AWARENESS OF OSTEOPOROSIS AMONG SAUDI POPULATION IN SAUDI ARABIA ESPECIALLY QASSIM REGION

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Abstract:

Background: *Osteoporosis is a worldwide health problem leading to an increased susceptibility to fractures and even more other complications. Awareness and perceptions of susceptibility and belief in the seriousness of a disease can help in its prevention and control.*

Objective: *this study was aimed to evaluate knowledge and perceptions of osteoporosis among Saudi population from different country regions and different educational levels.*

Methodology: *986 participants from all over Saudi Arabia regions and the majority of them were from Qassim region they were involved in a self- administered online questionnaire that was conducted in September, 2015 through the period to January, 2016 and was available online and easy to access to wide group of people, to evaluate the extent of knowledge about osteoporosis among Saudi population from those different regions of the country.*

Conclusion: *It is important to raise the awareness and knowledge of osteoporosis and its prevention measures as osteoporosis is a preventable disease among Saudi population. Saudi Ministry of health need to determine the population's knowledge of and attitudes towards osteoporosis to plan effective education programs to be able to avoid late complications and to safe highly cost methods of treating such a conditions.*

Keywords: *Osteoporosis, Awareness, prevention, perceptions, Saudi, Arabia, Qassim*

Introduction

Osteoporosis is a major and growing public health problem in both sexes especially in postmenopausal women. Osteoporosis is characterized by decreased bone mass and micro-architectural deterioration of bone tissue, leading to an increased susceptibility to fractures .In addition ,it is the most common metabolic disease that increase mortality and morbidity among elderly people (1). It is a silent illness so can be unrecognized for a long time until a fracture occurs (2). There are many risk factors for osteoporosis however; the most important are genetics, smoking and alcohol abuse, poor nutrient intake, deficiency of calcium and vitamin D, and decrease in sex hormone production (3).Since there is no cure of osteoporosis Corrective action must be taken to slow down and for protecting of osteoporosis (4). Because osteoporosis can affect any age during life, it is highly crucial to acquire maximum peak bone mass during early life (5) as the amount of bone mass achieved during that age determines the quality of bones in later life.

According to WHO, There is approximately 75 million people in Europe and America are complaining of osteoporosis and 9 million fractures worldwide are result from osteoporosis every year (6).

The aim of the current study is to evaluate knowledge and perceptions of osteoporosis among Saudi populations from different regions of the kingdom in order to protect and increasing the awareness about osteoporosis.

Methodology

Setting:

A cross sectional study was conducted among Saudi population in Saudi Arabia especially Qassim region. The population of Saudi Arabia varies from one region to other and that why this study conducted using online survey to give the possibility to those different regions population to participate in this questionnaire, and this one of the strength factor of our study. The kingdom is situated in Southwest of Asia and it has 13 administrative provinces including Al-Riyadh, Qassim, Mekkah, Madinah, Eastern Province, Ha'il, Jauf, Tabuk, Najran, Bahah, Northern Borders, Jizan and Asir. According to the central department of statistics and information of Saudi Arabia the population is 30,770,375.

Study Design, Subjects and Intervention:

The study was a cross sectional exploratory one, 986 participants from all over Saudi Arabia regions and the majority of them were from Qassim region they were involved in a self- administered online questionnaire to evaluate the extent of knowledge about osteoporosis among Saudi population from those different regions of the country. The survey was conducted in September, 2015 through the period to January, 2016 and was available online and easy to access to wide group of people .The research had been ethically approved by Qassim Research Ethics Committee.

Questionnaire:

The questionnaire used in the study is the self-reported OKAT questionnaire to assess knowledge, attitude, and practice about osteoporosis. The OKAT is a valid and reliable questionnaire. The OKAT questionnaire is composed of 20 items to assess knowledge about osteoporosis, the first 12 questions were to assess knowledge and questions from 13-16 were to assess attitude to osteoporosis and last 4 questions assessed practice and perception to prevent osteoporosis. It consists of multiple choices questions with each question having 3 answers: true, false, and I don't know. We considered those who answered I don't know to be an incorrect answer. The questionnaire included socio-demographic variables, which were; gender, age groups, educational level, monthly income, province.

The questionnaire was then distributed. The recruitment of subjects was done by posting the online self-administered questionnaire link in social media networks including: FACEBOOK, TWITTER, and WHATSAPP.

Statistical analysis:

For analysis of data, Statistical Package for Social Sciences software, version 16.0 (SPSS Inc., Chicago, IL) was used. Initially, all information gathered via questionnaire was coded into variables. Descriptive statistics were generated on all variables. Correlations were used to determine the degree of relationship between variables. To display the relationship between two variables the Normality Distributions of the Data was examined (See Appendix).

Results

A total of 986 participants completed the questionnaire that was available online, as 54% of them were Female and 46% male as shown in (figure1). They participated from different regions of Saudi Arabia and which gave the study more strength since the population were not based only one region but the majority which were 321 participants out of 986 they were from Qassim region (figure 2). The mean age was 28.6 ± 9.1 years, and age range was 10 – 60 years old the majority of were ageing 20 – 29 years old (figure 3). The educational status of the study group was as follows: pre elementary school, only 0.3% of the participants; elementary school graduates, 1.1%; secondary school graduates, 7.8%; high school graduates, 38.8%; and university graduates, 52% (figure 4).
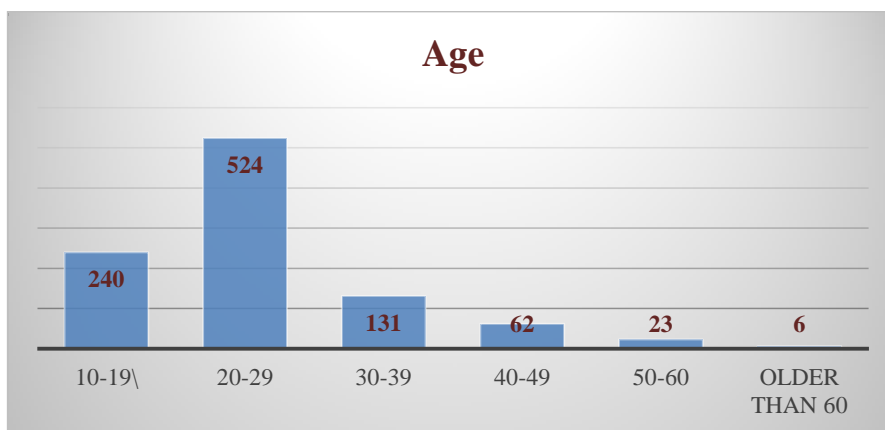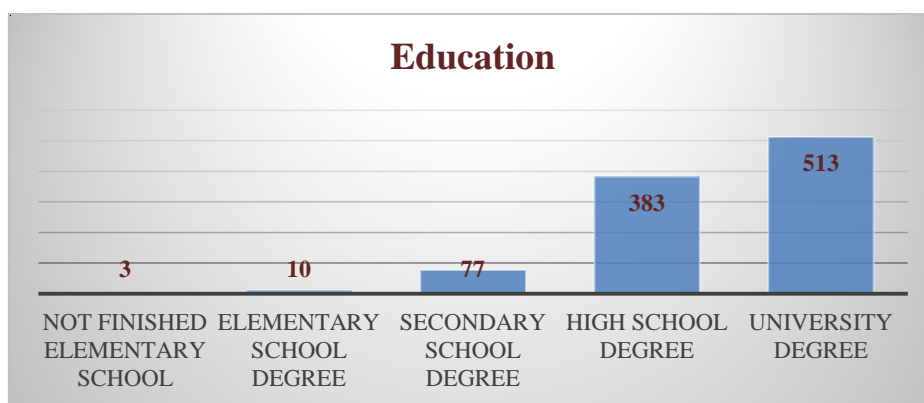
Descriptive Statistic:
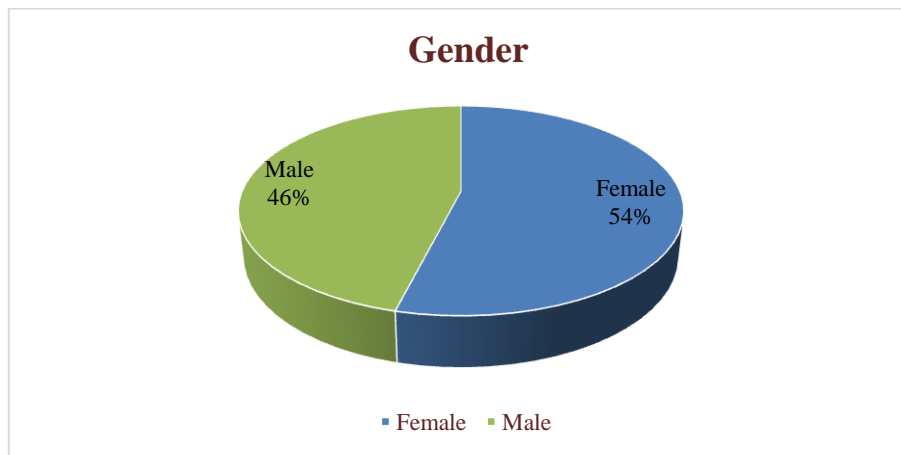
Figure1. The participants according the gender
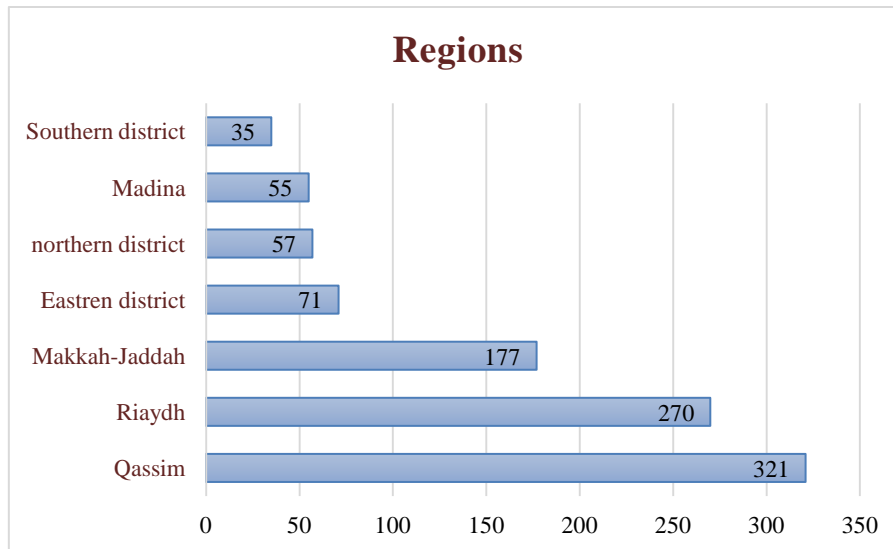
Figure2. The participants according to the region

Figure 3. The participants according to the age group

Figure 4. the participants according to the educational level

The questionnaire consisted of three parts (Table1). The first part collected information on knowledge of osteoporosis such as screening behavior for osteoporosis, risk factors, and gender and age group which are more affected with osteoporosis. The second part included questions on awareness and definition of osteoporosis (attitude to osteoporosis). And the third part included questions that evaluate perception of future osteoporosis risk, and the sources of osteoporosis knowledge. The average of each part of the Questionnaire by Gender group was demonstrated in (Table 2).

Table 1. Questionnaire consistence

	Question Number	**Category**
Part1	Question1-Question12	Knowledge of osteoporosis
Part2	Question 13-Question 16	Attitude to osteoporosis
Part3	Question 17-Question 20	perception to prevent osteoporosis

Using <u>Mann-Whitney U Test</u> to find out the difference between two independent groups (Gender)

Table 2. **shows the average of each part by Gender**

Group Statistics			
	Gender	**Sample Size**	**Mean**
Part1	female	532	2.2636
	male	454	2.2715
Part2	female	532	2.0508
	male	454	2.1035
Part3	female	532	2.2274
	male	454	2.1525

The difference between the gender (males and females) groups we found that there was no statistical significant (p>0.05) in their Knowledge and Attitude of osteoporosis (part1 and part 2) (Table 3). But then we come to part 3 of the questionnaire which was about perception and prevention against osteoporosis we found (p<0.001) which is statically significant between males and females in their knowledge to prevent osteoporosis.

Table 3. Using <u>Mann-Whitney U Test</u> to find out the difference between two independent groups

	Mann-Whitney U	Sig.
Part 1	121,481.500	0.871
Part 2	128,856.500	0.064
Part 3	106,711.000	0.001

Using Kruskal-Wallis Test to find out the Difference between the different regions of Saudi Arabia in their knowledge of the three parts of the questionnaire we found (p>0.05) which means that there is no statically evidence in Knowledge of osteoporosis and prevent osteoporosis. But we there was a statically significant different in the attitude to osteoporosis (p<0.05). (Table 4)

Table 4. Kruskal-Wallis Test

| **K-W**	**Test Statistic**	**Sig.**
Part1	3.877	0.693
Part2	15.920	0.014
Part3	7.691	0.262

Younger participants (age groups 1 and 6) which means (10-19 years old and above 60 years old) had a greater awareness of osteoporosis than age rest of age groups , and the difference between the age groups was statistically significant (p<0.001). **(Figure5)**
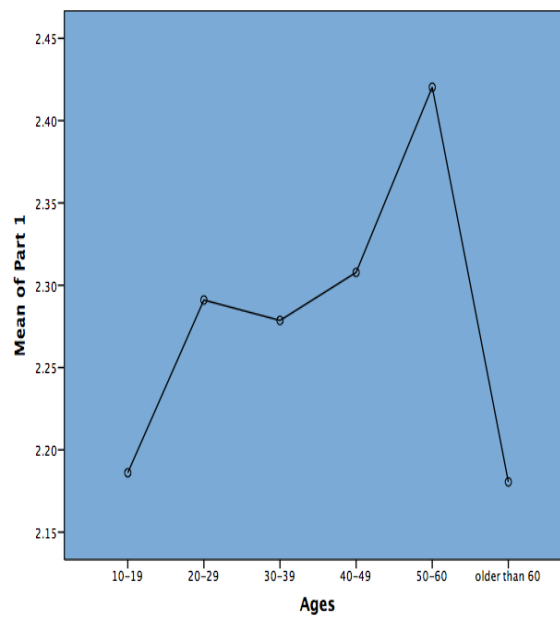
Figure 5. Awareness of osteoporosis knowledge according to the age groups

Awareness of osteoporosis was also significantly different between educational groups. It was lowest in the pre elementary school group (p<0.001). Awareness of osteoporosis was positively correlated with education (p<0.001) and negatively correlated with age (p<0.001). **(Figure 6)**
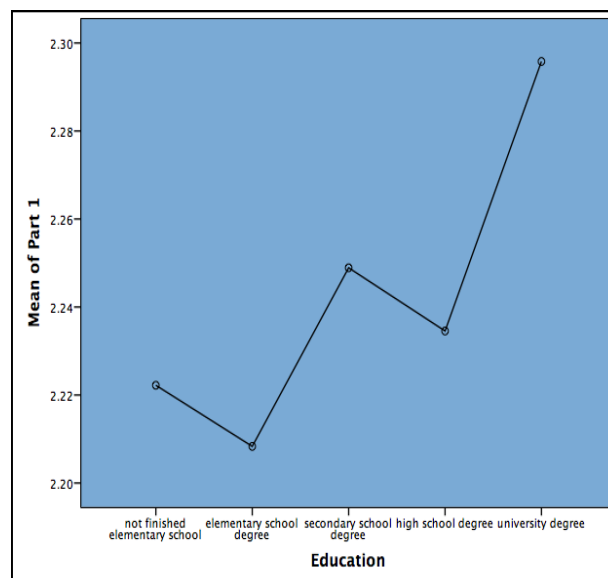
Figure 6. Awareness of osteoporosis knowledge according to the educational level

The stability of the questionnaire analysis

We checked the stability of the questionnaire analysis by using Cronbach's Alpha (Table 2)

Table 2. Cronbach's Alpha

Question	Cronbach's Alpha
Question1 - Question12	0.354
Question 13 - Question 16	0.107
Question 17 - Question 20	0.263
All Questions	0.442

Since the first part higher than (0.3), this means that the first 12 questions have high strength in the questionnaire. The second & third part is weak in terms of consistency. The reason goes back to the questionnaire that was published without consulting statistical analyst. In general, we got 0.442 which means we can say that the questionnaire has a good stability.

Discussion

This study assesses the awareness and knowledge of osteoporosis in different regions of Saudi Arabia including most population group in different age, in this study osteoporosis questionnaire was applied to investigate the knowledge and awareness of population about the osteoporosis risk factors and age most affected and the gender group which are more involved.

We found that the female group was more aware of the perception and prevention methods against osteoporosis however the results of our study indicate that females showed better knowledge on osteoporosis than males. The data concerning the relationship between knowledge levels about osteoporosis and having osteoporosis are less consistent. Some studies found that having osteoporosis did not influence the knowledge level (7, 8). In another study, having osteoporosis was found to be associated with increased knowledge (9). In another study, 84.8% of all women related osteoporosis with aging, which is concordant with the findings of a study held in Norway, where 85% of women answered positively to this question (9). In the same study by Magnus et al (9) surveyed a random sample of 1514 Norwegian women and men aged 16-79 years. This study demonstrated a high degree of general knowledge of osteoporosis and its consequences in the general population. Higher level of education and knowing someone with osteoporosis was associated with increased awareness (9).

A study from South Australia (10) determined nearly same self-reported osteoporosis prevalence rates in women aged 50 years and older that is 11.9%, whereas other studies based on DXA results revealed higher osteoporosis prevalence rates in women at same age groups such as 17–20 (11) and 30% in a different trails (12). The rate of women who underwent BMD was 14.6%. For the general population of women aged 50 years or more, this rate was 19% in Belgium and 16% in Europe (13).

A common negative attitude that was observed among study participants was low perceived seriousness of osteoporosis compared to. According to health belief model, the individual's perception of a disease and likelihood of adoption of positive attitude and practices depend on four important parameters i.e. perceived seriousness of a disease perceived susceptibility of a disease, perceived benefits of positive attitude and practice and lastly perceived barriers that might restrain an individual to make positive changes (14). Similar to findings of other studies, a majority of the participants in the present study have identified lack of calcium and dairy products as a risk factor for osteoporosis while minority had identified genetics or family history as risk factor for osteoporosis (15).

Limitations of the study largely stemmed from self-reporting of possibly invalid information and the small sample size. A larger scale study based on validated data might be able to draw a reliable inference.

Conclusion

The majority of the participants were aware of some knowledge about osteoporosis but female respondents were more knowledgeable in some very important points in this manner. Age was negatively correlated with the level of awareness though Awareness of osteoporosis was significantly different between educational groups. It was lowest in the pre elementary school group. Awareness of osteoporosis was positively correlated with education. Therefore it is important to raise the awareness and knowledge of osteoporosis and its prevention measures as osteoporosis is a preventable disease. Ministry of health need to determine the population's knowledge of and attitudes towards osteoporosis to plan effective education programs to be able to avoid late complications and to safe highly cost methods of treating such a conditions.

According to Statistic's conditions First thing we need to check :the Normality Distributions of the Data

One-Sample Kolmogorov-Smirnov Test

	Part 1	Part 2	Part 3
Sample Size	986	986	986
Kolmogorov-Smirnov Z	3.010	4.271	4.920
Asymp. Sig. (2-tailed)	.000	.000	.000

Since we got Sig less than 0.05 we reject the null hypothesis that which states data is following a normal distribution and we DON'T reject the alternative which states data is not following a normal distribution. This well help up to use the right statistical tool!

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