plays a pivotal role in measuring

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bone density at the hip and spine [8]. Despite the accessibility of central DXA machines for initial screening, the escalating prevalence and severity of osteoporosis present a growing challenge to global health, affecting individuals of all genders [6,9]. Furthermore, a review article that evaluated the treatment or prevention of osteoporosis in young or premenopausal women revealed that there is a lack of sufficient knowledge and awareness about osteoporosis among young women, which plays a major role in preventing the disease [10]. In a study conducted in China, it was found that the awareness level for osteoporosis was moderate, with lower family income and education level being risk factors for lower awareness [11]. Additionally, a study in Singapore aimed to identify factors associated with osteoporosis awareness and knowledge among female Singaporeans, indicating a global interest in understanding and addressing awareness gaps [12]. Moreover, a study in Kurdistan Province, West of Iran, found an association between demographic factors and BMI with osteoporosis, emphasizing the need for increased awareness among people about complications, risk factors, and timely treatment of osteoporosis [13].

The prevalence of osteoporosis in Saudi Arabia has been extensively researched. Alwahhabi (2015) found a high prevalence of osteoporosis among Saudis aged 50-79, emphasizing its significance in the country [14]. Furthermore, Al-Otaibi (2015) examined Saudi women's knowledge and beliefs about osteoporosis and highlighted the importance of raising awareness to influence preventive practices [15]. Insufficient knowledge and awareness about osteoporosis among young female Saudi university students was highlighted in a 2018 study conducted in Saudi Arabia. The study emphasized the need for health awareness programs to prevent the disease [10]. A study conducted in 2021 aimed to assess the level of knowledge about osteoporosis among adult Saudi females, underlining the importance of understanding existing awareness levels [16]. Furthermore, a research group in 2022 estimated the prevalence of osteoporosis among older adults in Riyadh, further emphasizing the need for understanding the disease's prevalence and associated risk factors [17]. It is worth mentioning that insufficient awareness of osteoporosis in Saudi Arabia was recognized, especially in the Bisha region [10]. Reviewing the existing literature reveals a global need for targeted educational interventions to enhance awareness of osteoporosis [2,5,10–12].

The research questions are meticulously designed to unravel the nuanced aspects of osteoporosis awareness. These questions encompass the level of awareness among premenopausal women, the influence of sociodemographic characteristics on knowledge, and the awareness of manifestations, screening methods, complications, and preventive strategies within the study group.

In essence, this research aspires to contribute nuanced insights into osteoporosis awareness, elevating the existing discourse by addressing critical gaps in knowledge. By paving the way for impactful preventive measures, the study aims to empower individuals and communities to mitigate the implications of osteoporosis on both individual health and broader public health perspectives.

METHODS AND MATERIALS

1.1 Study design and period: A descriptive cross-sectional community-based study in the period from November 2023 to March 2024.

1.2 Study area: The study was conducted in Bisha City located in the Asir region in the southern area of the Kingdom of Saudi Arabia.

1.3 Study Population: 363 Premenopausal women between the ages of 30 and 45 "which is the average age range of females premenopause by WHO" who live in Bisha City

1.4 Inclusion criteria:

• Females in the age group of 30-45
• Those who are willing to participate in the study
• Live in Bisha City

1.5 Exclusion criteria:

• Females in the age group above 45 or below 30
• Those who refuse to participate
• Doesn't live in Bisha City

1.6 Sampling technique:

Convenience sampling technique through online questionnaires and

1.7 Sample size calculation:

calculated according to the following formula:

$$N = \frac{Z^2 pq}{d^2}$$

N= minimal sample size
Z= 1.96 at 95% confidence interval
P = 0,37 which was the prevalence of osteoporosis from the Ministry of Health in Saudi Arabia [18].
q= 1– P
d= 5% which is the marginal error

$$N = \frac{1{,}96^2 (0{,}37)(1 - 0{,}37)}{0.05^2}$$

According to the above-mentioned equation, the sample size is 359.

1.8 Data collection:

Data was collected through an online self-administered questionnaire using the Osteoporosis Knowledge Assessment Tool (OKAT) [18]. The OKAT survey is a valid measurement of knowledge of risk factors for osteoporosis. It consists of 20 statements, the first 12 assess the knowledge of osteoporosis, 4 questions assess the attitude towards osteoporosis, and the last 4 questions assess the preventive factors of osteoporosis. Each statement has three choices true, false, and I don't know. The OKAT survey was translated into Arabic language which is found to be reliable and acceptable according to Sayed-Hassan et al. [19].

1.9 Data analysis:

After the data was collected was analyzed by using Statistical Package for Social Science (SPSS) version 26. parametric data was express in mean (+) (-) standard deviation. Non-parametric data was displayed in the median and interquartile range. P value <0.05 was considered statistically significant.

1.10 Ethical consideration:

The ethical clearance for this study was obtained from the ethical committee of the University of Bisha College of Medicine (UBCOM). The agreement of the participants on the consent letter of the research was mandatory to participate in the study.

RESULTS

A descriptive cross-sectional community-based study was conducted in Bisha City, Saudi Arabia, targeting premenopausal women aged 30-45 in the period from November 2023 to March 2024. The study included 363 premenopausal women from Bisha City. This study categorized the knowledge scores into different grades based on the number of questions answered correctly in the questionnaire. Participants who answered 10 or fewer questions correctly were classified as having poor knowledge, those who answered 11 to 15 questions correctly were considered to have satisfactory knowledge, and those who answered more than 15 questions correctly were deemed to have good knowledge.

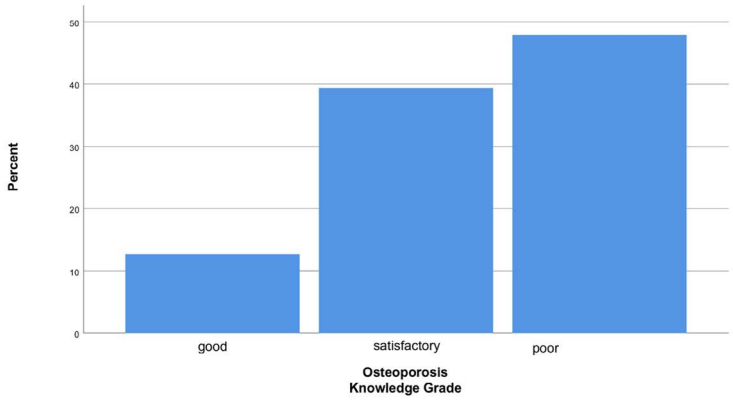

Figure 1. Degree of knowledge about osteoporosis among participants

Table 1. The impact of sociodemographic characteristics on the knowledge grade about osteoporosis

Sociodemographic Characteristics	Values	Knowledge grade about osteoporosis			P- value
		Good	Satisfactory	Poor	
Age	30-35	11.6%	41.3%	47.1%	0.7
	36-40	13.1%	33.3%	53.6%	
	41-45	13.5%	41.1%	45.4%	
Marital status	Married	10.2%	40.0%	49.8%	0.061
	Unmarried	19.4%	37.8%	42.9%	
Habitat	City	14.0%	37.2%	48.8%	0.329
	Rural area	9.7%	44.2%	46.0%	
Educational level	University graduate	15.3%	40.3%	44.4%	0.037*
	Pre-university education	7.0%	37.4%	55.7%	
Employment status	Employee	14.8%	41.4%	43.8%	0.159
	Unemployed	10.0%	36.9%	53.1%	

*P- value was considered significant if <0.05.

Table 2. Participants` awareness of risk factors, complications, and treatment of osteoporosis

OKAT Questions	Correct Answer	Number of participants who answered correctly	Percentage
Osteoporosis leads to an increased risk of bone fractures	True	242	66.7%
Osteoporosis usually causes symptoms (e.g…pain) before fractures occur	False	132	36.4%
Having a higher peak bone mass at the end of childhood gives no protection against the development of osteoporosis in later life	False	212	58.4%
Osteoporosis is more common in men	False	303	83.5%
Cigarette smoking can contribute to osteoporosis	True	242	66.7%
White women are at highest risk of fracture compared to other races	True	132	36.4%
A fall is just as important as low bone strength in causing fractures	True	212	58.4%
By age 80, the majority of women have osteoporosis	True	303	83.5%
From age 50, most women can expect at least one fracture before they die	True	182	50.1%
Any type of physical activity is beneficial for osteoporosis	False	93	25.6%
It is easy to tell whether I am at risk of osteoporosis by my clinical risk factors	True	205	56.5%
Family history of osteoporosis strongly predisposes a person to osteoporosis	True	224	61.7%
An adequate calcium intake can be achieved from two glasses of milk a day	True	252	69.4%
Sardines and broccoli are good sources of calcium for people who cannot take dairy products	True	258	71.1%
Calcium supplements alone can prevent bone loss	False	126	34.7%
Alcohol in moderation has little effect on osteoporosis	True	167	46.0%
A high salt intake is a risk factor for osteoporosis	True	208	57.3%
There is a small amount of bone loss in the 10 years following the onset of menopause	False	50	13.8%
Hormone therapy prevents further bone loss at any age after menopause	True	150	41.3%
There are effective treatments for osteoporosis available	True	239	65.8%

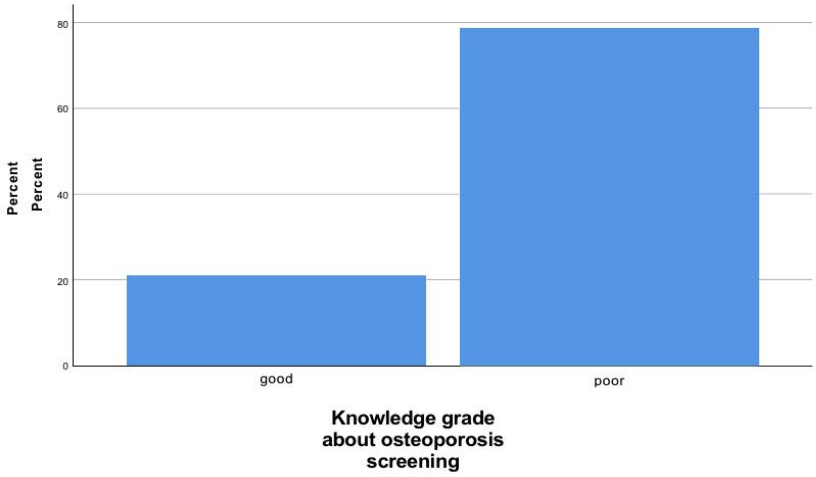

Figure 2. Degree of knowledge about osteoporosis screening

According to this scale, half of the participants were recorded to have poor knowledge regarding osteoporosis (Figure 1).

Most participants (38.8%, n=141) were between the ages of 41-45. Among the participants, a significant number (73%, n=265) were married. Additionally, a large portion (68.9%, n=250) lived in urban areas, while 248 participants (68.3%) held university degrees. Furthermore, 203 participants (55.9%) were employed. There was no statistically significant difference between age, marital status, habitat, and employment status with the knowledge grade with recorded P- values (0.7, 0.061, 0.329, and 0.159, respectively). There was a statistically significant difference (P=0.037) between the knowledge grade and the educational level (Table 1).

Regarding risk factors for developing osteoporosis, most of the participants (83.5%) were aware that it is more common in females than males and that most women develop osteoporosis by the age of 80. Moreover, 61.7% were aware that having a family member with osteoporosis increases their own risk of developing the condition. Interestingly, 69.4% of the participants showed good awareness about proper dietary intake to prevent osteoporosis. Unfortunately, a poor level of knowledge was noted regarding the beneficial types of exercises for osteoporosis, bone loss occurs in the ten years following the onset of menopause, and osteoporosis screening (25.6%, 13.8%, and 20%, respectively). In terms of treatment, an average knowledge (65.8%) of treatment options for osteoporosis was noted (Table 2 and Figure 2).

DISCUSSION

This study evaluated the knowledge about osteoporosis in premenopausal women, which is a serious bone disease affecting hundreds of millions of individuals around the world with women being more affected during the postmenopausal period. This research utilized the OKAT to assess participants' knowledge about osteoporosis [1,6].

This study focused on investigating how well premenopausal women aged 30 and above were aware of and knew about osteoporosis. Among the 363 participants, the majority exhibited a poor level of knowledge, followed by those with a satisfactory knowledge level, and lastly individuals with a good level of knowledge. Additionally, the study assessed the correlation between the level of osteoporosis knowledge and education level, establishing statistical significance at (P<0.037). This emphasizes the importance of targeted education efforts to improve awareness and understanding of osteoporosis, particularly in the context of varying education levels within the population.

The results indicated that 47.9% (n=174) of participants demonstrated poor knowledge of osteoporosis, surpassing the previous study in Al-Ahsa City, Saudi Arabia, where 32.6% out of 179 participants had inadequate knowledge [20]. Furthermore, this research revealed a higher level of satisfactory knowledge (39.4%) compared to the reported data from Iraq, where 31.97% of 391 participants had satisfactory knowledge [21]. Additionally, the study found that 12.7% of participants achieved a good knowledge score, contrasting with only 1.4% of participants with good knowledge in a study involving premenopausal women in Jeddah, Saudi Arabia [22].

The study showed no statistical relationship between age and level of knowledge in contrast to the study about the assessment of osteoporosis knowledge in Riyadh, Saudi Arabia in which the results showed statistical significance between them [16].

There is no correlation between marital status and level of knowledge. This aligns with [23] who reported no statistically significant difference between married and unmarried premenopausal women and the level of knowledge about osteoporosis.

Results also showed no statistical significance difference between different habitats and the level of knowledge. The participants were divided into two groups University graduates and Pre-university education. Nevertheless, the study revealed that 15% of university students had good knowledge about osteoporosis while 44% of them had poor knowledge. Among the pre-university-educated participants, 7% of them had good knowledge, but 55% had poor knowledge about osteoporosis. There was a statistically significant difference (P= 0.037) between the level of education and knowledge about osteoporosis indicating that knowledge increases as the educational level increases. This is in congruence with a study conducted in Lebanon that reported women with no education have never heard about osteoporosis [24]. This also agrees with Aitimeka et al [25] who reported a significant association between knowledge about osteoporosis and occupation, education,

marital status, and income among women of reproductive age in Bangalore, India.

The study showed no significant association (P=0.159) between occupation and knowledge level. A study conducted in Qatar supported our finding where no significant difference (P= 0.818) was recorded between different occupations and the level of knowledge about osteoporosis [26]. In contrast to our study, Kattimani et al. [23] found that there was a significant association (P =0.007) between occupation and level of knowledge.

CONCLUSION

The study revealed a lack of knowledge concerning osteoporosis risk factors, symptoms, screening, and prevention among premenopausal women, with almost half of the participants demonstrating limited understanding. Additionally, significant associations were observed between the participants' educational attainment and their level of osteoporosis knowledge proficiency.

RECOMMENDATIONS

Conducting periodic osteoporosis awareness and educational campaigns is necessary to spread awareness of the disease.

Early screening for osteoporosis for all women, especially for women between the ages of 30-45 is recommended.

Lifestyle modification is also recommended through the following:

1. Eat healthy foods. Because of the increased risk of osteoporosis and heart disease at this stage, a healthy diet is more important than ever. You should follow a diet low in fat and rich in fiber, fruits, vegetables, and whole grains. Add calcium-rich foods to the diet.
2. Make sure to practice physical activities, Exercise and physical activity help prevent weight gain and improve sleep and mood. Exercise should be maintained for thirty minutes or more most days of the week, but not immediately before bed. Exercise has been shown to reduce the risk of hip fracture in older women and boost bone density.

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