Knowledge and Self-Efficacy Regarding Osteoporosis Prevention among Multiparous Women Based on Health Belief Model

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Abstract

Osteoporosis is a metabolic bone disease, negatively affects all living activities of the individual, movement notably and causes fractures, pain and body image changes. (Ozturk and Sendir 2011). The aim of the study: To assess knowledge and self-efficacy regarding osteoporosis prevention among multiparous women based on health belief model. Research design: The study was carried out using a cross sectional descriptive research design at Maternal and child Health centers (MCH) at Minia City. Sample: A convenient sample of 196 multiparous women was selected. Data collection Tools: The first tool is an osteoporosis multiparous personal data questionnaire included questions related to demographic characteristics, obstetric history, personal history. The second tool is an osteoporosis knowledge assessment questionnaire to assess osteoporosis knowledge. The third tool is an osteoporosis health belief scale to measure health beliefs regarding osteoporosis. The fourth tool is an osteoporosis self-efficacy scale. Results: Forty nine and half percent of Multiparous women their age ranged from 30-35 years. More than half of multiparous women have fair level knowledge about osteoporosis with a mean 8.25 ± 3.74. in addition to 53.6% of multiparous women their perception of susceptibility reveals low, regarding severity perception reveals that 61.2% are low, regarding total health belief reveals that, 65.3% have high score positive perception with a mean score 94.71 ± 25.26. More than half of multiparous women have low self-efficacy with a mean score 36.53 ± 12.119. There is statistically significant correlation between osteoporosis self-efficacy and osteoporosis health belief. Conclusion: there was fair level Knowledge about osteoporosis, good belief about calcium intake and low self-efficacy among the majority of the multiparous women. Recommendations: It was recommended that the need of setting up of health education programs regarding osteoporosis among multiparous women .

Keywords: Osteoporosis, Knowledge, Self-Efficacy, Health Belief Model.

Introduction

Osteoporosis represents an important health concern and it has entitled the silent disease of the century. It is an asymptomatic disease and its complications can cause irrecoverable physical and financial problems to society and patients. Osteoporosis is a disease characterized by decreased bone density or loss of bone microstructure which can lead to increased risk of fracture (Khani Jeihooni, Hidarnia et al. 2017). Bone density and bone mass reduce slowly and most symptoms cannot be seen until the first fracture occurs. This disease is one of the main causes of disability in adults, this disease and fractures secondary to it are an essential reason of mortality and morbidity. About 1.6 million hip fractures occur every year worldwide; the incidence is set to increase to 6.3 million by 2050 (Elsabagh, Aldeib et al. 2015).

In the Middle East life expectancy has increased with rising urbanization, advance technology and health care, thus, escalating the risk factors of occurrence of Osteoporosis. So there are numerous risk factors leading to osteoporosis that are divided into unmodifiable risk factors including increased age, female gender, white race and family history. While, modifiable risk factors including dietary intake of calcium and vitamin D, physical activity, high parity, prolonged lactation, excessive alcohol intake and smoking. Osteoporosis is a multifactorial disease making its prevention and management complex (Sandhu and Hampson 2011). Reducing risk of osteoporosis and related fractures requires prevention and management strategies consisting primarily of adequate calcium and vitamin D intake, physical activity, timely diagnostic screening of BMD by Dual energy x-ray absorptiometry (DEXA), and appropriate drug treatment of high-risk individuals. Thus, there are recognized gaps not only in care between best practice and actual care

delivery, but also from knowledge to practice as men and women at risk of osteoporosis and fragility fractures are not engaging in preventive health behaviors (Lin, Xiong et al. 2015).

Health Belief Model (HBM) is one of the theoretical models that's used to increase the understanding of healthy behavior. It's based on the idea that individuals are willing to maintain healthy wellbeing through following health related actions to avoid undesirable health condition (Lovell, 2016). The structures of the HBM include Perceived Severity, Perceived Susceptibility, Perceived Benefits, Perceived Barriers, Modifying Variables, Cues to Action and Self-efficacy.

Community health nurses should take urgent steps through motivation and to create awareness about osteoporosis in the community by providing health education about life style modification such as doing regular aerobic exercises, exposure to sun light, maintaining normal body weight, eating calcium rich foods, intake of calcium and vitamin D supplements and to select the right choice of drug such as calcium supplements along with minerals in order to prevent osteoporosis among women. Taking these preventive measures at the right time will reduce the occurrence of osteoporosis, prevent osteoporotic fractures during elderly and there by it improves the quality of life of pre and post-menopausal women (Cecily, 2016).

Significance of the Study

Osteoporosis is a crippling condition that often results in premature mortality and significant morbidity that is manifested in the form of fractures, bone deformity, impairments of quality of life following fracture, and increased mortality. The risk of fracture increases approximately 1.5 to 3 fold for each standard deviation

decrease in bone mineral density (BMD). Based on these criteria, it has been estimated that 13–18% of women aged 50 and over have osteoporosis, and for those over the age of 80, the proportion rises to 70% (Bowden and Foster 2018).

In Egypt, 53.9% of postmenopausal women have osteopenia while 28.4% have osteoporosis, the problem affects almost 30 percent of the population and most recent studies indicate that almost 54 percent of post-menopausal women in the country have a primary form of the disease named osteopenia, while 28.4 percent have osteoporosis (Elsabagh et al., 2015). On the other hand, 26% of men have osteopenia and 21.9% have Osteoporosis among males aged above twenty.

The public health impact of osteoporotic fractures includes major and sustained effects on mortality, substantial increases in functional impairments, deceases in quality of life and lead to increased financial burden on our health care systems. Reducing fracture incidence in those who already have osteoporosis will reduce the public health impact of osteoporosis (Hirschfeld, Kinsella et al. 2017). So that using health belief model as method to find data base to develop health education program for osteoporosis prevention.

Aim of the Study

The current study aimed to assess knowledge and self-efficacy regarding osteoporosis prevention among multiparous women based on health belief model.

Research Question:

- What are the women's score of knowledge regarding osteoporosis?
- What is the relation between HBM constructs and women's knowledge regarding osteoporosis?
- What are the women's self-efficacy scale regarding osteoporosis?

Subjects and Method
Study design:-

A cross sectional descriptive research design was used for the current study; this design relevant to the nature of the problem under investigation.

Setting

The study was conducted at Maternal and child Health centers (MCH) at Minia City. Minia City contains four MCH Centers that providing numerous services such as providing obligatory vaccination, family planning services, and antenatal care including multiparous women attending MCH centers for family planning and antenatal care.

Subjects:

A convenient sample of multiparous women according to inclusion and exclusion criteria for 6 months from March 2018 to September 2018. Multiparous women were approached to take part in this study, which fulfill the following criteria:

Women age ranged from 30-50 years, multiparous women have at least 3 childs and willing to participate in the study, while Women have a previous history of osteoporosis excluded from the study.

The total number of multiparous women attended MCH from March 2018 to September 2018 was 196 according to inclusion and exclusion criteria.

Data Collection Tools

Data was collected through:-

1st tool: Osteoporosis Multiparous Personal Data Questionnaire:-

Covers the data related to general characteristics (age, educational level, occupation, telephone number, Wt., Ht. and Body mass index. Obstetric history (Age of Menarche, breast feeding, No. of Children, Source of information regarding osteoporosis prevention and history of bone densitometry scan).

2nd tool: The Osteoporosis Knowledge Assessment Tool Questionnaire:-

The Osteoporosis Knowledge Assessment Tool Questionnaire was developed to assess osteoporosis knowledge and awareness. It was adapted from (Winzwnberg, 2003), the instrument consists of four subscales addressing: understanding (symptoms and risk of fracture) 5 items, risk factors of osteoporosis 7 items, prevention factors as physical activity and diet relating to osteoporosis 6 items, treatment availability 2 items. The format of the 20-item scale included the "true-false and don't know" options.

Scoring System:- The scores for knowledge are calculated based on one point for the correct answer and zero for the incorrect answer or don't know the answer. The maximum scores for the total knowledge are twenty, (Up to < 7 is considered poor, from 7 to < 14 considered fair and from 14-20 considered high.).

3rd tool: Osteoporosis Health Belief Scale (OHBS):

The Osteoporosis Health Belief Scale (OHBS) is one of the most widely used frameworks for trying to understand and measure health beliefs related to osteoporosis It was adapted from (Kim, 1991), consists of 28 items instrument including 7 domains forming the health beliefs. The subscales are related to susceptibility, seriousness, benefits to exercise, benefits to calcium intake, barriers to exercise, barriers to calcium intake, and health motivation. Each domain has four specific subscales rated by using five point likert scales by each participant with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

Scoring System:- Scores have a possible range of 28 to 140 for the total health belief score and a possible range of 4 to 20 for each subscale score. Scale interpretation the above 6 subscale from (4-12 low perceived & high perceived 13-20) in relation to perceived health motivation subscale negative view of health 4-12, positive view of health from 13-20).

4th tool: Osteoporosis Self-Efficacy Scale (OSES):

The Osteoporosis Self-Efficacy Scale was developed as a measure of self-efficacy, or confidence, for behaviors related to physical activity and calcium intake. The OSES was adopted from (Horan, 1998), utilized a 12-item consisting of two subscales, an osteoporosis self-efficacy exercise scale and an osteoporosis self-efficacy calcium scale. The self-efficacy for exercise will be evaluated using 6 items. Each participant responses on five likert scale of 1-5 (1= strongly disagree, 2 = disagree, 3= neutral, 4 = agree, and 5 = strongly agree).

Scoring system: The exercise and calcium scores will be calculated by averaging the response to each 6 related

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items and multiplying by 5 (range: 0-30) to be grouped in to the following categories: low (6-18) and high (19-30). The maximum scores for the total osteoporosis self-efficacy are 60 low (12-36) and high (37-60).

Content Validity

The content validity of the data collection tools as an Osteoporosis Multiparous Personal Data Questionnaire, The Osteoporosis Knowledge Assessment Tool Questionnaire and an Osteoporosis Health Belief Scale (OHBS) was determined the tools were submitted to five experts in community health nursing to test their validity. The tools were examined for content coverage, sequence of items, clarity, relevance, applicability, wording, length, format, and overall appearance. Based on experts` comments and recommendations; minor modifications had been made such as rephrasing and rearrangements of some sentences.

Reliability

The internal consistency of the questionnaires was calculated using Cronbach's alpha coefficients. Test-retest was used. The Cronbach's alpha of the questionnaires were 0.838, 0.961and 0.973 respectively indicate good reliability.

Ethical Consideration

A written approval obtained from the ethics and research committee of the Faculty of Nursing, Mina University. Oral consent obtained from each participant after explaining the nature & objectives of the study to gain their cooperation. Each assessment sheet was coded and subjects' names were not appear on the sheets for the purpose of anonymity and confidentiality. Subjects were free to withdraw from the study at any time.

Study Procedure

Permission to conduct the study was obtained from the Dean of Faculty of Nursing at Minia University. An official letter was obtained from the directors of MCH Centers for data collection after approval of ethical committee at Faculty of Nursing, Minia University. This letter was included a brief explanation of the objectives of the study and permission was requested from each director to carry out the study.

After extensive review of relevant national and international literature, tools of data collections were developed by the researcher in 2018, prior to data collection, tools for data collection translated from English to Arabic version language and transverse translation again from Arabic to English, Study tools were revised by five experts in the field of nursing at the faculty of nursing; Cairo and Minia University, to test its content validity and feasibility, the necessary modifications were done as rephrasing and rearrangements of some sentences. Pilot study of twenty multiparous was conducted prior to data collection, those excluded from the study.

The researcher visited MCH centers two days per week (Saturdays and Mondays) to recruit the study sample from March 2018 to September 2018. All Multiparous women who attended MCH centers for family planning services, antenatal care and immunization services were selected according to inclusion criteria, 6-8 women per week). The average number interviewed subjects was 4 persons per day and average time taken for each was around 20-30 minutes depending on the response of each person.

The participant women were interviewed after obtaining oral consents from each participant women after explaining the nature & objectives of the study to gain their cooperation. The questionnaire was introduced for the participant women to be filled except in case of the participant being unable to read or write the researcher filled it. The researcher read the questions to the participant and marked exactly their answers. Time taken to fill in study tools ranged from 20 to 30 minutes. Participants were allowed to ask questions and get explanatory answers. Data collection lasts for 6 months from beginning of March 2018 to end of September 2018, then data were coded, tabulated and analyzed by computer using "the statistical package for social science" (SPSS) version 20.

Statistical analysis

Data were collected, tabulated, and analyzed by computer using "the statistical package for social science" (SPSS) version 20 .Descriptive data were expressed as numbers and percentages. Quantitative data were presented by mean and standard deviation. Correlation was calculated between knowledge, health belief model constructs regarding Osteoporosis using Pearson correlation test. Probability (p-value) equal to or less than 0.05 was considered significant in tests of relationships.

Results

**Table (1). Distribution of Multiparous women according to Socio demographic characteristic(n=196)**

Item	No	%
Age group		
30-	97	49.5
36-	55	28.1
41-	31	15.8
46-50	13	6.6
Residence		
Rural	113	57.7
Urban	83	42.3
Education		
Cannot read and write	79	40.3
Primary school	20	10.2
Secondary school	72	36.7
University	25	12.8
Occupation		

Item	No	%
working House wife	112 84	57.1 42.9
Family income		
Adequate Not adequate	57 139	29.1 70.9

Table (1) shows that, 49.5% of Multiparous women of study subject their age ranged from 30-35 years, while 6.6% of them their age ranged from 46-50 years. In addition 57.7% of multiparous women live in rural area. Their educational level revealed that 40.3% of women cannot read and write and 10.2% had primary school. Regarding work status, 57.1% were working while 42.9% being house wife. Regarding monthly income, 29.1% of them get adequate income.

Figure (1)
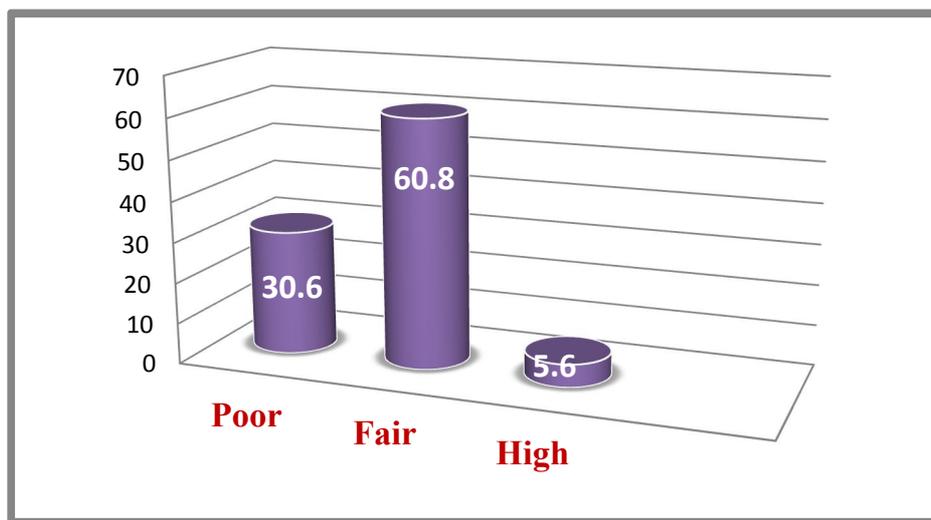
Distribution of Multiparous women according to their total Knowledge score (n=196)

Figure (1) shows that, 60.8 % of multiparous women have fair level Knowledge about osteoporosis, on the other hand 5.6 % have high level of Knowledge about osteoporosis.

Figure (2)
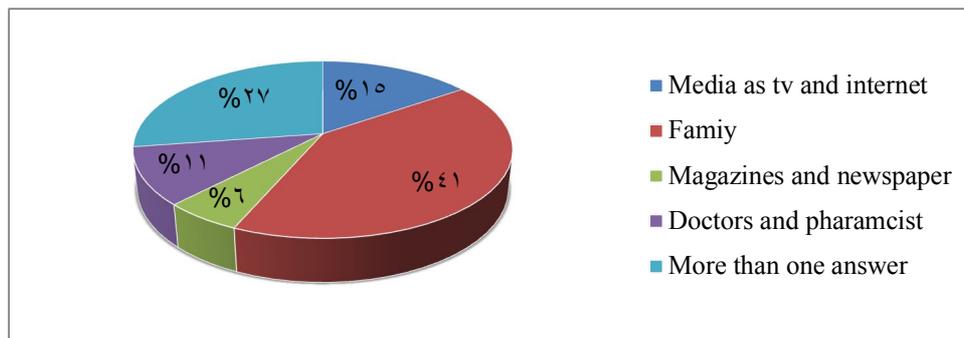
Distribution of Multiparous women according to their Source of information regarding osteoporosis prevention (n=124)

Figure (2) illustrates that, 41% of multiparous women obtained their information regarding osteoporosis prevention from their first stage families as their mothers, fathers, grand-mothers and grand-fathers, while 6 % of women obtained their information regarding osteoporosis prevention from Magazine and Newspaper.

Table (2). Knowledge Distribution according to demography (n=196)

Variable	Knowledge						X2	P value
	Poor		Fair		High			
	N	%	N	%	N	%		
Age group 30- 36- 41- 46-50	24 22 9 5	40 36.66 15 8.33	67 31 19 8	53.6 24.8 15.2 6.4	6 2 3 0	54.5 18.2 27.3 0	5.985	0.266
Residence Rural	35	58.3	75	60	3	27.3	4.452	0.108

Variable	Knowledge						X2	P value
	Poor		Fair		High			
	N	%	N	%	N	%		
Urban	25	41.66	50	40	8	72.7		
Education								
Cannot read and write	31	51.7	45	36	3	27.3		
Primary school	2	3.3	15	12	3	27.3	13.204	0.040**
Secondary school	22	36.6	48	38.4	2	18.2		
University	5	8.4	17	13.6	3	27.3		
Income								
Adequate	20	33.3	31	24.79	6	54.5	5.095	0.078*
Not adequate	40	66.7	94	75.21	5	45.5		
History of osteoporosis								
Yes	36	60	79	63.2	5	45.5	1.396	0.498
No	24	40	46	36.8	6	54.5		
Bone densimetry								
Yes	13	21.7	11	8.8	3	27.3	7.483	0.024*
No	47	78.3	114	91.2	8	72.7		
Exposure to sun light								
Yes	40	66.7	99	79.2	7	63.6	4.074	0.130
No	20	33.3	26	20.8	4	36.4		
Ca supplemental users								
Yes	17	28.3	48	38.4	4	36.4	1.808	0.405
No	43	71.7	77	61.6	7	63.6		
Vit. D supplemental users								
Yes	18	30	46	36.8	3	27.3	1.081	0.583
No	42	70	79	63.2	8	72.7		
Source of information								
Media as TV and Internet	3	10.7	15	16.5	1	20		
Family	11	39.3	38	41.8	2	40		
Magazine and Newspaper	1	3.6	4	4.4	2	40	15.499	0.050*
Doctors and pharmacists	2	7.1	11	12.1	0	0		
More than one Answer	11	39.3	23	25.2	0	0		

N.B -significant is considered at (p-value <0.05).
-Significant is considered highly significant at (p-value <0.01)

Table (3) reveals that, there is a positive statistical significant difference was found between levels of education and knowledge as multiparous women can't able to write or read have poor knowledge regarding osteoporosis prevention. Also there is a positive statistical significant difference was found between source of information and knowledge as women that obtained information regarding osteoporosis prevention from their first stage families have fair knowledge compared with other sources.

Figure (3)
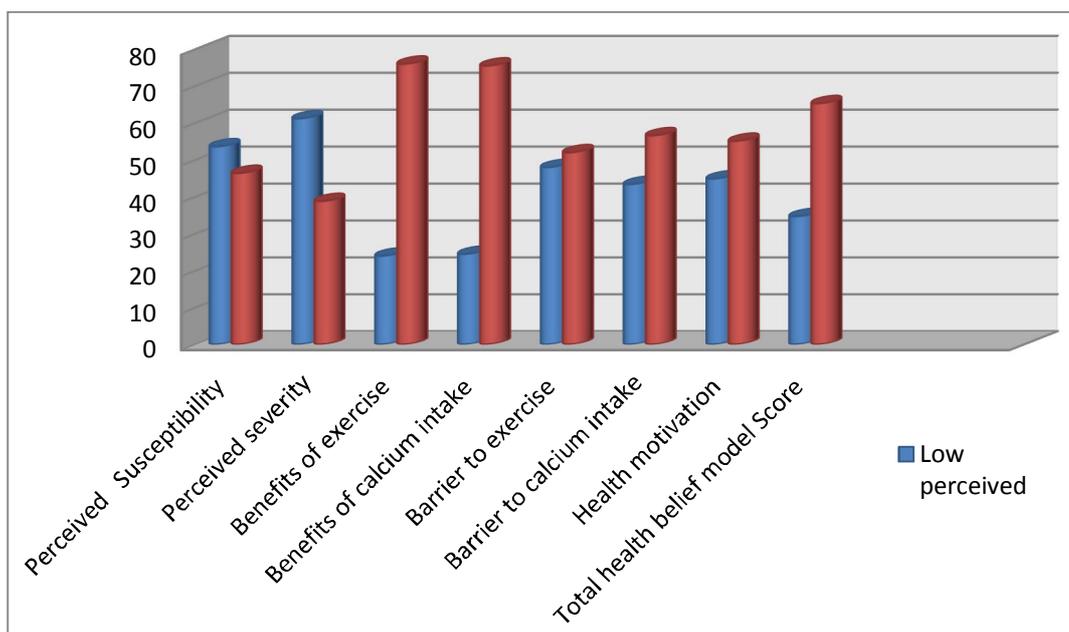
Distribution of Multiparous women according to Osteoporosis health belief model Scale n=196

Figure (3) clarifies that, 53.6% of multiparous women their perception of susceptibility reveals low, regarding severity perception reveals that 61.2% are low. In addition there was a low belief of perceived severity and perceived susceptibility. Regarding benefits of exercise reveals that 76% of multiparous women have high perception. Regarding benefits of calcium intake reveals that 75.5% of multiparous women have high perception, so that there was a good belief about benefits of Ca intake. Regarding barrier to exercise reveals that 52% of multiparous women have high perception. Regarding health motivation 55.1% of multiparous women have positive view of health. Regarding total health belief reveals that, 65.3% have high perception.

Figure (4)
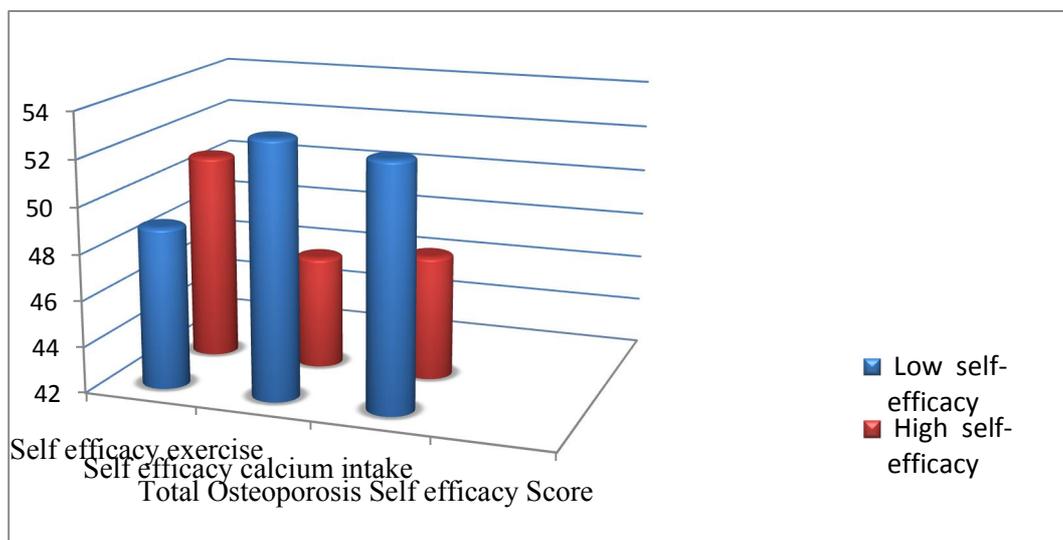
Distribution of Multiparous women according to Osteoporosis Self efficacy Scale (n=196)

Figure (4) shows that, 51% of multiparous women have high self- efficacy toward exercise. Regarding osteoporosis self-efficacy calcium intake reveals that 53.1% of multiparous women have low self- efficacy. For total Osteoporosis Self Efficacy Scale (OSES) reveals that, 52.6% of multiparous women have low self-efficacy.

Table (3) Correlation between Osteoporosis Knowledge, Osteoporosis Health Belief and Osteoporosis Self-efficacy among multiparous women (n=196).

Variable	Osteoporosis Knowledge	Osteoporosis Health Belief	Osteoporosis Self-efficacy
Osteoporosis Knowledge r value P value	1	-0.40 0.575	0.061 0. 329
Osteoporosis Health Belief r value P value	-0.40 0.575	1	0.398 0.000*
Osteoporosis self- efficacy r value P value	0.061 0. 329	0.398 0.000*	1

NB. * Correlation is significant at the 0.05 level (2-tailed)

Table (3) shows that, there is no statistically significant correlation between osteoporosis knowledge and osteoporosis self- efficacy and health belief, while there is statistically significant correlation between osteoporosis self-efficacy and osteoporosis health belief.

Discussion

Osteoporosis is a metabolic bone disease, negatively affects all living activities of the individual, movement notably and causes fractures, pain and body image changes, there is no cure for osteoporosis, and therefore, the most effective way of managing this disease is prevention (Ozturk and Sendir 2011).This study aimed to assess knowledge and self-efficacy of osteoporosis prevention among multiparous women based on health belief model, so that using health belief model as method for osteoporosis prevention through two measures, one is based on increasing the knowledge about osteoporosis and the other is related to preventive behavior and self-efficacy measures that reinforce behavioral changes.

In the present study the mean score for the osteoporosis knowledge assessment revealed moderate level of knowledge, this finding agrees with other studies carried out among Pakistan, Taiwanese and American women, the obtained scores indicate that knowledge about osteoporosis is poor or limited among surveyed subjects so health educational programs and health services regarding osteoporosis are necessary for Pakistanis women. These study findings were in agreement with, (Shahbo, El-Rahman et al.(2016) who evaluate knowledge and self-efficacy of females about osteoporosis in Egypt and reported that there was significant increase in the female's knowledge level post-intervention compared to pre-intervention. Also the current study findings were supported by (El-Sayed and Abdel Megeid (2013) who study osteoporosis-related life habits, knowledge and attitude among group of female employees in King Saud University and stated that health education programs have been shown to be effective in improving knowledge and awareness among the female employees.

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The current study showed that, there is no significant correlation between level of knowledge and the group aged 30-50 years. In the same line of this findings (Alshareef, Alwehaibi et al. 2018) which showed that there are no differences between age groups in their knowledge toward osteoporosis disease. Contrary to the finding study by (Osman (2013), in his study about assessment of osteoporosis knowledge ,attitude and practice among women in Assir region, Saudi Arabia, founded that the knowledge on osteoporosis in younger women was found to be very poor compared to relatively older females. Regarding the educational level and family income, the present study revealed that there is significant correlation between level of knowledge and educational level of multiparous women and their socioeconomic status. Similar to the study findings (Nguyen, Dinh et al. (2015) in his study about awareness and knowledge of osteoporosis in Vietnamese Women mentioned that women belonging to higher socioeconomic status and with better education level had slightly more knowledge about osteoporosis compared to those with a low education level.

Knowledge alone does not necessarily influence health behavior; thus, the current study assessed the health beliefs of women towards osteoporosis as important factors in influencing behavioral change in disease-prevention programs. Regarding osteoporosis health beliefs, the current study results revealed that multiparous women perceived a low susceptibility Similarly, Al-Muraikhi, Chehab et al. (2017) in his research about assessing health beliefs about osteoporosis among women attending primary health care centers in Qatar, founded that the perceived susceptibility in the cross-sectional study conducted in Qatar was low as well as that of another study conducted in New Zealand about a third of the women perceived that they were likely to develop osteoporosis. From the researcher point of view the possible explanation for this low level of perceived susceptibility could be due to the absence of any symptoms of osteoporosis, where most individuals do not perceive themselves at risk of a disease until they begin to experience the clinical picture of the disease. As osteoporosis is a silent disease and the prevalence of osteoporosis is much higher after the menopause, it was not surprising that most of the women did not perceive they were at risk.

Regarding severity perception the present findings revealed that more than sixty percent of multiparous women perception was low, similar to these findings (von Hurst and Wham (2007) found that sixty four percent of women acknowledged the seriousness of osteoporosis and a quarter of them agreed that osteoporosis was a crippling disease. From the researcher point of view women generally perceive osteoporosis as a highly serious disease with severe consequences. Thus this perception may help in motivating women to increase their health-promoting behavior and prevent osteoporosis.

Concerning the perceived benefits of dietary calcium and physical exercise among multiparous women, the present study showed that more than three quarter of multiparous women their perception was high. Similarly to our findings Endicott (2013), founded that the majority of the study subject agreed that they would not worry about osteoporosis if they ate food rich in calcium and eighty three percent of participants agreed that they feel better when they exercise every day.

Concerning perception of barriers of calcium intake and physical activity, the present study revealed that their perception was high. These findings in contrast with Al-Muraikhi, Chehab et al. (2017) founded that the perceived benefits of preventive practices and the perceived barriers, the highest level of agreement among our participants was towards the perceived benefits and the highest level of disagreement was regarding the perceived barriers. Moreover, Ziccardi, Sedlak et al. (2004), explored the health beliefs of 194 college nursing students regarding osteoporosis and found that the perceived benefits of osteoporosis-preventive behavior (e.g., calcium intake and weight-bearing exercise) scored high; however, the perceived barriers scored low. From the researcher point of view the differences may be due to the cultural beliefs and deficient knowledge regarding osteoporosis prevention. For health motivation the mean scores were relatively high which agreed with Elsabagh, Aldeib et al. (2015) in his study about osteoporosis knowledge and health beliefs among employees of Tanta University in Egypt and Renée D. Endicott 2013 in the USA, This high health motivation is an important trigger for implementation of relevant osteoporosis prevention program.

Regarding osteoporosis self-efficacy, the current study revealed that the mean score of self-efficacy was relatively high and regarding osteoporosis self-efficacy of calcium intake showed that more than half of multiparous women their self-efficacy was low. These findings in agreement with, Shahbo, El-Rahman et al. (2016) in his study about evaluation of knowledge and self-efficacy about osteoporosis Perception among females in the Faculty of Nursing in Port-Said, Egypt revealed that educational intervention positively affects osteoporosis self-efficacy perception. Similarly, Zhang, Li et al. (2012) in his study about evaluation of educational program on osteoporosis awareness and prevention among nurse students in China revealed that planned health education enhancing self-efficacy perception of women to accomplish the require behaviors to prevent osteoporosis. From the researcher point of view the lowest self-efficacy score in the present study regarding exercise and calcium intake suggested that young adults had least confidence in performing exercise and lack of community support for women to exercise. Physical exercise requires strong determination and many Egyptian women neglect it when they encounter obstacles such as violating social codes.

Regarding correlation between health belief and knowledge, the present study revealed that there was positively significant correlation between knowledge and perceived severity and barrier to calcium intake. These findings in the same line with Elsabagh, Aldeib et al. (2015) in his research about osteoporosis knowledge and health beliefs among employees of Tanta University, founded that a significant correlation between knowledge and perceived susceptibility of osteoporosis, barriers to calcium intake and barriers to exercise. These findings disagree with Tsai, (2008) finding in New Zealand in his study about the relationship between osteoporosis knowledge, beliefs and dietary calcium intake among South Asian women at Massey University, Auckland, New Zealand, who reported that, there is no correlation between all domains of health belief scale and knowledge.

Conclusion:
Based on the findings of the present study, it can be concluded that, there was fair level of Knowledge about osteoporosis and its consequences, high perceived benefits of

Ca intake about calcium intake and low self-efficacy among the majority of the multiparous women.

Recommendation:
- The study finding highlights the need of setting up health education programs as a primary prevention of osteoporosis among multiparous women at Minia city.
- Utilizing health belief model for assessing multiparous women attending MCH for early detection of osteoporosis.
- Encourage the research in area of Health education programs regarding of osteoporosis prevention.
- Further research to study the correlation between demographic characteristics and behavioral, social barriers in calcium intake in different cultural contexts.

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