



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>

Research Article

**AWARENESS AND HEALTH BELIEFS OF FEMALES  
TOWARDS OSTEOPOROSIS****Abdulrahman Hussain Abdulrahman Dajam, Waleed Ibrahim Abdullah Alqahtani,  
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**Abstract:**

**Background:** Osteoporosis is a chronic disease characterized by low bone density and abnormal bone tissue composition. Osteoporosis is a major female health problem; however, it is preventable and can be managed to a great extent. **Objective:** The bone tissue study aims to evaluate female's awareness and attitude toward osteoporosis as a major health problem. **Methods and Results** A cross-sectional study which was conducted on randomly 1000 women. The majority of the participants 720(72%) were not menopausal. And 557(55.7%) of study individuals had heard of osteoporosis, and majority 412(41.2%) of those who heard of osteoporosis are 45-54 years of age. Knowledge and awareness of osteoporosis are strongly related to Marital and Postmenopausal status, Family history of osteoporosis and regularly Exercise with significant  $p$ -value  $< 0.05$ . Knowledge, perceived risk factors, and attitudes regarding osteoporosis for those heard of osteoporosis were also assessed.

**Conclusions:** Majority of participants showed a good level of knowledge toward osteoporosis and its risk factors and complications. However, their attitudes and behavior towards such a major health problem need more improvement. This gap between knowledge and practice is highly recommended to be fulfilled with public education programs through media and primary health care centers.

**Keywords:** Beliefs, Knowledge, Osteoporosis, Risk factors.

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Please cite this article in press Abdulrahman Hussain Abdulrahman Dajam et al., *Awareness and Health Beliefs of Females towards Osteoporosis.*, Indo Am. J. P. Sci, 2019; 06(01).

**INTRODUCTION:**

Osteoporosis is a seriously disabling disease affects the bony skeleton and causes a decrease in bone density mass. (1) It is a serious health care condition due to the burden of consequences for both the patient and the health care system. (2)

World Health Organization (WHO) defined osteoporosis as a bone mineral density of 2.5 standard deviations or more below the mean peak bone mass (average of young, healthy adults) as measured by dual-energy X-ray absorptiometry. (4) It is more common in females than males and, old age, positive family history of osteoporosis, previous history of fractures of the bone, low body mass index, menopause before 45 years of age, calcium and vitamin D deficiencies, smoking, lack of physical activity and long-term corticosteroids therapy are common risk factors. (5, 6)

Osteoporosis is a silent disease as it is usually asymptomatic and accidentally diagnosed after bone fracture occurrence (3)

Globally, osteoporosis responsible for more than 8.9 million fractures per year, causing a fracture every 3 seconds. Osteoporosis occurs in an estimated 75 million population of Europe, USA, and Japan. In Saudi Arabia with 1,461,401 persons aged 50 years or more, 8768 would complain of femoral fractures annually at the cost of \$1.14 billion. Osteoporosis effect 67% of Saudi females and is responsible for serious life complications. (7, 8)

Sun exposure enhances the BMD of vitamin D deficient bone and helps prevention of non-vertebral fractures. Females particularly receive little or no sunlight since they cover their bodies with dark veils completely, for cultural and religious reasons which lead to vitamin D deficiency and weak bones. (9)

Osteoporosis complications include bone fractures after minimal trauma (especially the spine, wrist, hip, pelvis, and upper arm), and maybe a precipitating factor of mortality especially in the elderly. These fractures may even happen during daily activities such as bending or raising. It strongly affects the quality of life due to pain, being dependent, rehabilitation troubles, and fear of the future. (10) Furthermore, the financial and social burden of osteoporosis and its associated fractures is devastating. (11)

Studies showed that on-time prevention of osteoporosis also early diagnosis and adequate treatment demand sufficient knowledge in the

community, especially among women; also awareness helps early diagnosis of the disease, encourages help-seeking behaviors and decreases its complications. (12)

A lot of efforts are required to decrease the incidence of osteoporosis and increase public awareness. Which in turn decrease the risk factors for osteoporosis. So, public awareness, preventive measures, and treatment of osteoporosis are important.

**METHODS:*****Study population***

A cross-sectional survey of the health beliefs of women age more than 45 years and above was conducted in a housing community.

***Household interviews***

Interviews were conducted in homes of participants by trained via a standard questionnaire. The questionnaire was designed to evaluate demographic factors, health beliefs towards osteoporosis, and awareness of osteoporosis consequences.

Open questions to assess their awareness and beliefs as regard osteoporosis were asked. The resulting data was arranged to design more appropriate questions. The questionnaire was translated into Arabic and back-translated to English. Interviewers training was accomplished before the start of the study proper. A letter was sent to each participant to explain the nature and purpose of the study. After that, the interviewers called the participants to arrange suitable dates and times to the interview. Before the start of the interview, written consent was obtained from the study individuals.

The final questionnaire included information on socioeconomic status indicators age, and marital status. We asked the study individuals whether they had heard of the condition osteoporosis or not. We assessed participants' information and perception of possible risk factors for, as calcium level in diet, physical activity, and family history. We also evaluated the common false beliefs and attitudes toward osteoporosis, as "Osteoporosis is a more serious condition than malignancy" and "concern about getting osteoporosis." Each female in the study asked questions about knowledge, risk factors, and attitudes toward osteoporosis.

***Data analysis***

Univariate and multivariate analyses were conducted using SPSS V 22 [9]. The characteristics of participants who knew osteoporosis were compared

against those who didn't know. P values significance was defined as  $p < 0.05$ .

### RESULTS:

A total number of 1000 female were included in our study. Majority 660 (66%) of participants age was between 45-54 years while 250(25%) of them were between 55-64 years. A minority of study women 90(9%) age was more than seventy years. (Figure 1)

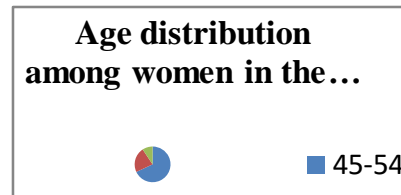


Figure 1: pie chart for the age of the participant

Most participants were married 745(74.5%), 155(15.5%) was a widow, and 100(10%) were divorced. Majority of participants 972(97.2%) had a negative family history of osteoporosis, and only 28(2.8%) had a positive history. As regard employment status, 976(97.6%) of females do not have a job, and 799(79.9%) of them do not exercise regularly. (Table 1)

Table 1: Socio-demographic data of women in the study.

Demographics	N(%)
<b>Age (years)</b>	
45-54	660(66%)
55-64	250(25%)
>64	90(9%)
<b>Postmenopausal</b>	
No	720(72%)
Yes	280(28%)
<b>Marital status</b>	
Married	745(74.5%)
Widow	155(15.5%)
Divorced	100(10%)
<b>The family history of osteoporosis</b>	
No	972(97.2%)
Yes	28(2.8%)
<b>Employment status</b>	
Not working	976(97.6%)
Working	24(2.4%)
<b>Exercise regularly each week</b>	
No	799(79.9%)
Yes	201(20.1%)

Interestingly, more than half of the participants heard of osteoporosis 557(55.7%). Demographic data of participants who had information about osteoporosis were compared to those who did not have information. (Table 2) Most of female who had information about osteoporosis, their age range of (45-54) years were 412(41.2%), 278(27.8%) not menopausal, 457(45.7%) married, 549(54.9%) no family history, 553(55.3%) not working and 357 (35.7%) no regular exercise. Also, all of these factors showed significant relation (P-value  $< 0.05$ ) to their knowledge of osteoporosis except the state of employment which are not a significant factor about their knowledge.

Table 2 Knowledge and awareness of osteoporosis

	Heard of osteoporosis		P-value
	Yes	No	
	557	443	
<b>Age (years)</b>			0.001
45-54	412(41.2%)	248(24.8%)	
55-64	105(10.5%)	145(14.5%)	
>64	40(4%)	50(5%)	
<b>Postmenopausal</b>			0.01
No	278(27.8%)	442(44.2%)	
Yes	279(27.9%)	1(0.1%)	
<b>Marital status</b>			0.01
Married	457(45.7%)	288(28.8%)	
Widow	50(5%)	105(10.5%)	
Divorced	50(5%)	50(5%)	
<b>The family history of osteoporosis</b>			0.02
No	549(54.9%)	423(42.3%)	
Yes	8(0.8%)	20(2%)	
<b>Employment status</b>			0.07
Not working	553(55.3%)	423(42.3%)	
Working	4(0.4%)	20(2%)	
<b>Exercise regularly each week</b>			0.04
No	357(35.7%)	442(44.2%)	
Yes	200(20%)	1(0.1%)	

As regard Knowledge for those heard of osteoporosis, 500(50%) of them knew that Osteoporosis leads to falls and 606(60.6%) knew that it increases the risk of broken bones and 700(70%) did not agree that Osteoporosis causes a person to grow while they equally 339(33.9%) agreed and disagreed toward the ability of Osteoporosis to make a bent spine shorter when we get older. Majority of the participant who heard of osteoporosis agreed that low calcium diet, positive family history, lack of exercise, caffeine, smoking, and post-menopause are perceived risk factors. As regard attitudes/beliefs towards osteoporosis of those who heard of the disease, 700(70%) were concerned about getting osteoporosis, and 707(70.7%) agreed that Osteoporosis makes daily activities more difficult. Correctly the majority of those participants did not agree that osteoporosis is more serious than cancer 750(75%) and it is more serious than heart disease 730(73%). (table 3)

Table 3: Knowledge, perceived risk factors, and attitudes regarding osteoporosis for those heard of osteoporosis.

-Knowledge of osteoporosis	Agree N(%)	Disagree N(%)	I don't know N(%)
Osteoporosis leads to falls.	500(50%)	300(30%)	200(20%)
Osteoporosis increases the risk of broken bones	606(60.6%)	290(29%)	104(10.4%)
Osteoporosis causes a person to grow	209(20.9%)	700(70%)	91(9.1%)
Osteoporosis leads to a bent spine shorter when they get older	339(33.9%)	339(33.9%)	322(32.3%)
<b>-Perceived risk factors of osteoporosis</b>			

Diet low in calcium	712(71.2%)	208(20.8%)	80(8%)
The family history of osteoporosis	660(66%)	240(24%)	100(10%)
Lack of exercise	454(45.4%)	246(24.6%)	300(30%)
Caffeine use	500(50%)	250(25%)	250(25%)
Smoking	750(75%)	200(20%)	50(5%)
Post-menopause	724(72.4%)	200(20%)	76(7.6%)

#### - Attitudes/beliefs regarding osteoporosis

I am concerned about getting osteoporosis	700(70%)	300(30%)	-
Osteoporosis is a more serious disease than cancer	250(25%)	750(75%)	-
Osteoporosis is a more serious disease than heart disease	270(27%)	730(73%)	-

### DISCUSSION:

Our study evaluates awareness and health beliefs of middle-aged and elderly females toward osteoporosis. A high proportion of women had heard of osteoporosis.

Our study, as well as ElTohami *et al.* study, concluded a good level of knowledge of osteoporosis with more than half of participants 557(55.7%) heard of osteoporosis. (13) In contrast to Pande *et al* study that reported poor levels of knowledge towards osteoporosis. (14)

Our results showed that Women who had heard of osteoporosis were more likely to be young, married, not working, and non-menopausal and those with a negative family history of osteoporosis. And also the Norwegian study reported a significant relation between awareness of osteoporosis and younger age, high level of education, regular exercise and never marriage. (15)

Among females who knew about osteoporosis, knowledge of osteoporosis possible complications of osteoporosis was good as data Saw *t al.* (16) The majority of participants correctly recognized that osteoporosis is less serious than malignancy and cardiac disease. These data are similar to the beliefs of elderly females in U S and Saw *et al.* study. (16, 17)

Detailed analysis of our data showed: Majority of the participants knew about osteoporosis, which is consistent with Ungan *et al.* and ElTohami *et a.* results. (13, 18) Awareness of osteoporosis was high in which more than half of the sample were aware of the risk of osteoporosis. While Turkish females expressed a fair level of awareness towards osteoporosis. (18)

Some studies identified that media as their source of information about Osteoporosis. (18, 19, 20) While in our study we didn't ask about the participant's source of knowledge.

ElTohami *et al* study showed that most of the participants were exposing themselves to the sunlight (13). Other studies reported high percentages of sunlight exposure (88.2%) that may be due to Saudi women being covered with Abaya (dark veils) all the time once they're outside their homes (20). Also a study from Egypt and Insel *et al.* conducted participant agreement that exposure to sunlight is good for bones (21, 22). While in our study we did not investigate the participant's sun exposure as a protective factor.

As regard to physical activity, a minority of participating females were practicing physical activities 200(20%) which is similar to El Tohami *et al.* results (217 out of 390) were rare and never performed exercises (13).

ElTohami *et al.* results, as well as our data, revealed a significant relationship between age and knowledge (13). In contrast to Orces *et al.* results that showed lower knowledge levels in younger females in comparison to older age participants (23).while Puttakitpong *et al* and von Hurst *et al.* reported no significant relationship between age and knowledge(24, 25).

Idress *et al.* and Khan *et al.* conducted their study on women in the reproductive period and showed that the majority of them (86.8%) knew about osteoporosis (26, 27).

In our study, we did not assess the educational level of participants, while ElTohami *et al.* conducted a negative relationship between educational level and awareness of osteoporosis but other studies confirmed a positive correlation (13, 24).

Interpretation of the criteria of females with poor knowledge of osteoporosis can help us to design a suitable public health education programs. Educational intervention programs may target older females with low education level. Mass media that target wide audience such as talks in voluntary

organizations can increase public awareness and decreased the incidence of osteoporosis.

### CONCLUSION:

Majority of participants showed a good level of knowledge toward osteoporosis and its risk factors and complications. However, their attitudes and behavior towards such a major health problem need more improvement. This gap between knowledge and practice is highly recommended to be fulfilled with public education programs through media and primary health care centers.

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