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Awareness of Osteoporosis among Females, Eastern Province, KSA

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Abstract: ***Introduction: The osteoporosis is a progressive systemic skeletal disease characterized by low bone mass and micro-architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture linked with excess morbidity and mortality. It is a serious silent disease that develops slowly over so many years and often diagnosed after the fragility fracture happened. The incidence of vertebral fractures due to osteoporosis in KSA is between 20%-24%[2]. Materials and Methods: The study is based on an electronic questionnaire which carried out in eastern province during October to November 2016. The targeted group was 250 females. The subjects participating in the study were chosen at random from urban and suburban communities. Results: A total of 250 subjects completed the questionnaire. The age response of subjects as following less than 45 (86.64%), from 45 to 55 (10.53%), more than 55 (2.83%). Out of them 58.4% of participants were premenopausal and 41.6 % were postmenopausal. Conclusions: Our study demonstrated that women in eastern province, Saudi Arabia is not fully aware about osteoporosis. The findings demonstrate that awareness and education are important factors in maintaining healthy bones among them.***

Keywords: osteoporosis, osteoporosis risk factor, premenopausal women, menopausal women, Saudi women

1. Introduction

The osteoporosis is a progressive systemic skeletal disease characterized by low bone mass and micro-architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture linked with excess morbidity and mortality. Osteoporosis affects both sexes. The World Health Organization (WHO) defined osteoporosis as "an epidemic of the 21 century" [1].Osteoporosis prevalence in the Kingdom of Saudi Arabia (KSA) is about 34% in healthy Saudi women aged between 50-79 years, and 30.7% in men [2]. The incidence of vertebral fractures due to osteoporosis in KSA is between 20%-24%[2]. Osteoporosis has become an increasing health problem. It is a serious silent disease that develops slowly over so many years and often diagnosed after the fragility fracture happened. The incidence of vertebral fractures due to osteoporosis in KSA is between 20%-24% [2]. In Italy, 90000 hip fractures per year affect persons aged older than 50 years [3]. Developing this disease depends on many factors like genetic predisposition, aging, dietary habits, physical activity, endocrine changes, lifestyles, general health condition and using medications [4]. The good thing is that osteoporosis easily recognized by screening suspected subjects (the recommended age for screening healthy subjects is at age of 65 years) [5]. The most dominant risk factors in society include postmenopausal age, diet (shortage of calcium intake) and lack of regular exercise [6,7]. Unfortunately, osteoporosis receives a low level of attention in primary health-care programs in most underdeveloped countries, where most women are largely unaware of the serious complications associated with osteoporosis. Minimizing the risk of acquiring the disease begins by modification of individuals' life-style to combat related risk factors and identification of patients at high risk to reduce the likelihood of fractures in the future. Life-style modification includes avoidance of alcohol consumption and cigarette smoking, and ensuring a high-quality and balanced diet, regular exercise, and adequate calcium and vitamin D intake (dietary or via supplements). Daily skin exposure to sun light for more than 15 minutes is also highly recommended [8,9].We believe that improving the knowledge and the awareness of the women in eastern province of Saudi Arabia about osteoporosis will had a positive impaction in bone health and future fractures protections. So, the present study will carry out to investigate and assess the awareness of osteoporosis among Saudi women in eastern province. Eventually, the extended objective of our work is to evaluate the seriousness of osteoporosis in the society in comparison to the populations of neighboring and other countries.Aim: assessment of awareness level of osteoporosis among females. At the same time, we will assess the risk and protective factors of osteoporosis among women in eastern province, Saudi Arabia.

2. Materials and Methods

The study is based on an electronic questionnaire which carried out in eastern province during October to November 2016. The targeted group was 250females.The subjects participating in the study were chosen at random from urban and suburban communities. The predesigned questionnaire consisted of 29 questions including 2 multiple choices, 21 single choice and 6 were open-ended questions. The questionnaire asked respondents about their age, age at menarche, age at menopause, weight,hight, education level, socioeconomic status, community, children number, years of lactation, and their knowledge on osteoporosis issues that included previous fractures, treatment, risk and protective factors, family history, prevention, screening age as well as the relationship of osteoporosis with the consumed milk and dairy products, soft drink, physical activity. Table 2

Table 1: Age of study subjects

Age	*No. of subjects*	*Response*
Less than 45	214	86.64%
45 to 55	26	10.53%
More than 55	7	2.83%

Table 2: General description of study subjects

Characteristic	*No. of subjects*	*Mean*	*Standard deviation*
Age		1.16	0.44
Age at menarche	241	12.64583	1.741825
Weight	239	63.28059	16.7114
Height	229	155.1801	22.02639
BMI	228	26.0813	14.42939481
No. of children	177	3.646259	2.403665
Years of lactation	168	3.106618	3.039592
Age at menopause	104	49.5	23.72089

3. Result

A total of 250 subjects completed the questionnaire. The age response of subjects as following less than 45 (86.64%), from 45 to 55 (10.53%), more than 55 (2.83%), Table 1. Out of them 58.4% of participants were premenopausal and 41.6 % were postmenopausal. That we can calculate their Body Mass Index (BMI). We found that the mean BMI measurement was 26 kg/m2. The education level of the subjects is shown in Table 3.

Table 3: The education level of the subjects according to menopausal status

	Pre-Menopausal	*Post-menopausal*		
Education level	*%*	*%*	*Total count*	*Total %*
Primary	1.21%	0.808%	5	2.02%
Intermediate	1.21%	1.21%	6	2.42%
Secondary	22.58%	3.22%	64	25.81%
Academic	56.04%	8.871	161	64.92%
Master	1.61%		4	1.61%
Ph.D.	1.21%		3	1.2%
Otherwise	1.616%	0.404	5	2.02%

Women after menopause are more likely to suffer from osteoporosis by 76.42%. 59.26% disagreed about menopause at an early age is not dangerous for osteoporosis. Around 36.33% they thought the loss of bone density occur without the presence of physical symptoms. Most of the subjects 92.71% agreed about bone examination after menopause is very important to see the possibility of interruption diagnosed with osteoporosis.Participants were asked if they got fractures previously. About84.21% they said no, whereas 15.79% said yes then asked about the site of fractures. The result as following; Spin0.00%, Femur3.92%, Pelvis 0.00%, others96.08%. regarding to the association of previous fractures and likelihood of osteoporosis, most of them 60.66% agrees there is no association.About 77.31% of the participants thought there is cure for osteoporosis and around 22.69% they didn't think that.Regarding the important of estrogen in maintaining of bone health most of the participant said yes (87.55%), while the rest (12.45%) believes no role of estrogen at all.When we asked about 2 sources of calcium or more do they know,most of them 94.74% answered by yes, 5.26% answered no. About 91.87% of the subjects believed that osteoporosis is preventable disease and can by since childhood.

Table 4: Awareness of study subjects about various risk factors for osteoporosis

Variable	*Correct answer*	*Yes %*	*No %*
Postmenopausal women more susceptible to osteoporosis	Yes	76.42%	23.58%
Surgical removal of ovaries decreases the likelihood of developing osteoporosis	No	11.54%	88.46%
Previous fractures have no effect on developing osteoporosis	No	60.66%	39.34%
Family history has no effect on developing osteoporosis	No	34.41%	65.59%
Inadequate calcium intake contributes to the development of osteoporosis	Yes	90.32%	9.68%
Caffeine-containing beverages (coffee, tea, soft drinks such as cola) increase the likelihood of developing osteoporosis	Yes	88.76%	11.24%
Smoking tobacco has no effect on developing osteoporosis	No	17.6	59.2
Menopause at an early age is not dangerous for osteoporosis	No	40.74%	59.26%

Concerning food supplements and therapy, only about 36.46% of the subjects were taking calcium supplement and about 36.46% were taking vitamin D supplement. Only 23.76% of subjects were taking daily multivitamins and 2.76% were on estrogen replacement therapy. The majority of the subjects 58.4% were premenopausal and 41.6 % were postmenopausal and 65.59% of the subjects believed on family history of osteoporosis is one of the risk factor. Most subjects responded correctly when asked about the effect of specific risk factors including caffeine, soft drinks (about 88.76%) and low calcium food (about 90.32%)Table 4. About 78.23% of subjects were aware that exercise such as walking helps to increase bone density. In otherward, limiting movement reduces bone remodeling resulting in weak bones. About88.46% of subjects were aware that ovariectomy is a risk factor, and about 11.54% thought ovariectomy will reduce the risk of developing osteoporosis. Table 5

Table 5: Awareness of study subjects about osteoporosis prevention, diagnosis and symptoms:

Variable	Correct answer	Yes %	No %
Osteoporosis prevention begins in childhood	Yes	91.87%	8.13%
Frequent exposure of the skin to sun contributes to the development of osteoporosis	No	7.29%	92.71%
Regular exercise such as walking increases bone density	Yes	78.23%	21.77%
Bone loss in osteoporosis occurs without symptoms or warning signs	Yes	36.33%	63.67%
Postmenopausal women should test their bones to check if they are at risk of developing osteoporosis	Yes	92.71%	7.29%

The awareness level of osteoporosis was significantly associated with age (p<0.001), educational level (p=0.001),

and residency (p<0.001). Awareness was significantly associated with the use of dietary supplements, calcium, vitamin D, multivitamins (p<0.001). There is significant correlation between age and social status (p=<0.009), social status and treatment of osteoporosis (P< 0.001), Previous fractures and knowing sources of calcium (P<0.001). We found that there is statistically significant positive correlation between the level of education and Caffeine-containing beverages (p=<0.05), between BMI and start of menarche (P=0.01). The correlation between awareness of the disease with age and education level was positive. There was no correlation between subjects who had previous fractures and family history of osteoporosis (P>0.1).

4. Discussion

The aim of our study to evaluate the knowledge and awareness of osteoporosis in eastern province's women in regardless to menopausal status. In our study, most of women are educated, doing exercise taking calcium and multivitamins that enhance the knowledge of osteoporosis. The awareness of risk and preventive factors is excellent. The majority know the risk and preventive factors. There is a need to increase the awareness of women in eastern province to reach the optimum level of bone health regarding osteoporosis. The unequal age distribution of our subjects limited our study in the presence of women over the age of 70 years. This limitation does not affect the main findings. The results demonstrate that tow-third of the subjects (about 59%) were obese and about 31% were overweight. These results show significant positive correlation between BMI and increase risk of osteoporosis. Our study represents the level of awareness about osteoporosis was significantly associated with age, education level, residency, food supplements. The findings provide good background and awareness of women in age less than 45 who are well educated and know about the disease is medium. These findings push us to raise the level of awareness about osteoporosis in society.

5. Conclusion

Our study demonstrated that women in eastern province, Saudi Arabia is not fully aware about osteoporosis. Our findings demonstrate that awareness and education are important factors in maintaining healthy bones among women.

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Author's Contributions

Mohammed Alhassan is the main author and participated in the study concept, literature review, study design, data analysis and manuscript preparation. Alyousif, Al-Battat, Alhassan, Alshukr, AlGhamdi are co-author and participated in literature review and study design.

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