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Prediction of Osteoporosis Preventive Behaviors through the Use of the Health Belief Model (HBM)

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Abstract

Aim: Nowadays, life is endangering women's health, so that without organizational support, women are engaged in unhealthy life styles. Osteoporosis is the most common metabolic bone disease that increases the risk of bone fracture by creating a structural abnormality in the bone. Osteoporosis is a common disease among middle-age and older persons, especially women. Therefore, the necessity of implementing strategic plans to prevent osteoporosis is significantly important. This study was designed to determine the prediction of osteoporosis preventive behaviors using the Health Belief Model (HBM).

Methods: This cross-sectional study was done among 200 women referred to the health centers in Taft in 2016. A stage simple random sampling was used. In order to gather the data a questionnaire consistent with the structures of HBM was used. Data were analyzed using the SPSS v16 and descriptive statistics (frequency, percentage, and mean±SD) and analysis (Linear regression). The significance level was 0.5.

Findings: The mean age of the participants was 53 years. Linear regression analysis showed the perceived awareness among the participants ($p > 0.001$).

Conclusion: The results showed that HBM is able to predict well the osteoporosis preventive behaviors in women. The findings of this survey confirm the efficiency of HBM in adopting preventive actions of osteoporosis.

Keywords: Preventive behaviors, Women, Health Belief Model (HBM), Osteoporosis

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Introduction

Today, a significant spread of chronic diseases in all countries, the changing pattern of epidemiological diseases in middle ages and aging, and the tendency towards chronic diseases have attracted the attention of researchers and planners to these diseases [1]. The impact of this disease on human health throughout the world is of interest so that prevention of osteoporosis and the subsequent fractures is a major goal of many health care services [2]. Osteoporosis is referred to as the disease of the silent illness or epidemic of the century, in which style and lifestyle play an important role in the rate of infection [3]. World Health Organization (WHO) has announced osteoporosis the world's leading cause of bone fracture as the fourth most important human enemy after heart attacks, stroke and cancer [4]. The incidence, disability and mortality of major non-communicable diseases account for about 60% of all deaths and 47% of global burden of illness, which is expected to increase to 73% and 60% by 2020, respectively [5]. According to WHO, in 2002, while only 22% of the missing years were due to illness, the incidence of irreparable illnesses was 28% and 49% respectively [6]. Based on the studies on osteoporosis in different parts of the world, more than 200 million people worldwide have osteoporosis; nearly 75 million people in Europe, Japan and the United States are suffering from the disease, which is very similar to heart disease [7,8]. According to statistics, over 6 million Iranians are suffering from osteoporosis [9]. Also the results of studies have shown that bone density of normal Iranian people is less than the world standard [10]. The statistics show that women are diagnosed with osteoporosis four times more often than men. According to reports from the Association of Endocrine Experts, one in two women over 50 experiences a fracture due to osteoporosis [11]. Women of all ages have less bone mass than men and lose about 40% of their skeletal calcium over their lifetime [12]. Regarding the high prevalence of osteoporosis in women, and due to the fact that the disease is related to change in behavior, the present study was conducted on the prophylactic behaviors of osteoporotic bone in women referred to the health centers in Taft to determine the effectiveness of the health belief model (HBM).

Materials and Methods

This descriptive study was done on the women aged 10 to 49 years referring to the health centers in Taft. All participants who had the criteria for entering the study were randomly assigned to the study. In this type of sampling, each person in the community is given equal opportunity to be selected in the sample. Data were collected using a questionnaire prepared

according to the Health Belief Model (HBM). This questionnaire was designed in 7 sections. The first part consists of demographic information, and the second part includes questions related to knowledge about preventive behaviors of osteoporosis. The scientific credibility of the questionnaire was assessed by face and content validities and using the panel of experts in previous studies. Its reliability was measured using Cronbach's alpha. To investigate the relationship between model structures and preventive behaviors of osteoporosis, Pearson's correlation coefficient was used. The significance level was considered. Also for demographic information, descriptive statistical tests of SPSS v_{16} were used.

Results

Here are a few results in two sections. Table 1 presents data analysis as the most important descriptive index of research data. In other words, the frequency, mean and standard deviation of the subjects are presented in the variables under study. In Tables 2 and 3, we examine the findings, including findings related to research hypotheses, within the framework of the research hypothesis testing. In this study, in order to investigate the effect of education based on health belief model on preventive behaviors of osteoporosis in women referred to Taft Health Centers Finally, the collected data from 200 women were analyzed and analyzed according to the purpose. The results of which are presented in tables 1,2 and 3 below.

Table 1: Frequency distribution of women in terms of educational level

Variable	Frequency	
Education level	Number	Percent
Under diploma	42	42
Diploma	30	30
Higher education	10	10
MSc	18	18
Total *	100	100%

Table 2: Distribution of women by age

Variable	**Frequency**	
	Number	**Percent**
Age		
Less than 30 years	56	56
years		
39-30	33	33
40-49	11	11
Total *	100	100%

Table 3: Correlation test between the knowledge, behavior and mechanisms of health belief model

		Awareness	Perceived sensitivity	Perceived severity	Perceived benefits	Perceived barriers	Cause to action	Self-efficacy	Practice
Awareness	Pearson's Correlation	1							
	Sig. (1-tailed)								
	N	14							
Perceived sensitivity	Pearson's Correlation	-.356	1						
	Sig. (1-tailed)	.106							
	N	14	14						
Perceived severity	Pearson's Correlation	.022	.258	1					
	Sig. (1-tailed)	.470	.186						
	N	14	14	14					
Perceived benefits	Pearson's Correlation	-.264	.043	.463*	1				
	Sig. (1-tailed)	.181	.442	.048					
	N	14	14	14	14				
Perceived barriers	Pearson's Correlation	.117	.178	.150	-.327	1			
	Sig. (1-tailed)	.352	.280	.312	.138				
	N	13	13	13	13	13			
Cause to action	Pearson's Correlation	-.262	.359	.026	.552*	-.617*	1		
	Sig. (1-tailed)	.182	.104	.465	.020	.012			
	N	14	14	14	14	13	14		
Self-efficacy	Pearson's Correlation	-.280	.169	-.055	.250	.005	.428	1	
	Sig. (1-tailed)	.166	.281	.426	.194	.494	.063		
	N	14	14	14	14	13	14	14	
Practice	Pearson's Correlation	-.061	-.057	-.046	-.199	-.254	-.039	-.433	1
	Sig. (1-tailed)	.418	.423	.438	.247	.201	.447	.061	
	N	14	14	14	14	13	14	14	14

*. Correlation is significant at the 0.05 level (1-tailed).

In this study, there was a significant correlation between guidance for action, perceived susceptibility, perceived severity, self-efficacy, knowledge and behavior.

Discussion

The aim of this study was to determine the factors related to osteoporosis preventive behaviors based on HBM in 10-49 years old women in Taft. Women referring to the health centers affiliated to Yazd University of Medical Sciences were enrolled. After completing the questionnaire, the data were collected, and frequency distribution tables and analytical tests used for data analysis. The mean age of the subjects was 53 years. The factors of age, number of depressions, occupation, education level and history of osteoporosis were found to be correlated with each other. This progeny is consistent with the study of Bayat. In the study of Bayat et al. (2007) regarding the rate of osteoporosis and osteopenia in postmenopausal women in military families referring to the dentistry center of the undergraduate hospitals of the rest, there were 200 menopausal women who had at least 5 years of menopause, and lacking secondary diseases such as diabetes, other

endocrine diseases, or the use of medications. Karamat et al. (2001-2005) evaluated Iranian women's osteoporotic risk factors in comparison with Indian women. The study of Khalaj et al. on the effects of health education on nutritional behaviors on 89 students in fifth grade elementary schools in Qazvin showed that the knowledge, attitude and performance of these individuals were not optimal comparing to the world standards [13-15]. The results of Shojaeezadeh et al.'s study on the application of HBM in the prevention of osteoporosis in health volunteers in Khorammabad Health Care Centers in 2010-2011 showed that HBM was useful for designing programs to prevent diseases and accidents. However, it does not seem to be appropriate to promote behaviors, and in particular, to change long-term behaviors that are dependent on economic and social factors [16]. The study of Berarducci et al. in 2002 with the aim of studying the effect of continuing education on the knowledge and attitude of nurses in relation to osteoporosis showed that one of the key goals of prevention of osteoporosis in societies was to use community-based interventions to reduce the risk factors for osteoporosis. The necessity of such interventions is to become aware of the knowledge, attitude and practice of the community. The results of this study suggested a significant difference between the mean score of knowledge before and after the intervention in the experimental group, and the knowledge of the subjects significantly increased after the intervention [17]. Therefore, this disease should be considered as one of the most important health priorities in Iran's health system [18], and proper nutritional behaviors must be adopted for preventing osteoporosis [19]. Since prevention is prior to treatment, the need to prevent osteoporosis is undeniable such that it is now known as a preventable disease [20]. In prevention of osteoporosis, women are more important than men, because, in addition to being more likely to develop the disease, they are mothers of the future. In this way, many concepts can be gained in the future not only on their health but also on permanent effects on the health of their baby, children and families [21]. Therefore, pay due attention to their knowledge, attitude and behaviors is important [22]. Hence, training to raise awareness about risk factors and preventive behaviors to help prevent osteoporosis is considered very important for these people [23]. The ultimate goal of health education is to improve the true quality of people's lives, since if it is efficient it can more than any other research finding save many people's lives. In other words, it is a crucial tool for the health of the community [24]. Research in behavioral knowledge requires the theory-based

intervention [25]. Applying theories will help designers contemplate extra-curriculum issues while doing their appraisal and planning. As a result, designers will be able to get an understanding of the factors affecting health and environmental behaviors [26]. Changing behavior is more difficult than can be expected with traditional training, so theories provide a comprehensive framework for understanding and predicting determinants of behavior [27]. Health education professionals must design health education interventions to help target group individuals to change their behaviours. They should use appropriate theories and patterns in this regard; one of them is HBM [28], which is a comprehensive behavioral change model for studying behavioral determinants [29].

Conclusion

Considering the importance of women's health in society, it is necessary to pay attention to the preventive behaviors of osteoporosis. One of the limitations of this study was that the findings of this study were related to women aged 10 to 49 years who referred to Taft Health Centers, so they cannot be generalized to all women, especially older women who are more likely to have osteoporosis.

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Competing interests

The authors have declared no competing interests.

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