

## Awareness of Osteoporosis among Saudi Population in Saudi Arabia Especially Taif governorate

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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 Taif governorate they were involved in a self-administered online questionnaire that was conducted in August, 2017 through the period to November, 2017 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.

**Results:** 986 participants from all over Saudi Arabia regions and the majority of them were from Taif governorate 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 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.

**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, Taif

### 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 increases mortality and morbidity among elderly people<sup>(1)</sup>. It is a silent illness so can be unrecognized for a long time until a fracture occurs<sup>(2)</sup>. 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<sup>(3)</sup>. Since there is no cure of osteoporosis corrective action must be taken to slow down and for protecting of osteoporosis<sup>(4)</sup>. Because osteoporosis can affect any age during life, it is highly crucial to acquire maximum peak bone mass during early life<sup>(5)</sup> 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<sup>(6)</sup>.

### OBJECTIVES

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

### METHODS

#### Setting

A cross sectional study was conducted among Saudi population in Saudi Arabia especially Taif governorate. The population of Saudi Arabia varies from one region to another 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, Taif, 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 Taif governorate. 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 August, 2017 through the period to November, 2017 and was available online and easy to access to wide group of people. The research had been ethically approved by Taif Research Ethics Committee. 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 while the last 4 questions were to assess practice and perception for prevention of osteoporosis. It consisted of multiple choice 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 of data by using Statistical Package for Social Sciences software, version 16.0 (SPSS Inc.). 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).

**The study was done after approval of ethical board of Taif university.**

**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 (figure 1). They participated from different regions of Saudi Arabia which gave the study more strength since the population were not based only on one region but the majority which were 321 participants out of 986 they were from Taif governorate (figure 2). The mean age was  $28.6 \pm 9.1$  years, and age range was 10 – 60 years old. The majority of them 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).

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). 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).

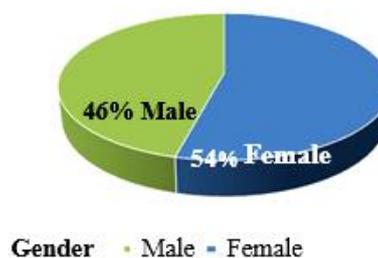
The difference between the gender (males and females) groups we found that there was no statistical significant ( $p > 0.05$ ) in their knowledge and Attitude of osteoporosis (part 1 and part 2) (Table 3). Then, we come to part 3 of the questionnaire which was about perception and prevention against osteoporosis, we found ( $p < 0.001$ ) which is statically significant between males and females in their knowledge to prevent osteoporosis. 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 statistical evidence in Knowledge and prevention of osteoporosis while, there was a statically significant difference in the attitude to osteoporosis ( $p < 0.05$ ), (Table 4).

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 ( $p < 0.001$ ).

We checked the stability of the questionnaire analysis by using Cronbach's Alpha (Table 5).

Since the first part higher than (0.3), this means that the first 12 questions have high strength in the questionnaire. The second & third parts are 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 that the questionnaire has a good stability

*Descriptive Statistic*



**Figure 1.** The participants according the gender

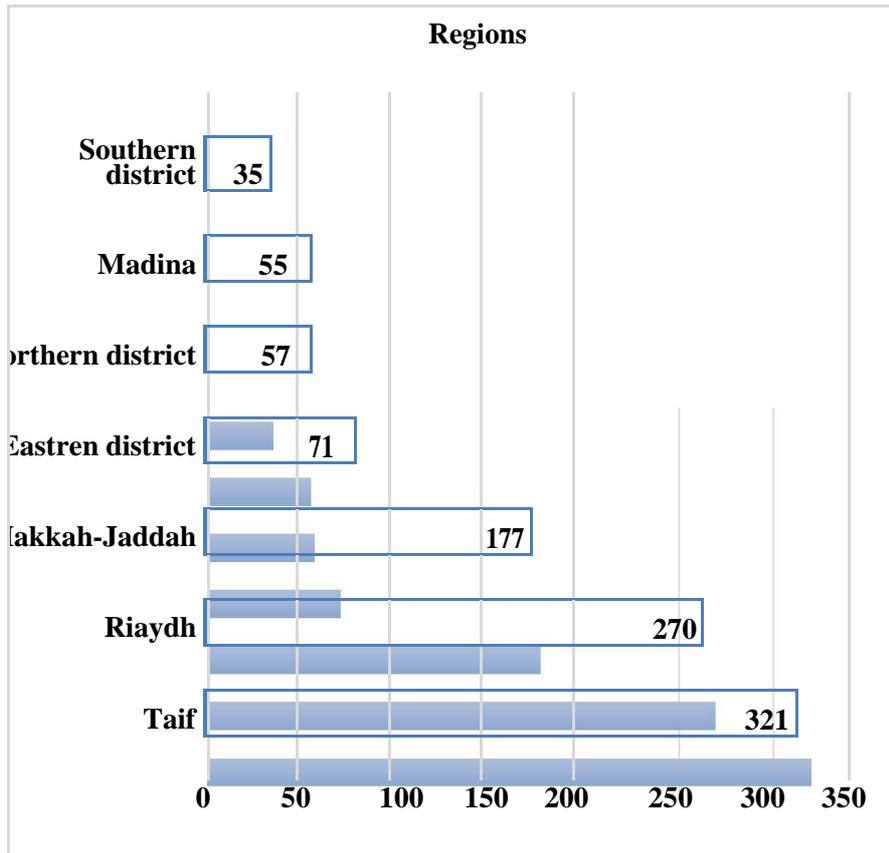


Figure 2. The participants according to the region

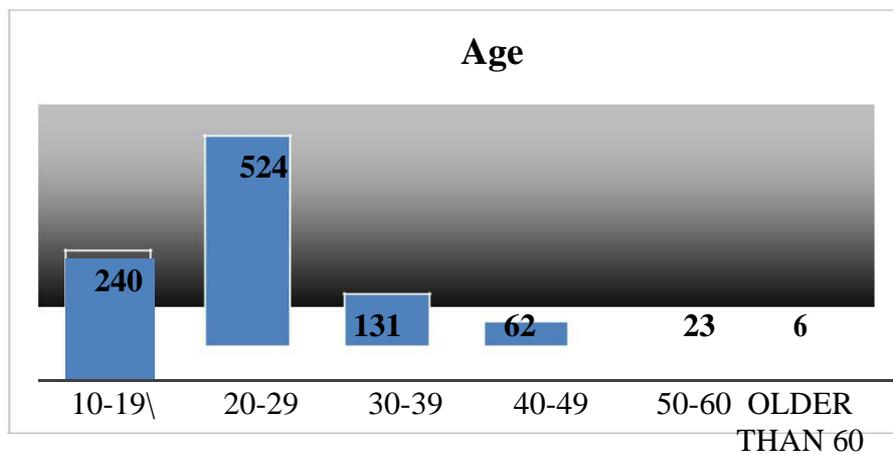


Figure 3. The participants according to the age group

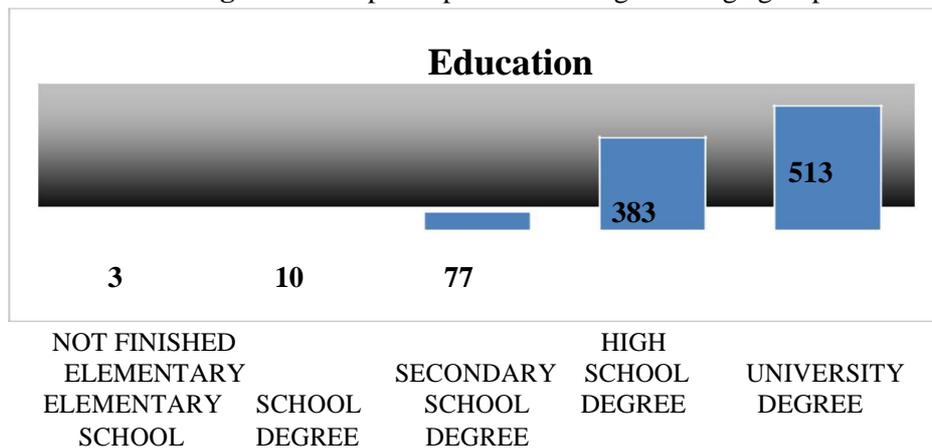


Figure 4. The participants according to the educational level

**Table 1. Questionnaire consistence**

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

Using Mann-Whitney U Test 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
<b>Part1</b>	female	532	2.2636
	male	454	2.2715
<b>Part2</b>	female	532	2.0508
	male	454	2.1035
<b>Part3</b>	female	532	2.2274
	male	454	2.1525

**Table 3. Using Mann-Whitney U Test 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

**Table 4. Kruskal-Wallis Test**

K-W	Test Statistic	Sig.
<b>Part1</b>	3.877	0.693
<b>Part2</b>	15.920	0.014
<b>Part3</b>	7.691	0.262

**Table 5. 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

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

**Table 6. 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)	.001	.001	.001

**DISCUSSION**

This study assesses the awareness and knowledge of osteoporosis in different regions of Saudi Arabia including most of population groups in different ages. 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 indicated 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<sup>(7, 8)</sup>. Another study, reported that osteoporosis was associated with increased knowledge<sup>(9)</sup>. In another study, 84.8% of all women were related to osteoporosis with aging, which is in accordance with the findings of a study held in Norway, where 85% of women answered positively to this question<sup>(9)</sup>. In the same study by Magnus et al.<sup>(9)</sup> who 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<sup>(9)</sup>. A study from South Australia<sup>(10)</sup> determined nearly same self-reported osteoporosis prevalence rates in women aged 50 years and older that was 11.9%, whereas other studies based on DXA results revealed higher osteoporosis prevalence rates in women at same age groups such as 17–20<sup>(11)</sup> and 30% in a different trails<sup>(12)</sup>. 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<sup>(13)</sup>.

A common negative attitude that was observed among study participants was low perceived seriousness of osteoporosis. 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<sup>(14)</sup>. Similar to findings of other studies, 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<sup>(15)</sup>. 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 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.

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

## REFERENCES

- 1- **Kanis JA (2007):** Assessment of osteoporosis at the primary health-care level. [www.shef.ac.uk/FRAX/pdfs/WHO\\_Technical\\_Report.pdf](http://www.shef.ac.uk/FRAX/pdfs/WHO_Technical_Report.pdf).
- 2- **Epstein S(2006):** Update of current therapeutic options for the treatment of postmenopausal osteoporosis. *Clin Ther.*, 28:151-73.
- 3- <http://www.surgeongeneral.gov/topics/bonehealth/>
- 4- **Riggs, B.L., Khosla, S. and Melton III, L.J. (2002):** Sex steroids and the construction and conservation of the adult skeleton. *Endocrine Reviews*, 23, 279-302. doi:10.1210/er.23.3.279
- 5- **Dombrowski HT(2000):** Effective strategies for the prevention of osteoporosis across the lifespan. *J Am Osteopath Assoc.*, 100: 8–14
- 6- **WHO (2004):**<http://www.who.int/chp/topics/Osteoporosis.pdf>~
- 7- **Drozdowska B, Pluskiewicz W, Skiba M (2004):** Knowledge about osteoporosis in a cohort of Polish females: the influence of age, level of education and personal experiences. *Osteoporos Int.*, 15:645–648
- 8- **Vytrisalova M, Kubena A, Vlcek J et al. (2007):** Knowledge of osteoporosis correlated with hormone therapy use and health status. *Maturitas*, 56:21–29
- 9- **Magnus JH, Joakimsen RM, Berntsen GK et al.(1996):** What do Norwegian women and men know about osteoporosis. *Osteoporos Int.* ,6:31-6.
- 10- **Phillipov G, Phillips PJ, Leach G et al. (1998):** Public perceptions and self-reported prevalence of osteoporosis in South Australia. *Osteoporos Int.*, 8:552–556
- 11- **Looker AC, Johnston CC, Wahner HW et al. (1995):** Prevalence of low femoral bone density in older U.S. women from NHANES III. *J Bone Miner Res.*, 10:796–802.
- 12- **Ross PD (1996):** Osteoporosis. Frequency, consequences, and risk factors. *Arch Intern Med.*, 156:1399–1411.
- 13- **Rosenberg S, Twagirayezu P, Paesmans M et al. (1999):** Perception of osteoporosis by Belgian women who work in a university hospital. *Osteoporos Int.*, 10:312–315
- 14- <http://www.jblearning.com/samples/0763743836/chapter%204.pdf>.
- 15- **Curry LC, Hogstel MO(2001):** Risk status related to knowledge of osteoporosis in older women. *J Women Aging.* , 13(2):33-37.