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## Research article

### THE LEVEL OF PEOPLE'S AWARENESS OF OSTEOPOROSIS IN ARDABIL CITY: A SURVEY BASED STUDY

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## ABSTRACT

**Introduction:** Osteoporosis is a skeletal disease which is characterized by a decrease in bone mass which can lead to increasing the risk of fracture. The present study aimed at assessing the level of people's awareness of osteoporosis in Ardabil city. **Materials and Methods:** This is a cross-sectional study conducted with the purpose of investigating the level of individuals' awareness of osteoporosis in Ardabil in 2013. The number of participants in this investigation was 250 including both sexes. And the instrument used for data collection was a researcher-made questionnaire which included 30 questions. Reliability and validity of the questionnaire were estimated, and the Cronbach's alpha coefficient was 0.78. Data were analyzed through SPSS.16. **Results:** 46.4% of respondents were male and 53.6% were female. The largest number (34.8%) of participants was from 15-25 age range. The mean awareness score was  $13.32 \pm 2.93$  out of 23, and 73% of the cases were at a moderate level of awareness. In this study, there was a significant relationship between the level of awareness on the one hand and the level of education (primary level, diploma, university) or economic class (weak, moderate, good, very good) on the other ( $p < .001$ ), but there was no such relationship between level of awareness and gender ( $p = 0.69$ ), or age ( $p = 0.24$ ). **Conclusion:** According to the results of this research, a high percentage of individuals had a moderate level of awareness. It is essential that health authorities and healthcare providers plan some programs for prevention and control of disease, while taking into account the level of individuals' awareness.

**Key Words:** Osteoporosis, Awareness, Fracture, Ardabil.

## INTRODUCTION

According to the definition proposed by the National Osteoporosis Foundation (NOF) and National Institute of Health (NIH), osteoporosis is a skeletal disease which is characterized by defects in bone strength and endurance, and as a result, increased risk of fracture. It is a chronic disease with high prevalence worldwide, especially in the U.S. The

prevalence of osteoporosis in Europe has been estimated about 27.6 million persons in 2010.<sup>1</sup> According to estimations, approximately 10 million persons in the U.S. suffer from osteoporosis, and about 34 million suffer from low bone mass.<sup>2</sup> It is expected that this number to rise to 14 million until 2020.<sup>3</sup> In a study in Iran the prevalence of spine

osteoporosis in Tehran city was 9/4% male and 32/4% female in 20-69 age group.<sup>4</sup>

The most serious adverse effect of osteoporosis is fracture. In 2005, more than 2 million cases in the U.S. had fractures due to this disease.<sup>3</sup> Such fractures reduce individuals' quality of life and are considered huge economic burdens.<sup>5</sup> Knowledge and control of risk factors of osteoporosis are crucial to its prevention. Some osteoporotic risk factors are genetics (white race), female sex, menopause, skeleton size, cigarette-smoking, alcohol and caffeine intake, malnutrition, vitamin D and calcium deficiency, low estrogen, early menopause (before 45 years of age), and a sedentary lifestyle.<sup>6-7</sup> One important key to the success of prevention programs is raising awareness and knowledge of individuals about this disease, especially awareness of diet, sport, and issues relevant to inappropriate lifestyle which hasten the progress of disease.<sup>3</sup> But, unfortunately people are seldom aware of osteoporosis, and even if they are aware, rarely does such awareness induce a higher probability of taking preventive measures.<sup>7</sup> Most studies conducted in this area have pointed to low and unsatisfactory levels of awareness. For instance, Jalili et al. found that mean score of knowledge, attitude, and function was low for female participants.<sup>8</sup> Gammage et al. also reported a low level of awareness, perceived sensitivity, and intensity for their targeted group.<sup>9</sup> Such low level of awareness is also reported in studies of Mirza-aqa'ei et al.<sup>4</sup>, Hazavahi and Saeedi<sup>10</sup>, Xu et al., and Gemalmaz and Oge<sup>11</sup>.

Since osteoporosis is a disease which depends on age, and the mean age of Iran's population is growing day by day, the level of individuals' awareness of this disease takes on utmost importance in our country. Therefore, before making any interventions for controlling and preventing a disease or a special problem, it is necessary to obtain enough information about the level of individuals' awareness of the problem, so that strengths and weaknesses of the community as well as areas requiring intervention can be identified. The purpose of this investigation was to examine the level of individuals' awareness in Ardabil city.

## **MATERIALS AND METHODS**

This study is a cross-sectional one aimed at estimating the level of people's awareness of

osteoporosis disease in Ardabil in 2013. For the purposes of the study, 250 individuals were selected through completely random methods, from 3 hospital, universities and bus stop of 5 town of Ardabil, from June to November 2013. A consent form signed by the participants and Then, they were interviewed by the researchers. Exclusion criteria were disability to answer to questions (e.g. deaf, dumb). Data were collected through administrating the researcher-made questionnaire to participants. The questionnaire was developed through reference to various reliable sources and articles. To ensure validity, the first version of the questionnaire was handed to 10 university professors in medical faculty on the basis of whose evaluations the necessary modifications were made. At the next stage, to estimate the reliability of the questionnaire, the questionnaire was piloted among 20 persons and a Cronbach's alpha of .78 was gained. Finally, this researcher-made questionnaire consisted of 30 questions, which 5 questions concerned demographic information, 23 questions were related to the level of awareness, and 2 questions pertained to the participants' perceptions. After collecting the questionnaires, in scoring, researcher was assigned the 1 for any correct answer, and 0 for any false answer. It should be noted to facilitate interpretation of the results, total score of awareness (0-23) were classified into three levels by researchers, includes weak awareness (score 0-7), moderate (score 8-15), and good awareness (scores more than of 15). 2 questions of participants' perceptions (22, 29) wasn't calculated in total score. To analyze and interpret the data, SPSS 16 analytical tests involving both descriptive and inferential statistics were used.

## **RESULTS**

46.4% of the cases were male and 53.6% were female. Most subjects (34.8%) were of 15-25 age range. With regard to level of education, most participants (45.2%) had college or university degrees. Concerning job distribution, the highest percentage belonged to students (36.8%), and 44.8% of subjects, with the highest frequency, were from an average economic status (weak, moderate, good, very good) (it was reported by participants). Mean awareness score was  $13.32 \pm 2.93$  out of 23, and

73.6% were at an average level of awareness (Table 1). In questions of questionnaire, concerning the use of information sources on osteoporosis and participant's perceptions of it, 40% checked the option "read books", 31.2% chose "consult doctors", and 25.2% opted for "browse websites". 52.8%

emphasized the key role of education administration in this regard. Overall, 46.2% highlighted media; 19.6%, the education administration; 14.4%, the press; and 16.8%, internet and cyberspace as the key factor in raising individuals' awareness- on osteoporosis.

**Table 1: Proportions (%) of Correct Responses for awareness questions**

Questions	% of correct responses
Consider the issue of preventing osteoporosis - important and necessary	83/2%
Aware of osteoporosis prevention methods employed for children	51/2%
Study any books or article about osteoporosis	40%
Media programs are appropriate ways to inform people about osteoporosis	44/4%
Consult with doctors about osteoporosis	31/2
Browse websites about osteoporosis	25.2%
Which exercises prevent the osteoporosis (yoga, go running, rotational movement, all the above)	32%
Using higher calcium nutriment as influential in osteoporosis prevention during growth ages	88%
Used to go running in order to reduce the risk of osteoporosis at higher ages	43.2%
Obesity and excess weight poses a higher risk of osteoporosis	78%
Vitamin D is useful in osteoporosis prevention	87/6
Which nutriment help increase body calcium level(meat; fibrous foods; caffeine, all the above)	33/6
Using soy milk is beneficial for prevention of osteoporosis	13.6%
A higher dairy diet is effectual in osteoporosis prevention	70/8
Which age groups are at the highest risk of osteoporosis,(children, worker, elderly females adolescent)	60%
Aware of the importance and purpose of Bone Mineral Density (BMD) test in measuring bone density and preventing osteoporosis	55.6%
Easy fracture is a side-effect of osteoporosis	70%
Aware of the negative effect of smoking on osteoporosis	66.8%
Family history of osteoporosis is a risk factor for osteoporosis	65/2%
Replacing hormones after menopause can slow down bone loss	38%
Osteoporosis is complication of some diseases	32%
Bisphosphonate(Alendronate) a class of drugs is used to treat or prevent of osteoporosis	24%
Using Some drugs(i.e. body building drugs ) increase risk of osteoporosis in future	35/3%

**Table 2: The rate of awareness in people**

Rate	N	%
0-7	2	0.8
8-15	184	73.6
16-23	64	25.6
Total	250	100
Mean±SD: 13.32±2.93Max:23Min: 0		

**Table 3. The rate of awareness by education**

Education level	Primary level		Diploma		University	
	n	%	n	%	n	%
0-7	0	0	1	50	1	50
8-15	53	29	60	32.8	70	38.3
16-23	7	9.4	16	25	42	65.6
ANOVA test : F = 9.19df = 4p= 0.001						

**Table 4. The rate of awareness by economic level in people**

Economic level	Weak		Moderate		Good		Very good		Total		
	n	%	n	%	n	%	n	%	n	%	
0-7	0	0	2	100	0	0	0	0	2	100	
8-15	28	15.2	91	49.5	51	27.7	14	7.6	184	100	
16-23	4	6.2	19	29.7	21	32.8	20	31.2	64	100	
ANOVA test			F = 7.859, df = 6, p= 0.001								

The question as to which nutrients help increase body calcium level. 39.2% chose meat; 33.6%, fibrous foods; 4.4%, caffeine; and 22.4%, all the above. Concerning age groups at the highest risk of osteoporosis, the option of elderly females was checked by 60% of the subjects, and children by only 9.6% (the lowest). In this study (Table 2), there was a significant statistical relationship between level of awareness and level of education and economic status ( $p < 0.001$ ) (Tables 3&4). However, there was no significant relationship between level of awareness and gender ( $p = 0.69$ ) on the one hand, and age ( $p = 0.24$ ) on the other.

## DISCUSSION

In the present study, the general level of individuals' awareness of osteoporosis disease and factors affecting it was  $13.32 \pm 2.93$ , and 73.6% of participants had a moderate level of awareness. Forouzi et al., in a similar study, over the population of female teachers, reported the level of awareness 62%.<sup>12</sup> In Yeap's study, in Malaysia, 87.1% of individuals had heard the word osteoporosis.<sup>13</sup> However, Mirzaaghaee et al. estimated this number to be about 40.8% in female high school students.<sup>4</sup> In the present study, 83.2% of cases acknowledged the importance of osteoporosis prevention. This finding was similar to that of Hazavahi and Saeedi's which indicated that 82.7% of secondary school students referred to educating public on osteoporosis as an important measure.<sup>10</sup> This is in contrary to Edmond et al.'s findings which showed that only 45% of subjects considered the issue of suffering from osteoporosis seriously.<sup>7</sup> In the present study, the relationship between overall awareness score and level of education was of statistical significance ( $p < 0.001$ ). Likewise, Forouzi et al. found significant relationship between level of

education and knowledge and attitude of participants.<sup>12</sup> It seems that well-educated individuals have more access to information and show more willingness to obtain information regarding health issues. In the present research, of statistical significance was also the relationship between economic class and level of awareness ( $p < 0.001$ ). This is in opposition to the findings of Ghaffari et al.<sup>14</sup> and Mirzaaghaee et al. which showed no such significant relationship.<sup>4</sup> The existence of this significant relationship in the present study may be attributed to the presence of a high percentage of the individuals with above-average economic status in this study.

Regarding the diet relevant to osteoporosis prevention, in this study, 70.8% believed that a higher dairy diet is effective. This finding was in line with those of Forouzi (98.4%)<sup>12</sup> and Dehghan Manshadi (86.4%).<sup>15</sup> Furthermore, 88.4% stated that high calcium foods contribute to osteoporosis prevention. This finding was in line with that of Mirzaaghaee (77.4%).<sup>4</sup> Hazavahi and Saeedi found that 77.5% of students were aware of the role of nutrition and exercise in osteoporosis prevention.<sup>10</sup> Since most people are aware of the influential role played by dairy in osteoporosis prevention, presenting enough information about the exact and correct amount of daily intake can play a pivotal role in the prevention of this silent disease. In this study, only 33.6% assumed that fibrous foods are effective in boosting body calcium level. This is against the findings of Forouzi's study which showed that 97.3% considered regular intake of vegetables and fruit helpful in the prevention of osteoporosis.<sup>12</sup> Regular intake of fruits and vegetables can improve bone mass and prevent osteoporosis in all age ranges.<sup>16</sup> In the present research, 87.6% of the cases were of the opinion that vitamin D is useful in osteoporosis prevention. This is not in concordance with that of Hazavahi and Saeedi's who reported that only 38% of subjects

pointed to the benefit of vitamin D in better absorption of calcium and negative effects of sour foods.<sup>10</sup>

In this study, only 43.2% of individuals used to go running in order to decrease the risk of osteoporosis, and only 32% assumed that running is helpful in osteoporosis prevention. This finding conforms to that of Larkey et al. who showed that there was a low level of awareness of the variety of exercises effective in osteoporosis prevention<sup>17</sup>, but against that of Edmond et al. who found that 76.8% considered running and jumping as useful in the prevention of this disease.<sup>7</sup>

## CONCLUSION

According to high prevalence of osteoporosis, it is essential, via school systems, media, especially visual media, and treatment centers and clinics, to provide people with accurate and complete information on what osteoporosis is, what its risk factors and adverse effects are, and what prevention and control methods of this silent disease are?. In addition, studies targeting the level of community's awareness create an opportunity to provide guidelines for educating health issues. Such guidelines can be used by organizations in charge of health and treatment. It is suggested that future studies address open questions with larger samples in order to be able to present more accurate information regarding the level of individuals' awareness.

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