Original Article

Knowledge of Medical University Students over Osteoporosis

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Cite this article as:

Afsaneh Enteshari-Moghaddam, Anahita Zakeri, Abolfazl Atalu, Vahid Abbasi

Knowledge of Medical University Students over Osteoporosis . Archive of Advances in Biosciences 2019:10 (2)**.**

Abstract

Introduction: Osteoporosis is called "silent illness", in which the bones get lost without any signs , with symptoms of pain and fracture developing in advanced stages . According to the World Health Organization statistics, about 40% of women and 10% of men are at risk of osteoporosis during their lifetime. Osteoporosis is more common among women than in men and in Iran half of women over the age of 45 and 90% of women over 75 are afflicted with it. The aim of this study was to assess the knowledge of Ardabil medical university students toward osteoporosis.

Materials and Methods: This is a descriptive cross-sectional study that has been performed over 258 students of Ardabil medical university in different fields of study. The data collection method was a research based questionnaire including demographic data and questions about knowledge of osteoporosis. Data were analyzed using statistical methods in SPSS version 16. P value of less than 5% was considered as significant.

Results: 69.5 percent of students were female students and the rest were male. 31.2 percent had good knowledge, 61.3 percent average knowledge and 7.5 percent poor knowledge toward osteoporosis. The most correct answer was "to have suitable nutrition in preventing osteoporosis" and "high risk to older people for osteoporosis" which were statistically significant and the lowest correct answer (5.8%) was related to "increase the risk of osteoporosis by removing ovaries".

Conclusion: Considering the high prevalence of osteoporosis and increasing the number of seniors over the past decades, the country should take necessary measures in order to raise the level of awareness of the community and especially students about osteoporosis such as the risk factors, prevention and complications of the disease through the health system and governmental or non-governmental organs .

Keywords: Osteoporosis, Awareness, Students

1. Introduction

Osteoporosis as a silent disease is the most common metabolic disease of the bone that causes bone tissue destruction and increased fracture risk . Millions of people worldwide are suffering from the disease and its prevalence in Asian countries was higher than in Western and American countries [1]. The most important reasons for osteoporosis are genetics , inappropriate nutrition , low physical activity, age, calcium and vitamin D deficiency, and tobacco and

alcohol consumption. Some diseases such as hyperthyroidism , hypogonadism, rheumatoid arthritis , Cushing's disease , diabetes and the consumption of certain medications such as cortin and levothyroxine, furosemide, heparin and phenytoin also cause osteoporosis over time [2]. Osteoporosis begins at the age 35 in women and its prevalence in women has proved to be more than in men . According to the World Health Organization, 13- 18% of women of 50 years of age and above have osteoporosis and 37-50% of them have osteopenia, too [3]. Awareness about osteoporosis and factors contributing to it is of great benefit and is a major public health challenge. Such knowledge can statistically have positive contributtion to any community-based prevention program and strategy [4]. osteoporosis, the patient has the feeling of pain and burn in all of the bones and may not notice any bone-breakings. In osteoporosis, small pressure such as bending or lifting a heavy device or even coughing can cause bone fractures. Pelvic fractures are the worst complication of osteoporosis where three quarters of such fractures occurs in women and its mortality rate in the first year is more than 20% . More than 50% of patients with pelvic fracture were unable to return to their previous standing position and almost 10% of them needed long term care facilities . Osteoporosis is a high cost health problem and its rate is increasing across the country. Researches have shown that trends in prophylaxis of osteoporosis such as doing physical activity, dairy consumption and vitamin D levels have declined in recent decades and the level of knowledge, attitude and performance of individuals toward osteoporosis is not desirable [5-7]. The country's aging population is increasing and it is expected that by the year 1410, about 25-30% of the population will be allocated to senior group which can become a major health problem in the future. Osteoporosis is usually without signs before the asymptomatic fracture and studies show that only one third of patients with osteoporosis are diagnosed worldwide [8-9]. The aim of this study was to assess Ardabil medical university students' knowledge about osteoporosis.

## 2. Materials and Methods

This study was a descriptive, cross-sectional study that has been done on 258 students of dental, medicine, pharmacy, anesthetics, radiology, laboratory sciences , health information , nursing , midwifery , health and operating rooms of Ardabil University of Medical Sciences in 2017. The sampling method was random classification method (each faculty was defined as a stratum and necessary samples were selected from each stratum based on total students' number) and the estimated sample size was calculated through statistical formula $n = \frac{z2.p(1-p)}{d2}$ which was used for descriptive studies and estimated about 258 samples. Data collection method was a research-based questionnaire, containing 27 questions about knowledge such as risk factors of disease and factors affecting disease prevention and 7 demographic questions including age, sex , academic degree, residence place and marital status. The reliability of the questionnaire was checked through Cronbach's Alpha index (α=0.76) on a pilot study with 20 samples which were randomly selected. Each correct answer was given score one and score zero for each wrong answer; then, data were analyzed using statistical methods in SPSS version 16 . To determine the level of awareness, the total score was calculated and classified in three groups as *desirable*, *moderate* and *low awareness*. The scores between 18-26 was

suggested as a desirable awareness , scores from 9-17 as average awareness and score less than 8 were considered as low awareness . P value less than 5% was considered as significant

3. Results

69.5 percent of students were female and the rest were male. The average age of students was 20.5 ± 3.36 and the age range was 18-39; the age group of 18-20 had the most members age group which was meaningful . 51.9 percent of students resided in dormitory and 58.1 percent were bachelor degree students. The differences between the groups proved to be meaningful (Table 1). 31.2 percent of students had desirable, 61.3 percent average and 7.5 percent had poor knowledge over osteoporosis (Figure 1). There was no significant relationship between demographic data such as age, sex, marital status, and residence place and awareness rate of students about osteoporosis. The highest level of knowledge was achieved for MD students with 49% and the highest average knowledge related to health students with 72.3% and the lowest knowledge level was for dental students

with 16.7% (Table 2). 90.7 percent of people pointed that proper nutrition is an effective factor in preventing osteoporosis . 89.1 percent of them believed that older people had a higher risk of developing osteoporosis which was statistically significant and 87.5 percent also considered regular exercise to be effective in preventing it . The lowest correct answer (5.8%) was related to increasing the risk of osteoporosis by removing ovaries. 24 percent of students had high dairy consumption and 59.7 percent had low dairy consumption and no significant relationship was found between residence place and dairy consumption . 80.9 percent of health students believed that pregnancy reduced calcium of the body, 83.3 percent of nursing and midwifery students believed that alcohol consumption could increase the risk of osteoporosis, 87.7% of medical students believed that those who are exposed to the sun have a higher risk of osteoporosis and 93.6% of health students pointed that they knew about osteoporosis (Table 3).
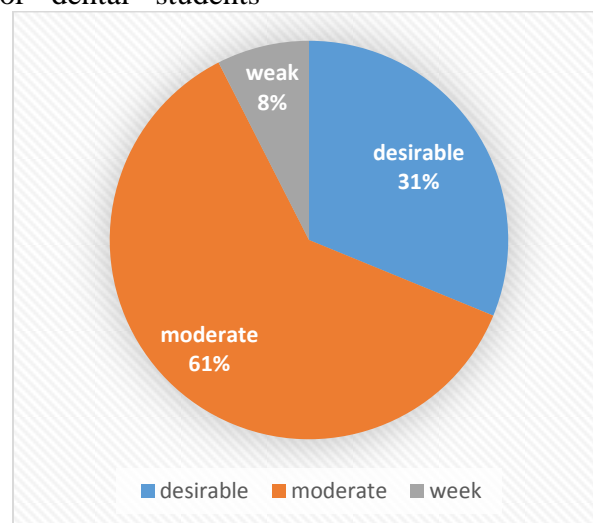
Figure 1. Knowledge of students toward osteoporosis

Table 1. Demographic data of students

Variables		n	%
Sex	Female	170	69.5
	Male	88	34.1
Age groups	18-20	187	72.5
	21-23	54	20.9
	>=24	17	6.6
Education level	Bachelor	164	63.6
	Medical doctoral	94	36.4
Marital status	Single	233	90.3
	Non-single	25	9.7
Residence place	In dorm	134	51.9
	In private home	124	48.1
Field of study	Medicine	49	19
	Dentistry	18	7
	Pharmacology	27	10.5
	Para-medical	81	31.4
	Nursing and midwifery	36	14
	Health	47	18.2

Table 2. The knowledge rate of students by field of study

Fields of study		Knowledge level		
		Desirable	**Moderate**	**Week**
Medicine	N	24	24	1
	%	49	49	2
Dentistry	N	7	8	3
	%	38.9	44.4	16.7
Pharmacology	N	6	18	3
	%	22.2	66.7	11.1
Para-medical	N	15	56	10
	%	18.5	69.1	12.3
Nursing –midwifery	N	12	22	2
	%	33.3	61.1	5.6
Health	N	12	34	1
	%	25.5	72.3	2.1

Table 3. The frequency of correct answers by field of study

Fields of study Questions	Medicine		Dentistry		Pharmacology		Para-med		nursing		health		Response rate	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Do you know about osteoporosis?	37	75.5	11	61.1	16	59.3	55	67.9	19	52.8	44	93.6	182	70.5
Is Osteoporosis a Symptomatic Disease?	33	67.3	9	50	14	51.9	54	66.7	29	80.6	17	36.2	156	60.5
Does alcohol intake have a role in increasing the risk of osteoporosis?	38	77.6	9	50	16	59.3	52	64.2	30	83.3	33	70.2	178	69
The long-term use of some medications (such as anticonvulsants) increases the risk of osteoporosis	38	77.6	10	55.6	14	51.9	40	49.4	18	50	31	66	151	58.5
Does calcium intake prevent osteoporosis?	47	95.9	15	83.3	21	77.8	60	74.1	32	88.9	47	100	222	86
Do older people have a higher risk of developing osteoporosis?	48	98	16	88.9	22	81.5	69	85.2	31	86.1	44	93.6	230	89.1
Proper nutrition is effective in preventing osteoporosis	49	100	16	88.9	24	88.9	66	81.5	36	100	43	91.5	234	90.7
Vitamin D is an effective ingredient in calcium intake	47	95.9	16	88.9	9	33.3	60	74.1	34	94.4	44	93.6	210	81.4
Vegetables with green leaves contain calcium	30	61.2	4	22.2	9	33.3	30	37	15	41.5	22	46.8	110	42.6
Those exposed to the sunlight have a higher risk of developing the disease	43	87.8	12	66.7	14	51.9	42	51.9	25	69.4	30	63.8	166	64.3
Anorexia decreases the risk of osteoporosis	22	44.9	9	50	9	33.3	21	25.9	16	44.4	26	55.3	103	39.9
Pregnancy reduces calcium intake	29	59.2	10	55.6	17	63	38	46.9	29	80.6	38	80.9	161	62.4

4. Discussion

In the present study, 60.5% of students believed that osteoporosis was an asymptomatic disease. Despite the many therapies for osteoporosis, the best solution is to prevent the disease because of available treatments only prevent the loss of bone tissues and they cannot rebuild its lost tissues. Knowledge of osteoporosis can be one of the factors that has the ability prevent the disease . In this study, level of awareness of 31.2% of students was satisfactory, 61.3 per moderate and 7.5% in poor level and in a

similar study, the level of awareness was 41% satisfactory , 51.5% average and 3.5% poor [10-11]. The clinical importance of osteoporosis is evident in fractures. A fracture occurs when bone density decreases; this risk is higher in women than in men and different from one country to another and from race to race. In the current study, 25.2% of the students believed that whites had a high risk of developing osteoporosis [12-14]. There is a lot of evidence that regular exercise prevents some of the negative consequences of menopause such as bone loss. Loss of bone mass was often significant at the start of menopause; consequently, the availability of regular exercise programs for women in post-menopausal stage is very important, as it reduces the need for estrogen injection. In the present study, 87.5% of students believed that regular exercise could play an crucial role in preventing osteoporosis [15-16]. The use of alternative hormones to prevent osteoporosis in menopausal women is an accepted method for physicians . Although the use of alternative hormones reduces the risk of fracture in menopause stage, the use of these hormones is not recommended compared with other effective drugs with less side effects such as bisphosphonates as a primary drug for the treatment or prevention of osteoporosis. In the present study, 32.9% of students believed that the use of female hormones after menopause prevents the disease. Over consumption of alcohol is one of the known causes of osteoporosis, especially among men. Excessive alcohol consumption has an adverse effect on the health of the skeletal but there is no evidence on low or average harm of alcohol consumption [17]. In this study, 69% of students believed that alcohol consumption is associated with an

increased risk of osteoporosis. Part of the reduction in bone density is seen among the elderly. In a recent study, 89.1% of the students stated that older people had a higher risk of developing osteoporosis. Several studies have revealed the role of vitamin D deficiency in increasing the risk of chronic diseases including cancers, type 1 diabetes, cardiovascular diseases, and osteoporosis. Proper consumption of calcium and vitamin D is essential for bone mass growth and maintenance throughout life. The use of these two nutrients is recommended, particularly in the elderly and people who do not get enough food [18-19]. In the present study, many students believed that calcium consumption is effective in preventing osteoporosis and vitamin D plays an effective role in its absorption. Since very few types of foods naturally contain vitamin D, exposure to sunlight increases the production of vitamin D3 in the skin [18]. In this study, 64.3% of the students believed that the risk of osteoporosis would be reduced through exposure to sunlight . Although the importance of calcium and vitamin D in preventing osteoporosis has been proven, taking other nutrients like potassium, magnesium, vitamin K, vegetables and fruits would also help prevent osteoporosis. The role of proper nutrition in preventing osteoporosis is confirmed through this study. In other similar studies, the role of vitamin K in preventing osteoporosis has been mentioned which was similar to the present study's results [21-22].

5. Conclusion

Considering the fact that osteoporosis is one of the common causes of bone diseases in Iran and there are many financial and physical losses, raising the awareness of the society, specifically the

youth and students about osteoporosis has a pivotal role in reducing the risk of developing the disease in higher age groups. Since reducing dairy consumption is important for osteoporosis and its capitation consumption is low in the country, it is recommended that university experts focus their goals on awareness of the risks and problems with osteoporosis in future.

Limitation

This study merely checked the reliability of research-based questionnaire, with no psychometrics content validity.

Acknowledgements

Conflict of Interest

The authors declare no conflict of interest.

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