Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2015; 3(6A):2200-2206 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2015.v03i06.010

Research Article

A Comparative Survey the Effect of Education Based program on Health Belief Model for the Use Osteoporosis Preventive Behaviors of the Girl's Osteoporotic and non-Osteoporotic Mothers

Zohrehkhoshnood[1], Monireh Anoosheh[2], Easa Mohammadi[3], Ebrahim Haji Zadeh[4]
[1]Master degree of nursing education, Tarbiat modares university
[2]PhD of health education, associate professor of Tarbiat Modares University, Nursing faculty
[3]Ph.D in nursing, full professor of Tarbiat Modares University, Nursing Faculty
[4]PhD in biological statistics, Full professor of Tarbiat Modares University, Health Education Faculty

***Corresponding author**
Monireh Anoosheh
Email: anoosheh@modares.ac.ir

Abstract: Osteoporosis is a global health issue along with heart disease, stroke, diabetes and cancer and takes up many financial resources for prevention and treatment. It affects more than 75 million people worldwide. So the purpose of this study was to examine comparative survey the effect of education based program of health belief model on the use osteoporosis preventive behaviors the girls of osteoporotic and non-osteoporotic mothers. This study is a quasi-experimental research with two groups trial (n= 42) and control (n=41) in Kerman in May to December of 2012. Data collection tools include demographic information, health belief model scale, calcium intake and sport self-report checklist. That demographic information, health belief model scale completed with mothers and self-reports checklist completed with their girls. For analyzing data used SPSS16 software (descriptive statistics, paired t-test, Man-Witney U, repeated measures and Wilcoxon).About health belief model of mothers in trial group, between before and after intervention tests showed significant difference in perceived benefits of calcium intake (p=0.03) and sport (P=0.004), barriers of calcium intake(P=0/00) and sport (P=0/00). About calcium intake (P=0/00) and time of sport (P=0/00) in girls statistical analysis showed a significant difference before and 1 and 3 months after intervention. The comparison between osteoporotic and non-osteoporotic mother's, before and after intervention for calcium intake and sport shows no significant difference (P>0.05).As regards that educational program have a significant effect in using osteoporosis preventive behaviors, planning interventions have an important role for increasing knowledge of mothers and their girls and changing their behavior.
Keywords: Osteoporosis, Prevention, Adolescent behavior, Health belief model.

INTRODUCTION

Osteoporosis is a global health issue along with heart disease, stroke, diabetes and cancer and takes up many financial resources for prevention and treatment [1, 2]. It is a systemic skeletal disorder characterized by decreased bone mass density, micro architectural deterioration of bone tissue, and fragility fractures, particularly of the hip, spine, wrist and shoulder [3]. It affects more than 75 million people worldwide and, according to the US Department of Health and Human Services, will affect more than 10 million women by 2020 if efforts to prevent it are ineffective [4]. There is a significant difference in the prevalence of osteoporosis among countries. Among the countries of the WHO Eastern Mediterranean Region, osteoporosis is a health priority. In previous studies, the levels of osteoporosis and osteopenia in the Islamic Republic of Iran were 22.2% and 59.9%, respectively and the level of osteoporosis in Pakistan was 55% [5]. On the contrary, in Turkey was 27%–33.3% [6], Morocco was 31%, Egypt was 28.4%, Bahrain was 27.1%, Saudi Arabia was 23%–24% and also United Arab Emirates was 2.5% [7]. Osteoporosis is a crippling condition that often results in premature mortality and significant morbidity that is manifested in the form of fractures, bone deformity, and pain [8]. Worldwide, osteoporosis causes more than 8.9 million fractures annually, resulting in an osteoporotic fracture every 3 seconds [9]. Decades and the subsequent retention of bone through middle age are important determinants for reducing the risk of osteoporosis [10]. Primary prevention programs of osteoporosis, which include health education and promotion programs should be emphasized, with the goal of optimizing bone mass growth, to prevent bone loss later in life. Maximizing bone mass along with lifestyle factors such as calcium intake and physical activity are considered as modifiable factors in the prevention of osteoporosis [11]. One of the educational

programs that effects on preventive behaviors and can change behaviors is health belief model (HBM).

Health Belief Model (HBM) is a theoretical framework for this study that is one of the theoretical models that explain factors influencing healthy behaviors [12]. The HBM addresses four major components for compliance with recommended health actions for osteoporosis: perceived barriers and perceived benefits of calcium intake and regular exercises, perceived susceptibility and perceived severity of osteoporosis. In addition, there are modifying factors that can effect behavior compliance and perception of and value placed on taking preventive action. It is also the most widely applied theoretical framework for evaluating osteoporosis health beliefs and behaviors [13]. Furthermore, several studies have already been conducted on osteoporosis preventive interventions using this model, in most of which health beliefs and knowledge improved after the intervention. In this study, the modified HBM has been used to examine the beliefs of mothers about osteoporosis and our presumption was their beliefs may be different between osteoporotic and non-osteoporotic women.

Programs based on HBM are effective and cheap ways of increasing knowledge and skills needed to establish behavioral changes in the prevention of osteoporosis such as increasing calcium intake and physical activities. The challenge for osteoporosis prevention programs is to promote early identification of risk factors and to encourage the adoption of risk-reducing behaviors in women from adolescence to premenopausal to develop a healthy lifestyle [14]. The nurses can help to families for choose healthy behaviors. If women have good health may be better to take care of their families [15].Community health nurses were playing effective role due to the presence in different social environments can osteoporosis prevention through health education in order to raise awareness and create positive health behavior, correct lifestyle and ultimately improve public health. Considering the limited studies focusing on prevention of osteoporosis through health education programs among young adults especially in girls and it's not clear that the mother's life style can effect on their Childs, otherwise this fact is clear that the incidence of osteoporosis grow in these years, so the aim of this study was to examine comparative survey the effect of education based of health belief model on the use osteoporosis preventive behaviors the girls of osteoporotic and non-osteoporotic mothers.

RESEARCH METHODS

This study was a quasi-experimental research in the state Samen Alhojaj bone densitometry center of Kerman city in October 2011to April 2012. The sampling method is based on Purposive sampling. The sample volume obtained based on the standard deviation and mean using the following formula according to Tussing. L *et al*. study [16]:

$\mu_1+\sigma_1= 2.67\pm0.40$

$\mu_2+\sigma_2=2.11\pm1.09$

$f(\alpha|\beta) = 7.5$ $\qquad f(\alpha|\beta) = 91.8 \cong 92$

$$N= \frac{\sigma_1^2+ \sigma_2^2}{(\mu_1-\mu_2)}$$

The inclusion criteria were as follows: The non-osteoporotic mothers with T-score (Measure bone density) between -1.5 - 2.5 and more. The osteoporotic mothers with T-score Less than -2.5.Having one or more teenage girls that were his biological child, not be single parent, having ability to reading and writing, Lack of disabilities (I.E paralysis,…) and consent to participate in the study. Data collection instruments were included demographics, health belief model based questionnaires and self-report checklist for their daughters about their full diet and exercises in three past days. The validity of the questionnaire was developed using a questionnaire of Torshizi.L [17] and confirmed by the researchers and professors. The Cronbach's Alpha that obtained from the pilot study in 20 participants before study that was 0.79 for health belief model questionnaire and 0.96 for self-report checklist. The questionnaire (health belief model) consisted of 39 questions; covering 6 parts. The first part (4 questions) related to perceived susceptibility to osteoporosis. The second part (6 questions) related to perceived severity of osteoporosis, the third part (4 questions) perceived benefits of calcium intake. The fourth part (5 questions) perceived barriers of calcium intake. The fifth part (4 questions) related to perceived benefits of sport and sixth part related to perceived barriers of sport (16 questions) and answers was based on Likert (completely agree ,agree, not mentioned, disagree, completely disagree with scores 5 to 1 respectively).The self-report check list was about osteoporosis-related actions. Two specific actions were their physical activity (time and type of exercises) and daily diet (in tables included a food frequency where the participants indicated the number of times per day and per week they consumed a food or beverage of a stated size) for three past days.

In pre-intervention stage, participants completed demographics and HBM questionnaires and got the self-report checklist to mothers for completing related actions of their girls at home. Content of Educational program about osteoporosis designed based on mothers knowledge's in HBM questionnaire. In intervention stage, mothers were divided randomly in trial and control group with matching for osteoporotic and non-osteoporotic participants. After that, trial group divided in four small groups (10-12 members). A four-week health education program based on the Health Belief Model consisted, 60-90 minutes each week, Presented via pamphlets, slides show and face to face lectures using discussion method. The content of educational sessions include definition of osteoporosis, prevalence

and risk factors; symptoms, complications, diagnosis and treatment; and preventive measures including nutritional prevention and calcium-rich foods and exercise. After intervention Mothers completed HBM questionnaire, Four week and 3 months after starting intervention their girls completed self-report checklist for examine the effects of time in behavior changes.
Data analysis included descriptive statistics, parametric and non-parametric of T-tests and repeated measures with SPSS software (package of Spss / pc + + ver16). The data were presented in the form of percentages and mean ± standard deviation and the significance of association (p) was accepted as statistically significant at an alpha level of <0.05

RESULT

Of the 83 subjects participated in the study (seven of members missed in the study period), 42were trial group (Average age of mothers: 47.88±1.76 and girls: 18.83±0.19) and 41 were control group (Average age of mothers: 48.66±1.38 and girls: 19.63±0.89). 38 of mothers were osteoporotic (22 in trial group and 18 in control group) and 43 were non-osteoporotic (20 in trial group and 23 in control group). Almost half of research units were menopausal in two groups, trial (50%) and control (46/3%). The mean age of menopausal was 47.86 for trail group and 48.21 for control groups, other demographic characteristics shown in Table1.

About the effects of mothers' education on osteoporosis prevention behaviors in girls, according to freedman test, we observed significant difference between measurements at various times for calcium intake in trial group. The average calcium intake was higher in girls, one and three months after the intervention compared with the average calcium intake before the intervention. However there is not a significant relationship in the control group (P = 0.93). The results showed that calcium intake of girls was uptrend one month after intervention in trial group (P = 0/03) (Figure 1). But there is not a significant change in the control group (P = 0/93).

According to freedman test, the average daily physical activity before, one and three months after intervention were respectively 27.11, 31.85 and 31.11 minutes in trial and was respectively 29, 28.48, and 28.41 minutes in control group. According the results of independent t-test, there is not a significant relationship between trial and control group (P > 0.05). The results showed that time was a significant effect (P=0/001).In trial group was seen an increase in girl's physical activity one month after intervention (Table 2). The rate has been relatively stable after three months, But there is not a significant change in the control group (P>0/05).

Finally The results showed that there is not a significant difference in relation to compare behaviors prevention of osteoporosis in girls in two groups of mothers (with and without osteoporosis)and the effect of training before and after intervention in trial groups (P>0/05).

Table-1: Personal and socio-demographic characteristics of participants

	Variables	Trial group	Control group	Statistical analysis
	Elementary and Middle	25(57.6%)	27(٪65.8)	$\chi2$=4/56 P= 0/08
Level of education	Diploma	13 (32.9٪)	27(٪29.3)	
	Associate, Bachelor, Master degree and higher	4 (9.5%)	(٪0)	
	20-25	22 (%52.8)	18(٪44.2)	T= - 0/70 p= 0/48
Body Mass Index	26-30	15(٪ 35.2)	16(٪38)	
	30<	5(٪12)	7(17.8)	
Job	Housekeeper	30(٪71.4)	35(٪85.4)	$\chi2$ =1/27 P= 0/076
	Employee	5(٪11.9)	1(٪2.4)	
	Working	1(٪ 2.4)	1(٪2.4)	
	Retired	6(٪14.3)	4(٪9.8)	
Relative Family income	Weak	6(٪14.3)	7(٪17.1)	$\chi2$ =60/53 P= 0/095
	Average	30(٪71.4)	7(٪75.6)	
	Good	6(٪14.3)	31(٪7.3)	
Type of housing	Yard house	25(٪59.5)	35(٪85.4)	$\chi2$ =58/14 P= 0/068
	Apartment with elevator	5(٪11.9)	2(٪4.9)	
	Apartment without elevator	12(٪28.6)	4(٪9.8)	

Table-2: Components of health belief model for mothers before and after intervention for trial and control group

Components of health belief model		Trial group		Control group		Statistical analysis
		Means	SD	Means	SD	
Perceived susceptibility to osteoporosis	Before education	7.79	0.07	7.59	0.09	P * = 0.17
	After training	7.9	0.04	7.95	0.03	P * = 0.41
	Result of Statistical test	Z=-1.73 P** = 0.08		Z= -3.21 P**= 0.1		
Perceived severity of osteoporosis	Before education	9.81	0.14	9.39	0.14	P *** =0.46
	After training	10.21	0.13	10.27	0.15	P ***= 0.79
	Result of Statistical test	T= -3.42 P**** = 0.001		Z= 0.001 P** = 1.00		
Perceived benefits of calcium intake	Before education	7.55	0.1	7.51	0.1	P * = 1.00
	After training	7.64	0.08	7.56	0.09	P * = 0.56
	Result of Statistical test	Z=-0.93 P** = 0.03		Z= 0.001 P** = 1.00		
Perceived benefits of sport	Before education	7.6	0.12	7.51	0.13	P * = 0.57
	After training	7.95	0.03	7.59	0.12	P *= 0.005
	Result of Statistical test	Z=-2.91 P** = 0.004		Z= -1.73 P** = 0.08		
Perceived barriers of calcium intake	Before education	8.24	0.23	8.32	0.21	P *** = 0.80
	After training	8.17	0.19	8.28	0.19	P ***= 0.57
	Result of Statistical test	T= -3.94 P****= 0.001		T= -2.08 P****= 0.06		
Perceived barriers of sport	Before education	25.98	0.4	22.93	0.29	P ***= 0.12
	After education	25.05	0.44	24.71	0.39	P *** = 0.001
	Result of Statistical test	T= -10.54 P****= 0.001		Z=-1.73 P**= 0.08		

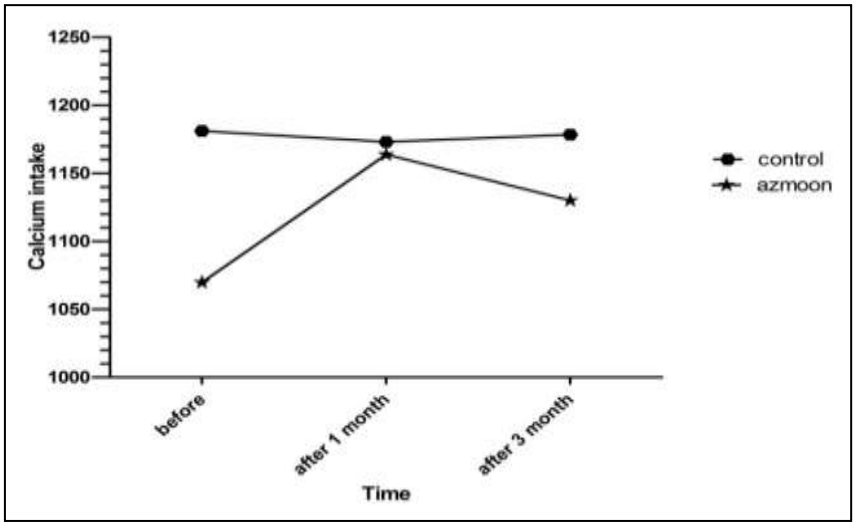

Fig-1: The mean of girl's calcium intake in trial and control group before,1 month and 3 month after intervention

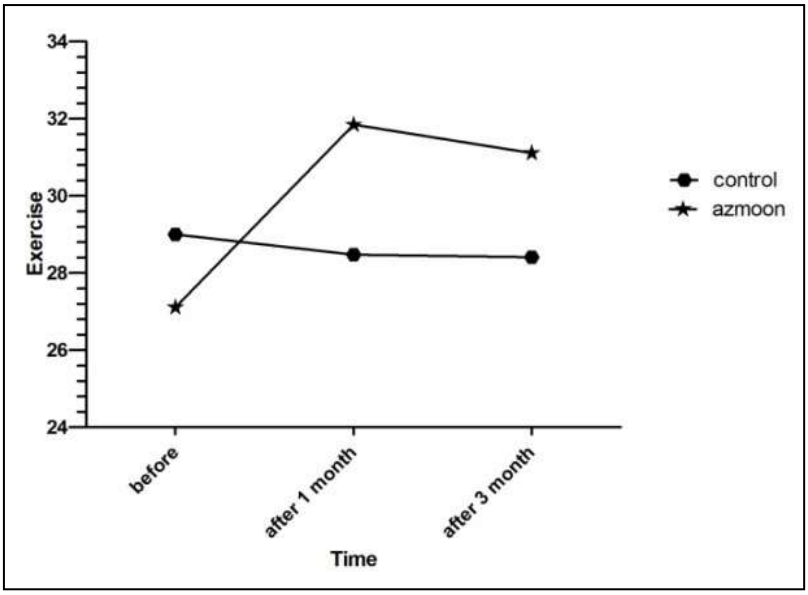

Fig-2: The mean of girl's exercise in trial and control group before, 1 month and 3 month after intervention

DISCUSSION

A Comparative Survey the Effect of Education Based program on Health Belief Model for the Use Osteoporosis Preventive Behaviors of the Girl's Osteoporotic and non-Osteoporotic Mothers. The main variable in this study were calcium intake and daily activities. These variables are important factors in the prevention of osteoporosis. The health behavior is influenced by many factors, such as demographic characteristics (such as age, gender and etc.), economic factors, family factors and family structure.According the results of Chi-square test, there is not a significant relationship between trial and control group for demographic variables ($P > 0.05$).

The average age of mothers was 47.88 years trial group and 46.66 were control group. These two groups were matched according to age. Torshizi *et al.* [17] and [1] reports the age affected on dietary pattern physical activity and perspective of his illness. Abdoli *et al.* [18] finding the age mother had an effect on prevention of osteoporosis. Chaubey and Gates [19] report the age mother had an effect on calcium intake. The majority of units' researches were primary education in trial and control groups (Table 1).Since the level of parents' education is effective on health behavior. Rezayipour [20] reports the girls which their parents was education high school, had better knowledge about osteoporosis.

The majority of units' researches wereBMI in range 20-25 (Table 2). Rebeiro and Blakely [21] stated that women with low weight followed by more educational programs were increased calcium supplementation and milk consumption. The majority of units research were housewives. Mirzaaghayi [22] reports the people who their mother's housewives were knowledge favorable in relation to prevention of osteoporosis. According the results, there is not a significant relationship between trial and control group, before and after the intervention. These results are not in good agreement with result Tussing [16] and Torshizi [17] reports the training affected on increase women's perceived susceptibility than osteoporosis. Rahimikian [23] stated that education based on Health Belief Model affected on perceived susceptibility than disease. In present study the impact of time and also complete the questionnaire were increased sensitivity to perceived mothers in control group. The results showed that perceived susceptibility of women is relatively high level and nearly maximum score. Thisresult indicates that perceived susceptibility of mothers was also high level before the intervention. According the results, there is not a significant relationship between trial and control group for perceived severity of osteoporosis, before and after the intervention. These results are in compliant with result Torshizi *et al.* [17]. These results are not in good agreement with result Rahimikian [23] reports the training affected on increase perceived susceptibility of mothers than choose the childbirth method Solimanian *et al*. [24] finding the perceived threat including aggregation sensitivity and perceived severity were significant effect on increased physical activity.

Including integration sensitivity and severity of the perceived threat was perceived to increase physical activity has positive and significant effect. The results showed that perceived severity in this study was relatively well. The results showed that average scores on the perceived benefits to calcium intake has increased after the intervention. While in control group scores was fixed. According the results there is a significant relationship between trial and control group for perceived benefits of calcium intake, before and later the intervention. This means that education based on Health Belief Model had a positive effect on perceived benefits to calcium intake. These results are in good agreement with result Tussing [16], Malak. M

[1] and Torshizi *et al.* [17] stated that education based on health belief model had a positive effect on perceived benefits to calcium intake. According the results, there is not a significant relationship between trial and control group, for perceived benefits of sport before the intervention but there is a significant relationship between trial and control group after the intervention. These results are not in good agreement with result Torshizi *et al.;* [17]. These results are in compliant with result Rahimikian *et al.* [23] and Rahnavard *et al.* [15] stated the education based on health belief model affected on increase perceived susceptibility of mothers than choose the childbirth method.

The value of perceived barriers of calcium intake showed significant decrease in trial group. While this decrease is not significant in the control group. According the results, there is not a significant relationship between trial and control group before and after the intervention. These results are not in good agreement with result Torshizi *et al.;* [17] reports the education based on Health Belief Model affected on decrease perceived barriers of calcium intake of mothers in postmenopausal women. The average calcium intake was higher in girls, one and three months after the intervention compared with the average calcium intake before the intervention. However there is not a significant relationship in the control group. Results showed that calcium intake of girls were uptrend one month after intervention in trial group. But there is not a significant change in the control group. These results are in good agreement with result Rahimikian [23] and Winzenberg *et al.;* [25]. Winzenberg finds the mother's education increased calcium intake and vitamin D in their children. Our results showed that effect of time was significant on increased daily physical activity. But in the control group had no significant effect on increasing sport. In experimental groups was seen an increase in physical activity girls, one month after intervention. The rate has been relatively stable after three months. But there is not a significant change in the control group. These results are not in good agreement with result Rahimikian *et al*.; [23] and Winzenberg *et al.;* [25] reports there is not a significant relationship between the amount of physical activity for children before and after training to mothers. These results are in compliant with result Solimanian *et al.;* [24] finding the benefits and barriers perceived to sport were effect significant and positive on girls' physical activity. The results showed that there is not a significant difference in relation to compare behaviors prevention of osteoporosis in girls in two groups of mothers (with and without osteoporosis) and the effect of training before and after intervention in trial groups.

CONCLUSION

Finally results of this study showed educating mothers can be effective in changing the behavior of their children (especially girls).Therefore, the correct method to educate mothers increased knowledge and improve healthy life style of mothers and their girls. Also the education based on health belief model had a significant effect on osteoporosis preventive behaviors in girls. It is recommended that educational programs have been designed as an effective method for prevention of osteoporosis behaviors.

Contributions:

Idea and Design: Zohreh Khoshnood, Monireh Anoosheh

Data collecting: Zohreh Khoshnood

Data Analysis: Zohreh Khoshnood, Monireh Anoosheh, Ebrahim Haji zadeh, Easa Mohammadi

Writing article and edit: Zohreh Khoshnood, Monireh Anoosheh, Easa Mohammadi

Conflict of interest:

The authors declare that they have no competing interests.

REFERENCES

1. Malak MZ, Toama ZT; The effect of osteoporosis health education prigram based on health belief model on knowledge and health beliefs towards osteoporosis jordanian female teachers. European Scientific Journal. 2015; 11(3).
2. Wallace I, Callachand F, Elliott J, Gardiner P; An evaluation of an enhanced fracture liaison service as the optimal model for secondary prevention of osteoporosis. JRSM short reports. 2011; 2(2): 8.
3. Hossien YE-S, Tork HM, El-Sabeely AA; Osteoporosis knowledge among female adolescents in Egypt. American Journal of Nursing. 2014; 3(2): 13-7.
4. Schuiling KD, Robinia K, Nye R; Osteoporosis update. Journal of Midwifery & Women's Health. 2011; 56(6): 615-27.
5. Lowe NM, Ellahi B, Bano Q, Bangash SA, Mitra SR, Zaman M; Dietary calcium intake, vitamin D status, and bone health in postmenopausal women in rural Pakistan. Journal of health, population, and nutrition. 2011; 29(5): 465.
6. Tuzun S, Eskiyurt N, Akarirmak U, Saridogan M, Senocak M, Johansson H, et al; Incidence of hip fracture and prevalence of osteoporosis in Turkey: the FRACTURK study. Osteoporosis International. 2012; 23(3): 949-55.
7. El-Hajj Fuleihan G, Adib G, Nauroy L; The middle east & Africa regional audit, epidemiology, costs & burden of osteoporosis in 2011. International Osteoporosis Foundation. 2011; 102011-5000.
8. Krall EA, Dawson-Hughes B; Smoking increases bone loss and decreases intestinal calcium absorption. Journal of Bone and Mineral Research. 1999; 14(2): 215-20.
9. Johnell O, Kanis J; An estimate of the worldwide prevalence and disability associated with

osteoporotic fractures. Osteoporosis International. 2006; 17(12): 1726-33.
10. Martin JT, Coviak CP, Gendler P, Kim KK, Cooper K, Rodrigues-Fisher L; Female adolescents' knowledge of bone health promotion behaviors and osteoporosis risk factors. Orthopaedic Nursing. 2004; 23(4): 235-44.
11. Babatunde O, Forsyth J, Gidlow C; A meta-analysis of brief high-impact exercises for enhancing bone health in premenopausal women. Osteoporosis International. 2012; 23(1): 109-19.
12. Moodi M, Mood MB, Sharifirad GR, Shahnazi H, Sharifzadeh G; Evaluation of breast self-examination program using Health Belief Model in female students. Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences. 2011; 16(3): 316.
13. Rosenstock IM, Strecher VJ, Becker MH; Social learning theory and the health belief model. Health Education & Behavior. 1988; 15(2): 175-83.
14. von Hurst PR, Wham CA; Attitudes and knowledge about osteoporosis risk prevention: a survey of New Zealand women. Public health nutrition. 2007; 10(07): 747-53.
15. Rahnavard Z, Hosseini Nodeh Z, Hosseini L; Effectiveness of clinical teaching associate model in nursing education: Results from a developing country. Contemporary nurse. 2013; 45(2): 174-81.
16. Tussing L, Chapman-Novakofski K; Osteoporosis prevention education: behavior theories and calcium intake. Journal of the American Dietetic Association. 2005; 105(1): 92-7.
17. Torshizi L, Anoosheh M, Ghofranipour F, Ahmadi F, Houshyar-rad A; The effect of education based on health belief model on preventive factors of osteoporosis among postmenopausal women. Iran Journal of Nursing. 2009; 22(59): 71-82.
18. Abdoli S; Assessment of the application for preventive factors of osteoporosis, in menopausal women referred to the health care centers in Tehran University of Medical Sciences: Tehran University of Medical Sciences; 2001.
19. Chaubey S, Gates G; Effect of The Knowledge, Attitude and Demographic Varialbes on Iron and Calcium Intake Among US Women. Journal of the American Dietetic Association. 1997; 97(9): A115.
20. Rezayi pour A, Yousefi F, Mahmoodi M, Shakeri M; The relationship between diet behaviors and sport of female teenagers with their reception of parent life style. Journal of Tehran university of medical science(Hayat). 2008; 13(3): 17-25.
21. Ribeiro V, Blakeley JA; Evaluation of an osteoporosis workshop for women. Public health nursing. 2001; 18(3): 186-93.
22. Mirzaaghayi F, Moinfar Z, Eftekhary S, Karimi M, Mazidi M; assessment the knowledge of teenage girls about osteoporosis and factors affect on it. Journal of Tehran university of medical science(Hayat). 2006; 12(3): 43-50.
23. Rahimi kian F, Mir mohammad ali M, Mehran A, Abouzari gazafroudi K, Salmani borough N; Assessment education based on health belief model to choosing delivery method. Journal of Tehran university of medical science(Hayat). 2008; 14(3): 22-5.
24. Solimanian A, Niknami S, Hajizadeh E, Shojaeezadeh D, Tavousi M; Predictors of physical activity to prevent osteoporosis based on extended Health Belief Model. Journal of the Iranian Institute for Health Sciences(Payesh). 2014; 13 :313-20.
25. Winzenberg T, Oldenburg B, Frendin S, De Wit L, Jones G; A mother-based intervention trial for osteoporosis prevention in children. Preventive medicine. 2006; 42(1): 21-6.