

## Women Knowledge, Attitude and Practices About Osteoporosis Prevention “Riyadh Saudi Arabia”

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**Abstract:** The aim of this study was to assess Saudi women knowledge, attitudes and practices about osteoporosis preventive measure. The design was Quantitative, descriptive correlative, cross-sectional design. Setting: Primary Health Care centers, Saudi Arabia, Riyadh city and King Saud University out of Riyadh University. A 500 women. The subjects were chosen by simple random from the previous sittings. A structural interview questionnaire (for house wife/illiterate) and questionnaire sheet (for employee women) were developed by the researcher. Data collected through structure questionnaire interview during the period from (January 2009 to January 2011). Result revealed that majority of women in both groups (housewife and working) had satisfactory knowledge and attitude scores, but they failed to follow health promotion activities / practices toward osteoporosis and its prevention. However, significant correlation was found between their knowledge scores and their attitude level scores. The author recommend a future studies to explore healthy life style practices.

**Key words:** Attitude • Life Style Factor • Bon Mass

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### INTRODUCTION

Osteoporosis is diagnosed when bone mineral density less than 2.5 standard deviations below the mean of normal young subjects. Loss of bone mass is a universal phenomenon associated with aging. Age-related loss begins soon after the peak bone mass is achieved (ie, in the fourth decade). Calcitonin, which inhibits bone re-absorption and promotes bone formation, is decreased. Estrogen, which inhibits bone breakdown, decreases with aging. On the other hand, parathyroid hormone increases with aging, increasing bone turnover and re-absorption. The consequence of these changes is net loss of bone mass over time. The osteoclasts are defective and are unable to re absorb bone in their usual fashion so the osteoblast operate unopposed. The result is a steady increase in bone density, neurologic defects due to narrowing and distortion of foramina through which nerves normally pass and hematologic abnormalities due to crowding out of the marrow cavities. Osteoporosis is caused by a relative excess of osteoclastic function. Loss of bone matrix in this condition is marked and the incidence of fracture is increased [1, 2].

Certain risk factors are linked to the development of osteoporosis and may contribute to an individual's likelihood of developing the disease. Many people with osteoporosis have several risk factors, but others who develop the disease have no known risk factors. Women are more likely to develop osteoporosis than men for 3 main reasons, first, women normally have a lower peak bone mass than men, second, women experience an accelerated loss of bone following the hormonal changes associated with menopause and third, women generally live longer than men so they continue to experience the bone loss associated with aging for a longer time. Adult women have less bone mass than adult men and after menopause they initially lose it more rapidly than men of comparable age do. Consequently they are more prone to development of serious osteoporosis. The cause of the bone loss after menopause is primarily estrogen deficiency and estrogen treatment arrest the progress of the disease [3, 4].

Al-Maatouq [5] assessed the prevalence of osteoporosis among Saudi Arabia postmenopausal women with non-insulin dependent type 2 diabetes mellitus. The results found that osteoporosis is more

common among Type 2 postmenopausal females compared to another group without type 2 diabetes mellitus. On the other hand, women with type 2 diabetes mellitus complain of Vitamin D deficiency, multi-parity, non exposure to sun, lack of exercise and negligible milk intake and low bone mineral density which are related to causes of osteoporosis.

In Europe and North America about 6% of men and 21% of women aged 50-84 years are classified to have osteoporosis. Osteoporosis causes an increase, in bone fragility. Its clinical significance mainly refers to hip fractures secondary to low or moderate trauma. Although it is well accepted that exercise is essential for the management of osteoporosis [6].

Age is a major risk factor for osteoporosis. Aging causes bones to thin and weaken. Bones weaken as we age, making the disease a greater threat for older people. As people age, their risks for osteoporosis increase. El-Desouki [7] reported that osteopenia and osteoporosis were more common in individuals above the age of 50 than those below 50 years old. Heredity is one of the most important risk factors for osteoporosis [7-9].

Lifestyle factors such as diet and exercise are another risk factor. Diet plays an important role in preventing and speeding up bone loss in men and women. A balanced diet including adequate calcium and vitamin D must be consumed. Physical activity in youth promotes the achievement of optimal peak bone mass. Bone formation is enhanced by the stress of weight and muscle activity [10, 11]. It is never too late, or too early to treat or prevent osteoporosis. Building strong bones when you are young is the best defense against getting osteoporosis later on in life [4, 12]. Clients' education is another preventing measure [13]. Community health nurse plays an important role in preventing & controlling of osteoporosis and preventing injuries in clients who have osteoporosis. Studies have reported level of knowledge about osteoporosis in women age 25-44 years. The results revealed that most of women has low knowledge about osteoporosis. Therefore, the aim of this study is to assess Saudi women knowledge, attitudes and practices about osteoporosis preventive measure.

#### **Objectives of the Study:**

- To describe level of women knowledge, attitude & prevention toward osteoporosis prevention.
- To estimate the presence of health practices of the subjects.

- To correlated between house wife & working women knowledge, attitude and practices toward osteoporosis prevention.

#### **MATERIALS AND METHODS**

**Design:** Quantitative, Descriptive Correlative, Cross-sectional Design.

**Setting:** Two setting were selected for this study: a Primary Health Care center in Riyadh city. A weighted random sample of 10 PHCCs out of 74 centers in Riyadh were chosen after stratification by the socioeconomic status and population density. King Saud University out of Riyadh University.

**Subjects:** The total number of the study subject were around 500 women. The subjects were chosen by simple random from the previous sittings as following: Two hundred fifty women who attended the primary center. Two hundred fifty female employees who working at King Saud University. The subjects in two places were chosen simple random according to the following criteria: They were willing to shared in the study, their nationality is Saudi, their age ranged between 25 & 45 years, women who attend the primary health center must be house wife.

**Tool of the Study:** A review of the literature and of the resources pertaining to the knowledge, attitude and practices of osteoporosis prevention synthesized from previous studies[14-18]. The literature review led to the decision to selected women's knowledge, attitude and practices to osteoporosis and its prevention. A structural interview questionnaire (for house wife/illiterate) and questionnaire sheet(for employee women) were developed by the researcher.

**Ethical Consideration:** Official permission to conduct the study was obtained from the responsible authorities at Ministry of health & King Saud University as well as director of primary Health Center in each sector and region in Riyadh city and director of each KSU building (college / deanship) for carrying out the study. The researcher obtain informed consent from each women after explanation of the objective of the study and confidential issues.

**Developing the Tool:** A Jury member who a penal of nine expert professional staff was selected to establish the content validity of each question.

**Pilot Study:** Pilot study of adult women who were considered a representative sample of the target population. Pilot study was conducted on 10%.

**The Actual Study:** Data collected through structure questioner interview during the period from (January 2009 to January 2011). The average time spent for collecting data from each client and working women were approximately 30 to 40 minutes for both interview and questionnaire sheet. Working women filled the questioners sheet in their offices during their working hours, house wives were interviewed in the Primary Health Center in the morning shift. Women consent was taken, then the aim of study and assure of them that these data will be confidential.

**Statistically Analysis:** The collected data were coded, organized, tabulated and statistically analyzed using SPSS soft were computed package version 15. The number and the percent distribution, mean and standard deviation, chi square & p value were calculated. The questionnaire had a Fergson sigma of 0.96, Cronbach's  $\alpha$  (alpha) of 0.70 and factor consistent with knowledge, attitude and practice being measured. Significance was adopted at  $p < 0.05$  for interpretation of significant tests.

## RESULTS

**The General Characteristics of the Sample:** Table 1 shows percent distribution of the studied subjects (housewife & working women) according to their socio-demographic characteristics. Women age ranged between 20-45 years old, with  $\bar{x} \pm SD$  ( $33.59 \pm 6.86$ ) for the total subjects. Slightly less than half (42.4%) for both groups (housewife & working women) their age ranged between 20 to 30 years old and between 30 to 40 years respectively. The rest (13.8 %) of women their age group ranged between 40 to 45 years old.

Regarding to educational level, more than three quarter (77.6 %) of studied subjects were secondary &/ or university level. While 7.2 % & 15.2 % of them were illiterate or/ & read and write and elementary & intermediate level respectively.

Slightly more than half (53.6%) of studied subjects were married compared to 31.8 % and 14.6% were single & divorced or widowed respectively.

In relation to the number of children, slightly less than half (41.4%) of studied subjects they haven't children. Slightly more than quarter (27.4 % & 23.4%) of studied subjects were had one to three children & 4 to 6

children respectively. The rest (7.8 %) of studied subjects had 7 & more children

Regarding to income, it was ranged from less than 5000 to more than 10,000 SR. slightly less than half (49.0%) of the studied subjects their income ranged between 10000 SR & more. Thirty three point two percent and 17.8% of them their income ranged between 5000 to 10,000 and less than 5000 RS respectively.

As regard to number of pregnancy, it was ranged between less than 3 to more than 8 number of pregnancy, with  $\bar{x} \pm S.D$  ( $4.3 \pm 2.74$ ). Slightly more than half (54.7%) of them had three or less time frequency of pregnancy. Forty five point two percent of them had 4 to 7 time frequency of pregnancy. The rest (1.8%) of them had 8 and more frequency of pregnancy.

Table 2 illustrates Percent distribution of the studied subjects (housewife & working women) according to their total score knowledge about osteoporosis & its prevention. Less than half (39.8%) of the studied subjects had un-satisfactory level of knowledge compared to (16.4%) of them had satisfactory level of knowledge. While 24% of them had good knowledge compare to 19.0% had very good knowledge. Statistically significant difference was found between subjects knowledge ( $\chi^2=14.38$ ,  $P= 0.002$ ). The mean score was ( $\bar{x} \pm SD$   $30.25 \pm 10.24$ ) out of 54. Table 3 illustrates Percent distribution of the studied subjects (housewife & working women) according to their total score of attitude osteoporosis& its prevention. As regard to total score of attitude about osteoporosis & its prevention, slightly less than one fifth (17.4%) of the studied subjects was strongly agree. More than half (52.8%) of them was agree. The mean score was  $\bar{x} \pm SD$   $35.91 \pm 8.23$  out of 50. Statically significant difference was not found.

Table 4 shows Percent distribution of the studied subjects (housewife& working women according to their practices related health promotion. More than half (56.6%) of the studied subjects reduced salt daily. Slightly less than three quarter (96.8%) of them keeping weight control. While less than quarter (15%)of them measuring bone density yearly. Slightly less than quarter (23.6%) of them following their health status regularly.

Table 5 illustrates correlation between subjects total score of knowledge level about osteoporosis& its prevention to their socio demographic data. Statistically significant correlation was found between working women and their education ( $X^2=20.4$ ,  $p=0.000$ ), working women and their number of children ( $X^2= 16.04$ ,  $p=0.001$ ), working women and their number of pregnancy ( $X^2=12.58$ ,  $p=0.002$ ).

Table 1: Percent distribution of the sample according to their socio-demographic characteristics

Variables	Housewife (n=250)		Working (n= 250)		Total (n= 500)			
	No.	%	No.	%	No.	%		
Age in years:								
20-	121	48.4	93	37.2	214	42.8		
31-	85	34.0	127	50.8	212	42.4		
41-45	44	17.6	30	12.0	69	13.8		
$\bar{x} \pm SD(33.59 \pm 6.86)$								
Educational Level:								
Illiterate or Read and write	30	12.0	6	2.4	36	7.2		
Elementary level & Intermediate level	61	24.4	15	6.0	76	15.2		
Secondary level, University level & above	159	63.6	229	91.6	388	77.6		
Marital Status:								
Single	108	43.2	51	20.4	159	31.8		
Married	104	41.6	164	65.6	268	53.6		
Divorced or Widowed	38	15.2	35	14.0	73	14.6		
No. of Children:								
Non	126	50.4	81	32.4	207	41.4		
Less than 3	48	19.2	89	35.6	137	27.4		
4-	44	17.6	73	29.2	117	23.4		
7 & more	32	12.8	7	2.8	39	7.8		
Income:								
Less than 5000 -	41	16.4	48	19.2	89	17.8		
5000 -	93	37.2	73	29.2	166	33.2		
10,000 & more SR.	116	46.4	129	51.6	235	47.0		
Income satisfaction:								
Satisfy	96	38.4	154	61.6	250	50.0		
Not satisfy	154	61.6	96	38.4	250	50.0		
No. of Pregnancy								
Less than 3 times.	(n=121)	46	38.0	(n=166)	87	52.4	133	54.7
4 to 7	43	35.5	67	40.3	110	45.2		
8 & more	32	26.4	12	7.2	44	1.8		
$\bar{x} \pm S.D(4.3 \pm 2.74)$								

Table 2: Percent distribution of the sample according to their total score of knowledge about osteoporosis & it prevention

Knowledge score level	House wife (n=250)		Working (n=250)		Total (n=500)		$\bar{x}$	SD	X <sup>2</sup>	Sig.
	No	%	No	%	No	%				
Un satisfactory knowledge	114	22.8	85	17.0	199	39.8				
Satisfactory knowledge	37	7.4	45	9.0	82	16.4				
Good knowledge	66	13.2	58	11.6	124	24.8	30.25	10.24	14.38	0.002*
Very good knowledge	33	6.6	62	12.4	95	19.0				
Total score (54)										

\*Statistically significant at p<0.05

Table 3: Percent distribution of the sample according to their total score of attitude osteoporosis& its prevention

Attitude score level	House wife (n=250)		Working (n=250)		Total (n=500)		$\bar{x}$	SD	X <sup>2</sup>	Sig.
	No	%	No	%	No	%				
Don't know	22	4.4	9	1.8	31	6.2				
Disagree	15	3.0	17	3.4	32	6.4				
Strongly disagree	48	9.6	38	7.6	86	17.2	35.91	8.23	10.12	0.038*
Agree	130	26.0	134	26.8	264	52.8				
Strongly agree	35	7.0	52	10.4	87	17.4				
Total score (50)										

Table 4: Percent distribution of the sample according to their Practice related health promotion

Variables	Housewife (n=250)		Working (n= 250)		Total (n= 500)		x̄	SD
	No.	%	No.	%	No.	%		
Reduce salt daily	136	54.4	147	58.8	283	56.6	1.43	0.49
Keep weight control	183	73.2	166	66.4	349	69.8	1.30	0.46
Measure bone density yearly	31	12.4	44	17.6	75	15.0	1.85	0.36
Following health regularly	62	24.8	56	22.4	118	23.6	1.76	0.43
Total score(4)								

Table 5: Correlation between subjects total score of knowledge level about osteoporosis& its prevention to their socio demographic data.

Socio demographic variables	House wife (n=250)				Worker (n=250)			
	Satisfy		Unsatisfied		Satisfy		Unsatisfied	
	No	%	No	%	No	%	No	%
Age group								
20 -30	71	28.4	50	20.0	65	26.0	29	11.6
31 -45	65	26.0	64	25.6	100	40.0	56	22.4
Total	136	54.4	114	45.6	165	66.0	85	34.0
X <sup>2</sup> /P value	(1.73, p=0.11)				(0.67, p=0.25)			
Education level								
Elementary level and less	26	10.4	29	11.6	6	2.4	8	3.2
Intermediate level	20	8.0	16	6.4	3	1.2	4	1.6
Secondary level	34	13.6	31	12.4	27	10.8	30	12.0
University and Above	56	22.4	38	15.2	129	51.6	43	17.2
Total	136	54.4	114	45.6	165	66.0	85	34.0
X <sup>2</sup> /P value	(2.28, p=0.517)				(20.4, p=0.000)*			
Marital status								
Single	57	22.8	51	20.4	37	14.8	14	5.6
Married	62	24.8	42	16.8	109	43.6	55	22.0
Divorcee	12	4.8	8	3.2	15	6.0	13	5.2
Widowed	5	2.0	13	5.2	4	1.6	3	1.2
Total	136	45.6	114	45.6	165	66.0	85	34.0
X <sup>2</sup> /P value	(6.65, p=0.084)				(3.16, p=0.367)			
Income								
Satisfy	91	36.4	76	30.4	107	42.8	47	18.8
Un satisfy	45	18.0	38	15.2	58	23.2	38	15.2
Total	136	54.4	114	45.6	165	66.0	85	34.0
X <sup>2</sup> /P value	(0.002, p=0.53)				(2.17, p=0.09)			
No of pregnancy								
3>	25	20.7	21	17.4	67	40.4	20	12.0
4-7	23	19.0	20	16.5	34	20.5	33	19.9
4>	19	15.7	13	10.7	6	3.6	6	3.6
Total	67	55.4	54	44.6	107	64.5	59	35.5
X <sup>2</sup> /P value	(0.29, p=0.32)				(12.58, p=0.002)*			

(\*) Statistically significant at p<0.05

Table 6 shows corellention subjects total score of attitude level about osteoporosis and its prevention to their socio demographic data. Statistically significant correlation was found between house wife and their age (X<sup>2</sup>= 21.55, p=0.001), house wife and working women and their level of education (X<sup>2</sup>= 26.06, p=0.001 and X<sup>2</sup>= 51.21, p=0.001 respectively),

house wife and their marital status (X<sup>2</sup> = 38.62, p=0.100), working women and their income (X<sup>2</sup> = 6.4, p=0.42 and 7.9, X<sup>2</sup>= 7.9, p=0.019 respectively) and house wife& working women and their number of pregnancy (X<sup>2</sup>=13.6, p=0.009 & X<sup>2</sup>=23.6, p=0.001 respectively) and house wife's and their drinking coffee (X<sup>2</sup>=13.4, p=0.001).

Table 6: Correlation subjects total score of attitude level about osteoporosis& its prevention to their socio demographic data

Socio demographic variables	House wife (n=250)						Worker (n = 250)					
	Don't know		Disagree		Agree		Don't know		Disagree		Agree	
	No	%	No	%	No	%	No	%	No	%	No	%
Age group												
20 -30	3	1.2	22	8.8	96	38.4	2	0.8	16	6.4	76	30.4
31 -45	19	7.6	41	16.4	69	27.6	7	2.8	39	15.6	110	44.0
Total	22	8.8	63	25.2	165	66.0	9	3.6	55	22.0	186	74.4
X <sup>2</sup> /P value	(21.55, p=0.001)*						(3.45, p=0.178)					
Education level												
Elementary level and less	9	3.6	18	7.2	28	11.2	4	1.6	5	2.0	5	2.0
Intermediate level	5	2.0	16	6.4	15	6.0	2	0.8	0	0	5	2.0
Secondary level	3	1.2	15	6.0	47	18.8	2	0.8	18	7.2	37	14.8
University and Above	5	2.0	14	5.6	75	30.0	1	0.4	32	12.8	139	55.6
Total	22	8.8	63	25.2	165	66.0	9	3.6	55	22.0	186	74.7
X <sup>2</sup> /P value	(26.06, p=0.001)*						(51.21, p=0.001)*					
Marital status												
Single	2	0.8	25	10.0	81	32.4	1	0.4	13	5.2	37	14.8
Married	10	4.0	31	12.4	63	25.2	4	1.6	32	12.8	128	51.2
Divorce	2	0.8	6	2.4	12	4.8	3	1.2	8	3.2	17	6.8
Widowed	8	3.2	1	0.4	9	3.6	1	0.4	2	0.8	4	1.6
Total	22	8.8	63	25.2	165	66.0	9	3.6	55	22.0	186	74.4
X <sup>2</sup> /P value	(38.62, p=0.100)*						(9.88, p=0.130)					
Income												
Satisfy	15	6.0	34	13.6	118	47.2	2	0.8	39	15.6	113	45.2
Un satisfy	7	2.8	29	11.6	47	18.8	7	2.8	16	6.4	73	29.2
Total	22	8.8	63	25.2	165	66.0	9	3.6	55	22.0	186	74.4
X <sup>2</sup> /P value	(6.4, p=0.42)*						(7.9, p=0.019)*					
No of pregnancy												
3>	7	5.8	10	8.3	29	24.0	3	1.8	15	9.0	69	41.6
4-7	1	0.8	12	9.9	30	24.8	1	0.6	14	8.4	52	31.3
4>	7	5.8	14	11.6	11	9.1	4	2.4	2	1.2	6	3.6
Total	15	12.4	36	29.8	70	57.9	8	4.8	31	18.7	127	76.5
X <sup>2</sup> /P value	(13.6, p=0.009)*						(23.6, p=0.001)*					
Drinking coffee												
yes	15	6.0	48	19.2	150	60.0	8	3.2	42	16.8	163	65.2
No	7	2.8	15	6.0	15	6.0	1	0.4	13	5.2	23	9.2
Total	22	8.8	63	25.2	165	66.0	9	3.6	55	22.01	86	74.4
X <sup>2</sup> /P value	(13.4, p=0.001)*						(4.4, p=0.112)					

(\* ) Statistically significant at p<0.05

Table 7: Correlation between subjects knowledge score level to their attitude about osteoporosis & its prevention

Study subjects	Knowledge level	Attitude level					Total (500)	X <sup>2</sup>	Sig.
		Don't know	Disagree	Agree					
House wife	Unsatisfactory	No.	13	32	69	114	3.25	0.197	
		%	5.2	12.8	27.6	45.6			
	Satisfactory	No.	9	31	96	136			
		%	3.6	12.4	38.4	54.4			
Working	Unsatisfactory	No.	9	30	46	85	34.94	0.001*	
		%	3.6	12	18.4	34			
	Satisfactory	No.	0	25	140	165			
		%	0	10	56	66			

(\* ) Statistically significant at p<0.05

Table 8: Percent distribution of the sample according to their Practice regarding osteoporosis

Statements	Housewife N=250		Work N=250		Total N=500	
	No.	%	No.	%	No.	%
<b>Eating fish</b>						
Daily	15	6	16	6.4	31	6.2
Twice Triple / week	129	51.6	172	68.8	301	60.2
Not at all	106	42.4	62	24.8	168	33.6
<b>Total score (3)</b>						
$\bar{x} \pm SD$	2.94±1.01		2.66±.92		2.80 ±.98	
<b>Drinking milk</b>						
Daily	113	45.2	107	42.8	220	44
Twice Triple/ week	80	32	110	44	190	38
Not at all	57	22.8	33	13.2	90	18
<b><math>\bar{x} \pm SD</math></b>						
Total score (3)	2.12±1.21		2.00± 1.05		2.02 ± 1.14	
<b>Eating Broccoli</b>						
Daily	8	3.2	10	4	18	3.6
Twice & Triple / week	36	14.4	59	23.6	95	19
Not at all	206	82.4	181	72.4	387	77.4
<b><math>\bar{x} \pm SD</math></b>						
Total score (3)	3.65±0.79		3.54±.83		3.60 ±.82	
<b>Drinking coffee</b>						
Daily	216	86.4	180	72.0	396	79.2
Twice & Triple / week	30	12	33	13.2	63	9.6
Not at all	4	1.6	37	14.8	41	8.2
<b><math>\bar{x} \pm SD</math></b>						
Total score (3)	3.95±0.34		3.95 ±.38		3.95 ±.37	
<b>Smoking cigarettes</b>						
Daily	1	0.4	5	2	6	1.2
Twice & Triple / week	6	2.4	5	2	11	2.2
Not at all	243	97.2	240	96	483	96.6
<b><math>\bar{x} \pm SD</math></b>						
Total score (3)	3.95±0.27		3.91±.48		3.93 ± .39	
<b>Smoking shisha</b>						
Daily	0	0	4	1.6	4	0.8
Twice/ week	5	2.0	7	2.8	12	2.4
Not at all	239	95.6	233	93.2	472	94.4
<b><math>\bar{x} \pm SD</math></b>						
Total score (3)	1.51±1.04		1.55 ±1.05		1.53±1.04	
<b>Practicing exercise</b>						
Daily	50	20.0	57	22.8	107	21.4
Twice & Triple / week	55	22	52	20.8	107	21.4
Not at all	145	58.0	141	56.4	286	57.2
<b><math>\bar{x} \pm SD</math></b>						
Total score (3)	3.05±1.23		2.98 ±1.27		3.01±1.25	
<b>Exposing to sun light</b>						
Daily	126	50	120	48.0	245	49.0
Twice & Triple / week	65	26	85	34	151	30.2
Not at all	59	23.6	45	18.0	104	20.8
<b><math>\bar{x} \pm SD</math></b>						
Total score(3)	2.08±1.25		2.01 ±1.16		2.05 ±1.20	

Table 7 illustrates the correlation between subjects knowledge score level to their attitude about osteoporosis & its prevention. Statistically significant correlation was found between working women knowledge & attitude ( $\chi^2=34.94$ ,  $P=0.001$ ).

Table 8 illustrates percent distribution of the studied subjects (housewife & working women) according to their practices regarding osteoporosis. In relation to eating fish, limited percentage (6.2%) of studied subjects eating fish daily while slightly less than quarter (19.4%) of them ate it three times/ week. The mean score was  $2.80 \pm 0.98$  out of 3.

About drinking milk daily, slightly less than half (44%) of them drank milk daily. Limited percentage (13.6%) of them drank it three times / week. The mean score was  $2.02 \pm 1.14$  out of 3.

As regard to eaten Broccoli, only three point six percent & 8.6% of the studied subject ate Broccoli daily & three times/ week respectively. The mean score was  $3.60 \pm 0.82$  out of 3.

Regarding drank coffee, more than three quarter (79.2%) of the studied subjects drank coffee daily. While 9.4% of them drank coffee three times per week. The mean score was  $3.95 \pm 0.37$  out of 3.

As regard to smoking and Shisha, little percentage (1.2 % & 1.4%) of studied subjects had smoking daily and three times/week respectively. Very little percentage (0.8% % 2.4%) of them had smoking & shisha daily & triple/week respectively. The mean score for (smoking) was  $3.93 \pm 0.39$  out of 3. The mean score for (shisha) was  $1.53 \pm 1.04$  out of 3.

About (21.4 % & 8.4%) of studied subjects practicing exercise daily and three times / week respectively. The mean score was  $3.10 \pm 1.25$  out of 3.

As regard to sun exposure, slightly less than half (49.0%) of studied subject exposed daily to sun light. While little percentage (12.2%) of them exposed to sun three times per week. The mean score was  $2.05 \pm 1.20$  out of 3.

More than half (56.6%) of studied subjects ate vegetable daily. While only 16.0% of them ate three times/week. The mean score was  $1.64 \pm 0.83$  out of 3.

Slightly less than half (44.2%) of studied subject ate fruits daily comparing to slightly more than quarter (23.2%) of them ate fruit three times/week. The mean score was  $1.87 \pm 0.91$  out of 3.

## DISCUSSION

In order to plan for the prevention of osteoporosis among women, sufficient information about women's

health beliefs and knowledge is necessary and to change the health behavior related to modifiable risk factors of osteoporosis. It necessary to be familiar with the women's practice in case of prevention and also their cultural and socioeconomic features [14]. The present study is important in that it examined the osteoporosis knowledge, attitude and practices in two different Saudi women groups (housewife and working women), to find the association of their knowledge and attitude characteristics with their preventive practices.

In general, the study revealed that, majority (two thirds) of women in both groups have satisfactory knowledge scores and attitude level scores toward osteoporosis and its prevention. As well as they failed to follow health promotion activities / practices (Tables 2- 4). However, significant correlation was found between their knowledge scores and their attitude levels (Table 7). The reason behind this findings could be related to that women paid much attention to osteoporosis and preventive measures. This findings are similar to a study done by Rauda [15].

The cumulative present knowledge scores regarding eight dimensions related to osteoporosis and its prevention among the studied women in both groups were satisfying (60.2%). However, 19% of them obtained very good knowledge and 24.8% of them got good knowledge. Working group had slightly improved knowledge scores than housewives group (Table 2). This findings are paralleled by a study done by Orces [16].

On the other hand, in contrast with previous studies investigating osteoporosis knowledge amongst women from adolescence to post menopause in different countries including Taiwanese women's [17], Turkish women's [13], American women's [18] and Iranian women's [19]. In these studies, women obtained scores indicated that knowledge about osteoporosis were poor or limited.

Socioeconomic factors determined by educational level, occupation and income. The present study results illustrated that two thirds of Saudi women in both groups had secondary / higher educational level. Half percent of them have satisfactory income. This results is supported by the views of Ho *et al.* [20]. Their views is higher educational level may be related to higher income correlated with healthy life style behavior such as healthy diet selection and practicing more exercise.

Statistically significant correlation were found between group of working women knowledge score about osteoporosis and its preventive measures to their



educational level, number of children and number of pregnancy (Table 6). Women in both groups in this study seemed to possess satisfactory attitude level scores toward ten statements related to osteoporosis and its prevention (70.2%). However, their mean score attitude level ranged between strongly agreement (17.4%) and agreement (52.8%) (Table 3). Women in both groups obtained higher mean score attitude level toward "they feel them and their family members susceptible to osteoporosis". This result is similar to findings of Edmonds [21]. Osteoporosis can be detectable and treated easily [15].

Statistically significant correlations were found between total mean score attitude level to women in both groups toward their educational level, income and number of pregnancies. However, total mean score attitude level of housewives group were correlated significantly to their age group, marital status and drinking coffee (Table 6).

Women practices to osteoporosis and its prevention, in this study were toward eight behaviors. Five behaviors considered positive actions such as eating food rich calcium "fish, milk and Broccoli", exercise and exposure to sunlight. While three activities considered negative practices that include coffee, smoking cigarettes and smoking shisha. Overall practice scores were lower across women in both groups in this study (Table 8).

As regard to women positive behavior to "eating food rich calcium", present women consumed foods that rich calcium and frequency was distributed over the week. The calcium sources was from fish (66.4%), milk (72%) and prickly (22.7%) (Table 8). This result is similar to study done by Dehghan *et al.* [22]. Calcium intake is the most important part in bone construction. It is suggested that dietary calcium should be taken every day to build strong bone [23].

Another positive behavior in the current study is practicing exercise, 42.8% of women in both groups reported practicing exercise (Table 8). This result is inconsistent in the study done by Edmonds [21]. Beneficial effects of exercise on the skeletal system which enhance bone growth [24].

Majority of women in both groups in this study exposed to sunlight and frequency was distributed over the week (79.2 %) (Table 8). Combining with calcium, vitamin D, sunshine exposure is a natural source of vitamin D with 10 to 15 minutes of sunlight several days a week is enough for human body produces adequate quantities of vitamin D. Vitamin D is likely to occur in regions with plentiful sunshine.

Smoking cigarettes in the present study was very low among the studied subjects in both groups. It could be to Islamic reason. As well as, smoking shisha between women (Table 8). Similar results with Lysen *et al.* [25]. Smoking reduces bone mineral density by decreasing the amount of calcium absorbed from food [26-27].

Knowledge alone is insufficient to bring about significant improvement in preventive behaviors. Knowledge can influence health related behaviors when mediated by attitudes, beliefs, self efficacy and an effective call to action.

## CONCLUSION

It is concluded that majority of women in both groups (housewife and working) have satisfactory knowledge and attitude scores, but they failed to follow health promotion activities / practices toward osteoporosis and its prevention. However, significant correlation was found between their knowledge scores and their attitude level scores.

## Recommendations are Suggested:

- Recommendations to raise women knowledge, attitude and practices toward osteoporosis and its prevention.
- Recommendations to health authorities to improve early case finding through bone mineral density measurement.
- Future studies to explore healthy life style practices.

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