

## A STUDY OF KNOWLEDGE OF WOMEN TOWARD OSTEOPOROSIS IN PRIMARY CARE IN KING ABDULAZIZ MILITARY HOSPITAL IN TABUK

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### ABSTRACT

**Background:** Osteoporosis is a disease in which the density and quality of bone are reduced. As the bones become more weak and fragile, the risk of fracture is greatly increased. The loss of bone occurs "silently" and progressively. Often there are no symptoms until the first fracture occurs.

**Aims & Objective:** To study the knowledge of women toward osteoporosis in primary care.

**Materials and Methods:** This was a cross-sectional study conducted throughout the period from 1<sup>st</sup> March 2013 to 30<sup>th</sup> April 2013 in the family medicine department at the King Abdulaziz military hospital in Tabuk city, Saudi Arabia. The questionnaire was designed and modified after review previous studies and validated by two consultant family medicine. It included socio-demographic data, including age, marital status and education level. The rest of questions aimed to determine the awareness, knowledge of the risk factors of osteoporosis. Data was entered to a computer using Epi info version 6 program and SPSS version 13 for statistical analysis.

**Results:** 244 (65%) of participants were 50 years old or above, while 180 (48%) were married and 66.1 % were post-menopausal. Almost half of women in this study (52.3%) have not heard about Osteoporosis. There was inversely correlation between age and KOS, as age increase the KOS decrease with significant p-value.

**Conclusion:** A significant number of the Saudi's women are unaware of the osteoporosis risk factors and simple preventable measures especially those women with high risk for osteoporosis e.g. elderly.

**Key Words:** Knowledge; Women; Osteoporosis; Saudi Arabia

### Introduction

Osteoporosis is a disease in which the density and quality of bone are reduced. As the bones become more weak and fragile, the risk of fracture is greatly increased. The loss of bone occurs "silently" and progressively. Often there are no symptoms until the first fracture occurs.<sup>[1]</sup>

The most common fractures associated with osteoporosis occur at the hip, spine and wrist. The incidence of these fractures, particularly at the hip and spine, increases with age in both women and men.<sup>[1]</sup>

Of notable concern are vertebral (spinal) and hip fractures. Vertebral fractures can result in serious consequences, including loss of height, intense back pain and deformity. A hip fracture often requires surgery and may result in loss of independent living.<sup>[1]</sup>

The National Osteoporosis Foundation (NOF) in the USA reported that by 2010, about 12 million people over the age of 50 are expected to have osteoporosis and another 40 million to have low bone mass. By 2020, it is expected to increase to 14 million cases of osteoporosis and over 47 million cases of low bone mass.<sup>[1]</sup>

It is estimated that around 40% of US white women and 13% of US white men aged 50 years will experience at least one clinically apparent fragility fracture in their lifetime. At age 50, a white woman has a 17% chance of sustaining a hip fracture, 15% chance of vertebral fracture and 16% chance for forearm fracture, with comparable figures of 6%, 5% and 2.5%, respectively, for fractures in white males.<sup>[2]</sup>

It has been estimated that in the USA, 54% postmenopausal white women are osteopenic and 30% are osteoporotic, and by the age of 80, 27% of women are osteopenic and 70% are osteoporotic.<sup>[3]</sup>

Annual direct medical cost in 1995 totalled \$13.8 million (or \$17.5 billion adjusted to 2002 dollars) for the treatment of osteoporotic fractures in the USA (hip fractures alone were responsible for 63% of the total).<sup>[4]</sup>

From 1990 to projections in 2050 the number of hip fractures for women and men aged 50-64 in Latin America will increase by 400%. For age groups older than 65 the increase will be a staggering 700%.<sup>[5]</sup> Latin Americans will suffer an estimated 655,648 hip fractures in 2050, at an estimated direct cost of \$13 billion.<sup>[6]</sup> It is projected that more than about 50% of all osteoporotic

hip fractures will occur in Asia by the year 2050.<sup>15,71</sup>

Locally, El-Desouki carried out a study included 830 postmenopausal Saudi women at the King Khalid University Hospital, Riyadh, and concluded that Osteopenia and osteoporosis were common among postmenopausal Saudi women and should be considered as a matter of public health.<sup>181</sup> Another study was conducted by Sadat-Ali et al at the King Fahd Hospital of the University, Al-Khobar. They concluded that postmenopausal Saudi women suffered from osteoporosis and osteopenia higher than those from other parts of the country.<sup>191</sup>

Risk factors for osteoporosis can be divided into non-modifiable risk factors and modifiable risk factors. Non-modifiable risk factors are age, sex, ethnicity, reproductive factors and family history of osteoporosis. Modifiable risk factors are weight, smoking, sun exposure, drugs, alcohol, sedentary lifestyle and diet.<sup>111</sup>

The U.S. Preventive Services Task Force (USPSTF) recommends BMD screening for women 65 years and older without risk factors. Screening should begin at 60 years in women who are at increased risk for osteoporotic fractures. The USPSTF makes no recommendation for or against BMD screening in postmenopausal women who are younger than 60 years or women aged 60 to 64 years who are not at increased risk for fractures.<sup>1101</sup>

According to national osteoporosis foundation the prevention & treatment of osteoporosis should be a mandate of primary care. Cook et al. demonstrated that an educational program could increase women's knowledge of osteoporosis & produce lifestyle changes.<sup>1111</sup> Prevention is the most cost effective mean of managing osteoporosis & includes adequate nutrition, weight bearing, exercise & healthy life style. The first step in the prevention of osteoporosis in women should be to make them aware of the risk factors.<sup>1121</sup>

In this study we try to determine the awareness, knowledge of risk factors, and attitudes toward osteoporosis in middle aged and elderly women in Saudi Arabia.

## Materials and Methods

This is a cross-sectional study conducted throughout the period from 1st March 2013 to 30th April 2013 in the

family medicine department at the King Abdulaziz military hospital in Tabuk city, Saudi Arabia Tabuk city is located in the north-western area of the Kingdom of Saudi Arabia. Its dimension about 95000 km<sup>2</sup> and it covers about 5% of the area of the Kingdom of Saudi Arabia. King Abdulaziz military hospital is serving the military personnel and their dependants in Tabuk area and the villages around it.

The age groups were middle age (40 -65 years) and elderly 65 years and above women attending the family medicine clinics at king Abdulaziz military hospital. An entry criterion was defined as any woman eligible for treatment in the family medicine department.

The questionnaire was designed and modified after review previous studies<sup>1131</sup> and validated by two consultant family medicine. Pilot study was done and it was successful. It included socio-demographic data, including age, marital status and education level. The rest of questions aimed to determine the awareness, knowledge of the risk factors of osteoporosis. Data was obtained at the time of interview by expert Arabic educational nurse in family medicine department. Data was entered to a computer using Epi info version 6 program and SPSS version 13 for statistical analysis. The study sample was calculated using the formula:

$$N = (Z) p (1-p) / d$$

Where, P = 44% (prevalence of osteoporosis in Saudi Arabia from Sadat Ali study); d = 0.05; Z = 1.96.

N = The study sample size was estimated as 375.

## Results

A total of 375 women completed the questionnaire.

**Socio-Demographic Characteristic:** Table 1 shows that 244 (65%) of participants were 50 years old or above, while 180 (48%) were married and 66.1 % were postmenopausal. Of the 375 women participants, 220 (58.7%) were illiterate, and 297(79.2%) were house wife.

**Osteoporosis Background of Participant:** Almost half of women in this study (52.3%) have not heard about Osteoporosis before as obvious from figure 1.

**Sources of Information:** Most of women received information about osteoporosis from physicians 32%, TV 30% and friends 30% while 5% of women received information from newspaper and 3% from Radio. Figure 2.

**Table-1: Socio-demographic characteristics**

Characteristics		N	%
Age (years)	40-49	131	34.9
	50-59	122	32.5
	60-69	94	25.1
	≥70	28	7.5
Marital Status	Single	30	8
	Married	180	48
	Divorced	42	11.2
Menopausal Status	Widow	123	32.8
	Pre- Menopausal	127	33.9
Educational Level	Post -Menopausal	248	66.1
	Illiterate	220	58.7
	Primary	63	16.8
	Intermediate	33	8.8
Job Status	Secondary	27	7.2
	University	32	8.8
	House wife	297	79.2
	Teacher	23	6.1
	Others	55	14.7

**Table-2: The simplified form of questions asked together with the correct numbers and percentage of answers**

No.	Question	Correct Answer	N	%
1	Osteoporosis common in which age group	Elderly	230	61.3
2	First symptom of Osteoporosis is pain	No	49	13.1
3	Osteoporosis can lead to loss of heights	Yes	128	34.1
4	Osteoporosis common in male more than female	No	162	43.2
5	Food rich with calcium protect form Osteoporosis	Yes	211	56.3
6	Watch of the following food rich with Osteoporosis	Milk	287	76.2
7	Coffee consumption protective for Osteoporosis	No	92	24.5
8	Lack of exercise is risk factor for Osteoporosis	Yes	175	46.6
9	Sun exposure is protective for Osteoporosis	Yes	195	52.5
10	Alcohol consumption risk factor Osteoporosis	Yes	72	19.2
11	Family history Osteoporosis is a risk factor	Yes	90	24.0
12	Smoking may be risk factor of Osteoporosis	Yes	160	42.7

**Table-3: Knowledge score on Osteoporosis (KOS)**

Questions Answered	Score	N	%	Cumulative
1 to 3	≤25%	127	33.90	33.90
4 to 6	>25-≤50%	103	27.50	61.30
7 to 9	>50-≤75%	122	32.50	93.90
10 to 12	>75%	23	6.10	100.00
Total		375		100.00

Student t test = 43.062; df = 375; p-value <0.001

**Table-4: Relation between educational level and KOS**

KOS	Illiterate	Primary	Inter-mediate	Secondary	University	Total
≤25%	105	19	1	2	0	127
>25-≤50	59	26	8	6	4	103
>50-≤75	49	17	20	14	22	122
>75 %	7	1	4	5	6	23
Total	220	63	33	27	32	375

Chi-square 99.77; p-value <0.001

**Table-5: Relation between age group and KOS**

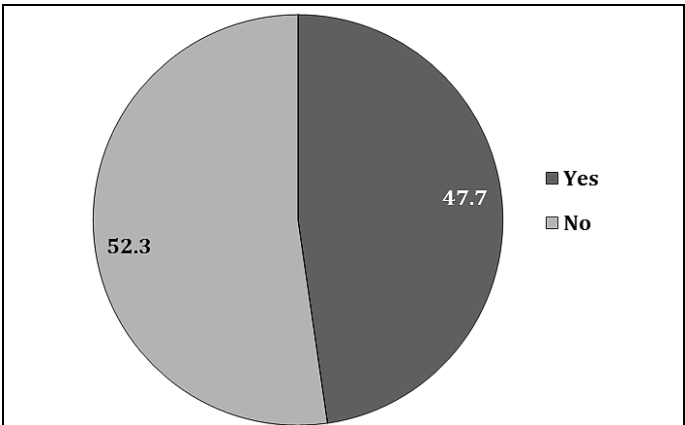
KOS	40-59	50-59	60-69	>70	Total
≤25%	14	47	44	22	127
>25-≤50	41	25	31	6	103
>50-≤75	61	42	19	0	122
>75 %	15	8	0	0	23
Total	131	122	94	28	375

Chi-square 82.123, p-value<0.001

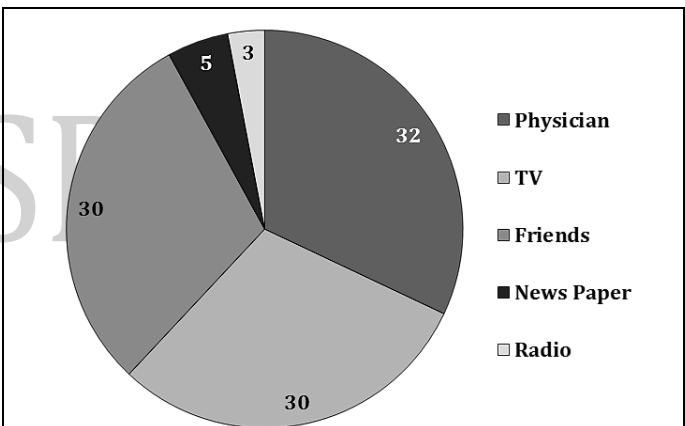
**Table-6: Relation between women with type 2 DM and KOS**

KOS	Non-Diabetic	Diabetic	Total
≤25%	87	40	127
>25-50≤	70	33	103
>50-≤75	89	33	122
>75 %	17	6	23
Total	263	112	375

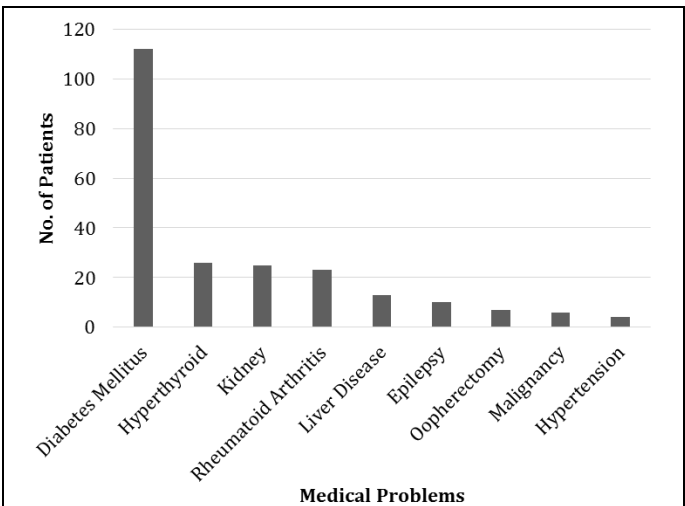
Chi-square 0.310; p-vale=0.958



**Figure-1: Response of the participants to a question of have you heard about Osteoporosis?**



**Figure-2: Sources of information about osteoporosis**



**Figure-3: Medical problems among participants**

**Assessment of Osteoporosis Knowledge:** The results of women’s knowledge were assessed by 12 items in

questionnaires, summarized on table 2. Our study indicated that women are relatively aware of elderly as commonest age group affected, role of sun exposure as protective for osteoporosis and role of food rich with calcium and also milk in protection. Women showed poor knowledge regarding other important topics in osteoporosis, especially questions related to first symptom of osteoporosis, alcohol as risk factor and role of family history as risk factor. Knowledge score shows that 61.3% of sample scored 50 % or less, 38.6 % of sample scored over 50% but less than 75% while only 6.1% of sample scored over 75%. Table 3

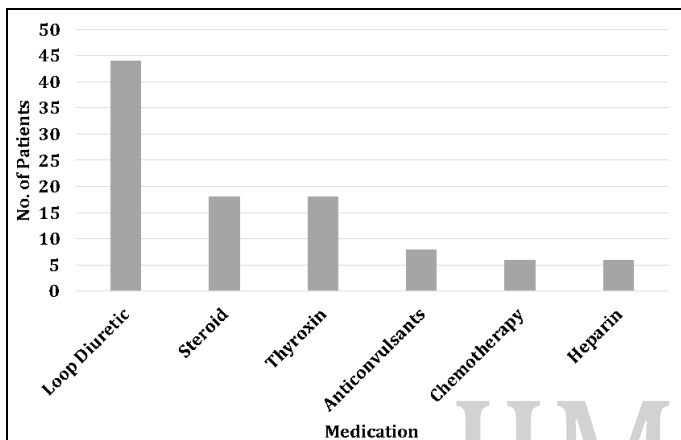


Figure-4: Medications used by the participants

**Medical History of Participants:** Most common medical problem encountered in our sample is type 2 DM 112 (29.8%) followed by thyroid health problems, rheumatoid and kidneys diseases. Figure 3

**Medications Used by Participants:** Loop diuretic were used by 44 (11.7%) of participants, thyroxin 18 (4.8%), steroid 18 (4.8%) and Anticonvulsant 8 (2.1%). Figure 4

**Factors Influence Osteoporosis Knowledge:** There was a positive correlation between the levels of education and (knowledge osteoporosis score) KOS, whereas education level increases, the knowledge about osteoporosis also increases and vice versa (Table 4). As illustrated in table 5, there was inversely correlation between age and KOS, as age increase the KOS decrease with significant p-value. We had 112 (29.8%) diabetic mellitus women in our study, 65% of them Score<50% KOS. Table 6.

## Discussion

This study showed that most of participants 65% are 50 years old or above and 66.1% were postmenopausal while 80.4% were illiterate. Those women in particular

are at higher risk to develop osteoporosis and need to explore their osteoporosis knowledge.

Forty seven percent of the sample had heard of osteoporosis it was lower than the study held in Singapore conducted in middle age & elderly women.<sup>[14]</sup> They reported 58% and the main source of information about osteoporosis were the mass media and friends. In our study the main source of information was physicians, friends and television.

Education is known to have an influence on the public health measures in a country, and it was found to be the strongest predictive factor for knowledge on osteoporosis according to study done in family medicine department of the middle east technical university in Turkey<sup>[13]</sup> among 270 women. Our data are in accordance with the result of this study except for the significant low degree of general knowledge on osteoporosis and it consequences in our study group. According to that study were mean age 41.3, 62% postmenopausal and 2% were illiterate. 23.7% of women scored 50% or less on the knowledge of osteoporosis score (KOS), comparing with 61.3% in our study scored 50% or less.

In the same study 60.4% of women aware of family history of osteoporosis as risk factor, 58.2% of participants agreed that female gender is a risk factor and 45.6% identified the coffee consumption as a risk factor for osteoporosis while in our study 24% of participants aware of family history of osteoporosis as a risk factor, 43.2% agreed that female gender as risk factor and 24.5% identified coffee consumption as a risk factor for osteoporosis. These finding might not be considered surprising for our population were 58.7% are illiterate and 66% of participants were postmenopausal. However these finding is alarming.

According to a study carried out in north east England<sup>[15]</sup>, including 1649 women aged 20 and 69 years in family medicine clinic, lack of exercise as risk factor for osteoporosis was known by 29% of participants. Among the women included in our study, 46% were aware of the role of exercise in preventive. This difference may be due to the sample size differences of the two studies.

According to Carlos<sup>[12]</sup>, 85.7% of women identified low calcium intake as risk factor for osteoporosis, in our study 56.3% of women identified low calcium as risk factor.

Higher level of education and younger age scored higher KOS. This finding similar study carried out in 1065 women aged 16-72 years attended family medicine clinic in Poland.<sup>[16]</sup> We had 112 (29.8%) diabetic mellitus women in our study, 65% of them Score<50% KOS, where these women have risk peripheral neuropathy and risk of falling and fracture and should their knowledge better than this score.

## Conclusion

Conclusively, according to our study, a significant number of the Saudi's women are unaware of the osteoporosis risk factors and simple preventable measures especially those women with high risk for osteoporosis e.g. elderly.

This poor and superficial knowledge not only result from failure of health care providers but also from deficiency of health educational programs and also the media such as television ,radio and newspaper which are play important role in education, therefore it is responsibility of health policy planners, the media , medical associations and other non-governmental organization. Thus the disease should be one of the major topics of health promotion in family practice to meet the women's educational needs and thereby enhance the quality of their life in older age.

Accordingly, we recommended the following; Community based health programs on osteoporosis that targeted a wide audience including the less well educated women should be implemented, encourage the health care provider to increase their counselling and advise about osteoporosis, using the media which include television, radio and newspaper in effective way for health education, using video tapes and leaflets about osteoporosis for women while they are in the waiting

area in hospital and arrangement visiting to school and colleges where health care provider can educate young girls about osteoporosis and the importance of using simple preventable measures.

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