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Full Length Research Paper

Effect of organized educational sessions on women's knowledge and perception toward the risk factors for osteoporosis

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Abstract

Background: Osteoporosis is a silent disease that causes bones to become thin and weak and increases the risk for broken bones. Osteoporosis prevention have several aspects including health education, nutrition, exercise, lifestyle modification and early screening. Aim of the current study has two folds; 1)-to assess the level of knowledge and perception among women toward the risk factors for osteoporosis and 2)- to evaluate the influence of organized educational sessions on women knowledge and perception for osteoporosis. A quasi-experimental design (One group pretest – post-test only) was utilized for this study. A total of 230 women were recruited from four settings in Kingdom of Saudi Arabia. Three tools were used to collect the data; 1)-Structured interviewing questionnaire 2)-knowledge assessment questionnaire and 3)-Perception assessment questionnaire. Three health education sessions per week two days interval were done. Results: the mean age of the sample was 32.96 ± 12.2 years old. More than ninety two percent of them were working. Before the educational session, more than eighty percent of the participants had poor level of knowledge compared to only 20.4% during post test with statistical difference between pre and post test (t= 18.7, P<0.001). In addition, 26.5% of the women perceived osteoporosis as dangerous disease such as cancer. While more than forty percent of them perceived the benefits of physical activity and its importance in developing a strong bone. Conclusion: More than half of the sample had neutral perception about the risk factors and dangers for the disease. The organized educational sessions had a positive effect and improved their level of knowledge and perception toward the risk factors for osteoporosis. Recommendations: Educational sessions facilities and methods about osteoporosis as; lectures, handout, and videos should be developed and become accessible to all women's clinics. Also, Mass media can play an active role to raise the women's awareness about risk factors of osteoporosis.

Keywords: Osteoporosis, Knowledge, Perception, Risk factors, Organized educational sessions.

INTRODUCTION

Osteoporosis is a progressive bone disease that is characterized by a decrease in bone mass and density in which bones become fragile and easily to fracture (National library of medicine, 2012; Kimble , Young, Kradjan & Guglielmo, 2013). Fracture is a frequent and often life-altering consequence of osteoporosis. Timely and effective intervention can make the difference between recovery and chronic disability, even death (Graham *&* Kelly, 2011). Usually the bone loses density, which measures the amount of calcium and minerals in the bone (National library of medicine, 2012). Women are more likely to have osteoprosis than men and can occur at any age (Facts, 2013; Vann, 2013). Osteoporosis poses a significant health problem. As the population ages, its incidence increases (Giangregorio et al., 2010). It is a major public health problem associated with

fracture-related morbidity. Osteoporotic fracture is the main complication of osteoporosis (Burge et al., 2007; Nazrun, Tzar, Mokhtar & Mohamed, 2014). The prevalence of osteoporosis is continuing to heighten with dramatically increase affecting a third of postmenopausal women in Europe. It can cause fractures and disability (Kavanagh, 2015). An estimated 300,000 people in Ireland have osteoporosis and approximately 200 million people worldwide are affected by the condition. One in 5 men and 1 in 2 women over the age of 50 will develop a fracture due to osteoporosis in their lifetime (Leslie & Morin, 2014; Kavanagh, 2015). In the United States, more than 40 million people either already have osteoporosis or / and at high risk due to low bone mass (Giangregorio et al., 2010). Moreover, in Saudi Arabia, osteoporosis is a serious issue. With the kingdom's population of 1,461,401 aged 50 or more, approximately 8,768 suffer from femoral fractures each year, costing yearly 1.14 billion in health care cost (Leslie & Morin, 2014). There are no symptoms in early stages of osteoporosis. Several times, people will have a fracture before know that they have the disease. Pain almost anywhere in the spine can be caused by fractures of the bones of the spine. They often occur without an injury (Brody, 2012). The pain occurs suddenly or slowly over time and loss of height. In addition, stooped posture or kyphosis may develop (Park-Wyllie et al., 2011 ; Brody, 2012).

Several factors play a role in determining peak bone mass in individual, and should always be considered in assessment. Males achieve a higher peak bone mass, and they have a lower incidence of osteoporotic fracture than women (Al Jurayyan, Al-Jurayyan & Al-Jurayyan, 2012). Risk factors for osteoporotic fracture can be divided into non modifiable and modifiable risk factors (Waugh et al., 2009). Non modifiable risk factors include; gender, ethnicity, body type, age, and past family history (Estanislao, 2013; Sinnesael et al., 2013). Small “thin boned” body, Caucasians and Asians are also at higher risk for developing osteoporosis (Sinnesael et al., 2013). While, poor nutritional behaviors, insufficient calcium or vitamin D consumption; excessive intake of alcohol, and caffeinated drinks are modifiable risk factors. In addition, sedentary lifestyle; smoking, chronic illness and prolonged use of certain medications as steroids and anticonvulsants were proved to have a role in the development of osteoporosis (Al Jurayyan et al., 2012; Mohamad & Tayel, 2012; Estanislao, 2013). Heath care provider can influence and modify these factors, by increase the awareness and contribute actively to its prevention and share in the appropriate management (Al Jurayyan et al., 2012). Recent research has focused on prevention of osteoporosis rather than management. Treatment for osteoporosis may involve lifestyle changes such as diet and exercise, taking calcium and vitamin D and using medicines (Brody, 2012). Osteoporosis is a growing chronic health problem that could result in mortalities and poor living condition, since there is deficiency in the knowledge and poor application of the preventive actions. Therefore, educational sessions are needed to improve awareness and motivating healthy behaviors (Barzanji, Alamri & Mohamed, 2013). Previous studies have mentioned that, women of all ages have a lack of knowledge about osteoporosis so, an osteoporosis-specific educational program can improve women’s knowledge and some health beliefs (Yeab, Goh & Das Gupta, 2010; Endicott, 2013). So, both health education and health promotion were very important to increase population awareness and practices of a healthy lifestyle. A key component in developing intervention is understanding what women know about the disease and to what extent they practice preventive behaviors (Wahba et al., 2010). It is important to evaluate the family history, knowledge, health beliefs, and self-efficacy of premenopausal women to provide them adequate education (Mamji, hasan & sabri, 2010). A study conducted by Jalili,(2007) found a significant relationship between the score of preventive practices and the level of education, knowledge score, perceived barriers to preventive actions. In another study the researchers found that, participants did not perceive themselves as susceptible to osteoporosis and perceived minimal barriers to calcium intake (Qaseem et al., 2008; Edmonds , Turner & Usdan, 2012; El-Sayed & Megeid, 2013).

Public Health Nurses (PHNs) are responsıble for promoting community health, preventing disease, disability and protecting the health of vulnerable populations. Therefore, PHNs need to be aware of the risk of osteoporosis and provide early counseling and prevention strategies (Zhang et al., 2012). Majority of nurses believe that osteoporosis is a problem for postmenopausal and elderly women only. Many of the lifestyle prevention behaviors that could substantially reduce risk are more important prior to menopause. Primary health care providers are responsible for health promotion and disease prevention in community populations (Yağmur, 2009).Young women need to be aware of their osteoporosis risk and take steps to slow its progress and prevent fractures (Estanislao, 2013). There are multiple ways to prevent the development of osteoporosis (Chan et al., 2007; Edmonds et al., 2012). Having a diet high in calcium and vitamin D is one important preventative measure. Weight bearing exercises are another way to assist in maintaining strong bones. Lastly, avoiding cigarette smoking and alcohol consumption is one more way to prevent the onset of osteoporosis (Brody, 2012; Sinnesael et al., 2013). Osteoporosis specific educational sessions clearly increased knowledge and some health beliefs in women with and without a family history of osteoporosis (Endicott, 2013). In Saudi Arabian, there are scatter research concerning health educational program intervention among adult women. One of the first steps for raising awareness and planning education is to

examine how much is known about the disease. Therefore, the present study contributes to a greater understanding to assess the adult women level of knowledge and perception about the risk factors for osteoporosis and evaluate the influence of organized health education sessions on women knowledge and perception about osteoporosis.

Significance of the study

Osteoporosis is the most common type of bone disease and it is characterized by low bone mass and loss of bone tissue that may lead to weak and fragile bones. It is a serious and growing problem faced by thousands of Saudi Arabian citizens each year (Saeedi et al., 2014). Osteoporosis is common in Saudi Arabia and the burden of management in an aging population will increase in coming decades (Ali et al., 2012). Also Greer et al., (2008) estimated the prevalence of osteoporosis for Saudi Arabian women aged 50-70 years to be approximately 23%. In addition, a large number of middle aged and elderly Saudi women are unaware about osteoporosis risk factors (Al-Shahrani, Al-Zahrani & Al-Haquawi, 2010).

Aims of the study

The aim of the current study has two folds :
1)-to assess the level of knowledge and perception among women toward the risk factors for osteoporosis.
2)- to evaluate the influence of organized educational sessions on women knowledge and perception for osteoporosis.

Research questions

To fulfill the aim of the current study the following research questions were formulated
1)- What is the women level of knowledge regarding the risk factors for osteoporosis?
2)- What is the women perception regarding the risk factors for osteoporosis?
3)- What are the effects of organized educational sessions on women knowledge and perception toward the risk factors for osteoporosis?

Subjects and Methods

Design

A quasi-experimental design (One group pretest – post-test only design) was utilized for this study to assess the women level of knowledge and perception toward the risk factors for osteoporosis and to evaluate the influence of organized educational sessions on women knowledge and perception toward the risk factors for osteoporosis. This design is one of the quasi-experimental design in which data collected from research subjects both before and after introducing the educational sessions (Nieswidomg, 2012).

Setting

The study carried out at four settings (college of education, applied medical science, secondary school and primary health care centers) during the academic year 1434-1435H in Shaqra Governate, Kingdom of Saudi Arabia.

Sample

A total of 230 adult women were recruited for this study. Researchers selected the women who met the following inclusion criteria; women and who express their willingness to participate and give permission for the interview.

Tools for data collection

Three tools were developed and used by the researchers according to the extensive review of literature to collect the data; 1) Structured interviewing questionnaire 2) Knowledge assessment questionnaire and 3)Perception assessment questionnaire.

1)- Structured interviewing questionnaire

Was used as a tool for data collection, it includes personal data related to age, educational level, marital status, and family history of osteoporosis was obtained from the participants. Content validity was established by a panel of three nursing faculty member.

2)-**Knowledge assessment questionnaire**

Was developed by the researchers after extensive review of the relevant current literature. The questionnaire had multiple choice formats in which the female was instructed to choose the correct answer. The questionnaire was scored in the pre and post-test. It assessed the knowledge about definition, risk factors, manifestations, prevention, diagnosis, and treatment of osteoporosis.

3)-**Perception assessment questionnaire**

Which included 21 questions that cover four partitions.

Perception about osteoporosis were measured by use of series of statements reflecting personal perception that women may have osteoporosis, women respond to these statements by using 3 points rating scale from agree to natural and disagree. It focused on the patient's perception about risk factors, dangers of the disease, benefits of physical activity, and benefits of increasing Ca intake to avoid osteoporosis.

Scoring System

Women responses to the questions regarding knowledge and perception about risk factors for osteoprosis were scored as (1) for correct answer and (0) for incorrect answer. The total knowledge scores were classified into three levels: score less than 50 was considered poor, 50-70% was considered satisfactory and good level of knowledge when more than70%.

Content validity and reliability

Tools were revised by experts in the field of maternity and community nursing to test the content validity. Modifications were carried out according to the panel judgment on clarity of sentences and appropriateness of content to achieve the aims of the current study. Reliability test was assessed by applying the questionnaire on 10 women using test-retest.

Pilot study

A pilot study was conducted for 10% (23 participants) to clarify the validity of the questionnaires and to test the research feasibility, clarity and objectivity of the tools as well as to estimate the time needed for data collection. Then modifications were done. Pilot study revealed that, the average length of time needed to complete the structured interview was approximately 30 minutes with each woman. Sample included in the pilot study were excluded from the study sample.

Procedure

Before conducting the study, permission was obtained from ethic review committee approval and administrative personnel, after that, acceptance of the women who were participated in the study. Data collection was carried out through using nursing process; interviewing and assessment, implementation and evaluation phase.

Interviewing and assessment

During this phase, questions about socioeconomic condition which include; age, family history, heredity and chronic diseases; also questions about the knowledge related to definition and risk factors related to osteoporosis, practices and life style. The time needed for completing the questionnaire was 30 minutes for each woman.

Implementation

In this phase, all recruited women divided into six groups with the average number who attend the instructional session were ranged between 35-40 women. The researchers were provided instructional program in title about osteoporosis prevention; and it was contain three instructional sessions per week two days interval, each session took about 30-45 minutes by using power point presentation, flyers, and group discussion.

The first educational session, the researchers were discussed points about definition, incidence, clinical manifestations, and diagnostic test regarding osteoporosis; the second sessions was containd the followings: who gets osteoporosis, and factors that put you at risk; the third sessions was containd the followings: building bones to last a lifetime, what you should know about calcium, vitamin D and bone health, and exercise for reducing bone fracture. The women were also given handout developed by the researchers ‘booklet’ after extensive literature review and include knowledge regarding osteoporosis in clear Arabic language with color pictures.

Evaluation phase

In this phase, the researchers evaluated the health educational sessions regarding osteoporosis by eleven questions to evaluate the influence of organized health educational sessions on women knowledge and perception about the risk factors for osteoporosis.

Human rights and ethical considerations

All women were informed that participation in this study is voluntary, they can withdraw at any time during the study without giving reasons. The researchers were explained the aims of the study to all participants. A written informed consent was obtained from women who were willing to participate in the research. Confidentiality and anonymity of the women were assured during coding of the data. Women were assured that the data were not be reused in another research without her acceptance.

Statistical analysis

Data were coded and transformed into a specially

Table 1: Distribution of socio-demographic characteristics for the studied sample (n=230).

Socio-demographic Characteristics	Studied sample n=230	
	No.	%
Age (years old):Mean ± SD	32.96 ± 12.2	
Occupation :		
• Housewife	17	7.4
• Work	213	92.6
Nature of work:-		
• setting for long time	29	12.6
• continuous movement	88	38.3
• moderate movement	113	49.1
Marital status:		
• Single	71	30.9
• Married	144	62.6
• Divorced	11	4.8
• Widowed	4	1.7
Education level		
• Illetrate	24	10.4
• Read/write	13	5.7
• Basic/intermediate	43	18.7
• Secondary	64	27.8
• High education	86	37.4

Table 2: Distribution of the Studied Sample According to their Obstetrical History (n =230)

Obstetrical History	No.	%
Age of menarche:- Mean ± SD	12.86 ± 0.8	
Have children:-		
• Yes	130	56.5
• Number of children	n=130	
	3.03 ± 1.2	
Breastfeed her babies:-		
• Yes	92	70.8
• No	38	29.2
Using Contraceptive method		
• No	180	78.3
• IUD	20	8.7
• Pills	30	13.0
Menstruation still present:-		
• Yes	204	88.7
• No	26	11.3
Remove the ovary:-		
• Yes	5	2.2
• No	225	97.8

designed format suitable for computer feeding. All entered data were verified for any errors. Data were analyzed using statistical package for social sciences (SPSS) version 19 windows and were presented in tables. Chi-square analysis were performed. Also mean and standard deviations were computed to evaluate the precipitating factors. An alpha level of 0.05 was used to assess significant differences.

RESULTS

The study sample included 230 women from Education, Applied Medical Science, Secondary School and primary health care centers during the academic year 1434-1435H for specific studies with mean age was 32.96 ± 12.2 years old. Table (1) shows that, the high percentage of women 62.6% was married, 92.6% of the participants were working with moderate movement. Most of participants had secondary and university education (27.8% and 37.4% respectively). While, the remaining participants 5.7% can read and write. Regarding obstetrical history, the mean age of menarche was 12.86 ± 0.8 year old. High percentage of women had children and breastfed their babies (56.5% , 70.8%) respectively. Also table (2) shows that, 78.3% of the participants didn't use any family planning methods and only 2.2% of them removed their ovaries.

Table (3): Distribution of the women according to their recognized risk to osteoporosis (n=230)

Risk Factors	No.	%
Categories of BMI:-		
• Underweight	5	2.2
• Normal	70	30.4
• Overweight	75	32.6
• Obese	48	20.9
• Very obese	32	13.9
Body weight (Mean ± SD)	70.9±17.5	
BMI (Mean ± SD)	27.8±5.6	
Chronic disease(N=66)		
- Diabetes	28	12.2
- Hypertension	24	10.4
- Asthma	5	2.2
- Hyperthyroidism	4	1.7
- Hypothyroidism	5	2.2
Exposure to sun		
– Yes	28	12.2
– Sometimes	61	26.5
– Rare	44	19.1
– Non	97	42.2
Take vitamins		
– Yes	40	17.4
– Sometimes	61	26.5
– Rare	14	6.1
– Non	115	50.0
Passive cigarette smoking	54	23.5
Rickets (low calcium intake)	14	6.1
Lack of activity	166	72.2

Table (4): Distribution of the risk factors that might cause osteoporosis (n=230)

Items	Yes		No	
	No.	%	No.	%
Unchangeable risks				
– Age Above 45 years	47	20.4	183	79.6
– Family history of osteoporosis	55	23.9	175	76.1
– Small body frames	12	5.2	218	94.8
Dietary factors				
– Low calcium intake.	182	79.1	48	20.9
– Beverage intake				
• < 2cups a day	115	50.0	17	7.4
• >2 cups a day	98	42.6	-	-
– Milk intake				
• < 4 Cups a week	148	64.3	48	20.9
• > 4 Cups a week	34	14.8	-	-
– Fruit intake				
• < 4 Times a week	93	40.4	51	22.2
• > 4 Times a week	86	37.4	-	-
– Vegetable intake				
• < 4 Times a week	75	32.6	115	50.0
• > 4 Times a week	40	17.4	-	-
Disturbance of Hormone levels	26	11.3	204	88.7
Lifestyle choices				
– Sedentary lifestyle.	166	72.2	64	27.8
– Tobacco use.	54	23.5	176	76.5
– Rarely exercise.	30	13.0	200	87.0

The distribution of correct responses toward the risk factors for osteoporosis shown in table (3); being overweight (32.6%), had history of diabetes and hypertension (12.2 % & 10.4%) and lack body exposure to sun and passive cigarette smoking (12.2% & 23.5%) were recognized. Regarding to physical activities, more

Table (5): Distribution of The Sample According To Their Perception Toward Osteoporosis (n =230)

Perception	Agree	Neutral	Disagree
• Perception about risk factors			
I think that, I have high chance for the disease	53.5	26.5	20.0
I think that, my body building increase the chance for the disease	17.0	60.0	23.0
I think that, I am more liable to have the disease	18.7	59.1	22.2
I think that, I have a good chance to develop the disease	18.7	58.7	22.6
I think that, I have moderate chance to have the disease	21.3	59.6	19.1
I think that, family history increase the chance for the disease	23.9	49.1	27.0
Mean percentage	25.5	52.4	22.1
• Perception about dangers of the disease			
Thinking about the disease making me afraid	37.0	44.3	18.7
If the disease happened to me I will be disabled	28.3	55.7	16.1
If the disease happened to me, my feeling about self will be changed	40.6	43.2	16.2
If the disease happened to me, it will much money for treatment	33.0	50.4	16.6
I feel depression when I think about osteoporosis	32.2	53.0	14.8
If the disease happened to me, it will be very dangerous	26.5	60.4	13.1
Mean percentage	32.9	51.2	15.9
• Perception about benefits of physical activity			
Sports in regular time prevent osteoporosis	39.6	46.5	13.9
Sports in regular time develop strong bones	44.8	44.3	10.9
Sports improve the general appearance	44.8	43.0	12.2
Sports reduce the chance for bone fractures	33.9	54.3	11.8
Sports improve feeling of satisfaction and wellbeing	17.8	63.0	19.1
Mean percentage	36.2	50.2	13.6
• Perception about benefits of increasing Calcium intake			
Enough Calcium intake prevents osteoporosis	20.8	43.5	35.7
Increasing ca intake gives many benefits	24.8	54.8	20.4
Enough ca intake can reduce the chance for bone fractures	40.0	48.2	11.8
I feel satisfaction when I take enough ca to prevent osteoporosis.	14.3	45.7	40.0
Mean percentage	25	48.05	26.95
Total mean percentage	29.9	50.47	19.63

than one hundred and sixty of the participants had lack of physical activities (72.2%) While, 27.8% knew the benefits of physical activity to prevent osteoporosis and engaged in some sort of physical activity but not in regular basis. In addition, based on statistics from Al-Anfal private hospital for patients who performed blood analysis to measure calcium and vitamin D, 46.4% of them had reduction in level of calcium in their blood than recommended level. They were confirmed as persons with high risk factors

Table (4) shows that, there were a different risk factors that might cause osteoporosis such as age above 45 years old(20.4%), family history (23.9%) and small body frame (5.2%). As regards to dietary habits, the table shows that, 20.9% of the participants did not consume enough milk, it was observed that, it is good for participants who were able to identify food rich in calcium such as; seafood, parsley, banana, and apple. In addition, dietary risk factors for osteoporosis such as drinking beverage, did not eat adequate fruits and vegetables (50.0, 22.2, 50.0%) also were reported. Further that, more than seventy percent (72.2%) of women had a sedentary lifestyle, passive smoking(23.5%) and rarely perfomed exercises(13.0%). Table (5) explores women general perception about osteoporosis. Findings were grouped into four categories; a) Perception about risk factors, b) Perception about dangers of the disease, c) Perception about benefits of physical activity and d) Perception about benefits of increasing calcium intake.Concerning perception about the risk factor, being female and family history of osteoporosis felt more susceptible to develop osteoporosis. Meanwhile, 20% of the participants perceived that, they were far from having osteoporosis. About 37% to 40.6% of the participants perceived that, occurrence of osteoporosis as change of their feeling and being afraid. Meanwhile, 26.5% of them perceived osteoporosis as dangerous disease such as cancer. Awareness and perception about physical activity were illustrated in table (5). 44.8% of the participants were

Table 6: Distribution of the women levels of knowledge before and after educational sessions (n =230)

Level of Knowledge	Before	After	*Test*	P value
• Poor ≥ 50	82.4	20.4		
• Satisfactory 50 - 70	9.5	48.6	t=18.7	<0.001
• Good ≤ 70	8.1	31.0		
Total Mean Score of Knowledge	23.13± 17.6	45.96 ±13.8		

Table 7: Summary of the women perception toward osteoporosis for the studied sample (n=230)

Perception	Agree	Neutral	Disagree
Mean percentage Perception about risk factors	25.5	52.4	22.1
Mean percentage Perception about dangers of the disease	32.9	51.2	15.9
Mean percentage Perception about benefits of modified life style	36.2	50.2	13.6
Mean percentage Perception about benefits of adequate Calcium intake	25.0	48.05	26.95
Total mean percentage	29.9	50.47	19.63

perceived the benefits of physical activities in developing strong bones, and reducing the chance of bone fracture (33.9%). As regards calcium intake as a protective against osteoporosis, approximately half of the participants perceived that, calcium intake decreases the incidence of bone fractures. Table (6) shows an improvement in the studied sample level of knowledge about osteoporosis with a statistically significant difference between pre and post test knowledge scores (P<0.001). Knowledge were analyzed by the total knowledge questions answered correctly on osteoporosis knowledge questionnaire. To analyze the difference between the two groups of knowledge scores, paired sample t-test were calculated. The average of the total osteoporosis knowledge scores of adult women was found to be 23.13± 17.6 in pretest and 45.96 ±13.8 in posttest. Table (7) reveals that, more than half of the sample had neutral perception about the risk factors (52.4%) .in addition, perception of danger of the disease (51.2%) neutrally agree. As regrds to benefits of modifiedlifestyle, more than one third of the women agreed that, life style modifications are helpful to reduce risk of osteoporosis. On the other hand, 48.05 % of the participant women had neutral perception toward the benefits of adequate calcium intake to reduce its risk.

DISCUSSION

Millions of people around the world suffer from osteoporosis because it is a silent killer disease. Moreover, primary prevention of the disease through increase the awareness about risk factors and educational session is essential. The current study aimed to assess the women level of knowledge and perception toward the risk factors for osteoporosis by introducing pre-test structured knowledge questionnaire and to evaluate the influence of organized educational sessions on women knowledge and perception for osteoporosis. Two hundred and thirty participants included in the study with the mean age was 32.96 ± 12.2 years old (table 1). High percentage of women was breastfed their babies (table 2). Other researchers studying the awareness about osteoporosis among young females with the mean age of studied group was about nineteen years old with range between sixteen to twenty four years old (Wahba et al., 2010). This may be related to age considered as risk factor in our findings. In another study, Wahba et al., (2010) observed that, being female and aging are risk factor but most of females had poor knowledge about other risk factors such as; cigarette smoking, early menopause and hereditary. This agrees with another study conducted by Endicott, (2013). Concerning risk factors for developing osteoporosis, in our study findings the correct answer to risk factors of osteoporosis were overweight, history of hypertension and diabetes, lack of body exposure to sun and passive cigarette smoking (table 3). In the same line Wahba et al., (2010) reported that, advanced age and being a female were the most common identified risk factors. In

contradictory, study done by Jalili et al., (2007) in Iran to determine knowledge, attitude and preventive practices of women above forty five years old. They found that, more than eighty percent of the participants had enough exposure to sunlight seems to be related to regional climate rather than a specific preventive act and this as protective from occurrence of osteoporosis. Other studied reported that, obesity is traditionally viewed to be beneficial to bone health because of well-established positive effect of mechanical loading conferred by body weight on bone formation, despite being a risk factor for many other chronic health disorders. Although body mass has a positive effect on bone formation, whether the mass derived from an obesity condition or excessive fat accumulation is beneficial to bone remains controversial (Cao, 2011).This may be related to low body mass index is associated with low store of body fat and lower circulating estrogen level which help to prevent loss of bone tissues (Edmonds, 2009).

In the present study,it was observed that,lack of physical activity and low calcium intake were considered as other risk factors for developing osteoporosis (table 3, 4). According to Gerend et al., (2006) who reported that, one half and one third of all women in their study mentioned that, calcium and exercises respectively as protective factor to reduce osteoporosis. Also, the present study reported that, more than twenty percent of the participants did not consume enough milk in regular base (table 4). Also several studies mentioned that, women who take diet with low milk product will associate with developing osteoporosis. In the same line, Ozturk & Sendir, (2011) illustrated that, inadequate calcium intake, age, and hereditary were the most risk factors for developing osteoporosis. In contrast Jalili et al., (2007) observed that, more than fifty percent of the studied individuals recognized cigarette smoking, corticosteroids, and female gender as risk factors for osteoporosis correctly; but most of them did not indicate about being underweight, hereditary factors, low calcium consumption, old age, and lack of activities as risk factors. Concerning perception about risk factor for osteoporosis, in our findings, it was observed that, being female and had a family history of osteoporosis felt more susceptible to develop osteoporosis. This finding is consisted with Edmonds, Turner & Usdan, (2012) who mentioned that, women with a family history of osteoporosis have almost double the risk of developing osteoporosis. In Accordance, Wahba et al., (2010) mentioned that, all participants perceived that, being female and had a family history are associated with incsreaed occurrence of osteoporosis.

Optimal physical activities are necessary for increasing bone mass in all age groups and thus perhaps decreasing the risk of osteoporosis. Some recent data have shown that, some specific exercises, in the form of short, repetitive and multidirectional mechanical loading, lead to greatest gains in bone strength (Wahba et al., 2010). In the current study women perceived that, physical activity is essential to reduce bone fracture and develop strong bone (Table5). This findings in consisted with Wahba et al., (2010) who stated that, regular exercise was important to prevent osteoporosis.

Calcium intake considered as a protective and preventive for occurrence of osteoporosis. A study conducted by Wahba et al., (2010) showed that, the mean estimated calcium intake found to be 470+ 311.5 mg/day; it is obvious the wide range of the intake. It is very lower intake and more than eighty percent of them had calcium intake less than their recommendation. In the same line, inadequate calcium intake in women has been reported in other studies Malak, (2014). In the present study women perceived calcium intake essential to prevent bone fracture (Table 5). In conclusion the present study reportd that, more than half of the sample had neutral perception about the risk factors and dangers for osteoporosis. As regrds to benefits of modified lifestyle, more than one third of women agreed that, life style modifications are helpful to reduce risk of osteoporosis. On the other hand, about half of the participant women had neutral perception toward the benefits of adequate calcium intake to reduce its risk (table 7). This finding is consistent with findings of previous studies; they mentioned that, women perceived calcium intake and regular exercise work as a barrier to prevent osteoporosis (Edmonds et al., 2012).

Because of no cure from osteoporosis, primary prevention of the disease through increase awareness about risk factors and educational program is essential. In our present study, table (6) shows an improvement for the studied sample level of knowledge about osteoporosis with a statistically significant difference between pre and post test knowledge scores ($P<0.001$). Knowledge were analyzed by the total of knowledge questions answered correctly on osteoporosis knowledge assessment questionnaire. The average of the total osteoporosis knowledge scores of adult women found to be 23.13± 17.6 in pretest and 45.96 ±13.8 in posttest. In the same line, Edmonds et al., (2012) mentioned that, total knowledge score was higher after given educational program for preventing osteoporosis. Finally health care providers should play a major role in providing information regarding osteoporosis and explain several strategies to prevent occurrence of it.

CONCLUSION

Based on the findings of the present study, it was concluded that; there is a critical need to emphasize on the importance of primary prevention as well as management of osteoporosis. More than half of the sample had neutral perception about the risk factors and dangers for the disease. The organized educational sessions had a positive effect and improved their level of

knowledge and perception toward the risk factors for osteoporosis. So, healthcare team can impact on the knowledge base as well as on the perception of women to decrease the risk for osteoporosis.

RECOMMENDATIONS

1-Educational sessions facilities and methods about osteoporosis as; lectures, handout, and videos should be developed and become accessible to all women's clinics .
2- Mass media can play an active role to raise the women's awareness about risk factors of osteoporosis.
3- Encourage women to measure the level of calcium and vitamin D on regular basis.
4-Replicate the study with large sample size and different setting to disseminate the result.

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