ORIGINAL ARTICLE

Awareness of osteoporosis in men

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Abstract

Objectives: To assess the awareness in office workers about osteoporosis in men.

Method: The cross-sectional study was conducted in different offices in the 5 districts of Karachi from June to December 2014, and comprised office workers not related to the medical profession and belonging to middle and upper socioeconomic groups with education level of Masters and above. A questionnaire was used as the data collection tool and the collected data was analysed using SPSS 16.

Results: A total of 420 questionnaires were distributed of which 360(86%) were analysed. The mean age of the respondents was 44±9.11 years; mean height was 5.6±0.26 feet; mean weight was 70.8±1.20 kg; and 55% (198) participants were smokers. Only 14.7%(53) had heard of osteoporosis,13.3%(48) had heard of osteoporotic fracture, 17.5%(63) knew that osteoporosis can occur in males also,14.2%(51) knew that osteoporosis occurs secondary to smoking and alcohol consumption, 15%(54) knew worldwide 1 in every 8 males after 60 years suffers from osteoporosis, 22.5%(81) knew that it can be prevented with adequate calcium and vitamin D, and 30%(108) used internet to seek information regarding medical issues. In total, 54.4%(196) reported regular milk intake, 22.5%(81) took calcium supplements,23.6%(85) took vitamin D, 33.1%(85)performed regular exercise, 18.1%(65) had got their serum calcium and vitamin D levels checked. There was no association between smoking and the level of awareness (p=0.219). There was significant association between those who took calcium and the level of awareness (p=0.00), and between those who performed regular physical exercise and their level of awareness (P=0.001).

Conclusion: There is a need to educate people as well as healthcare providers about the need to keep an eye on male osteoporosis. National awareness strategies should be implemented to cope with the issue.

Keywords: Osteoporosis, BMD, Osteoporotic fracture. (JPMA 65: S-12 (Suppl. 3); 2015)

Introduction

According to the World Health Organisation (WHO), osteoporosis is a generalised skeletal disorder of low bone mass (thinning of the bone) and deterioration in its architecture, causing susceptibility to fracture. WHO has given a criteria according to which a bone mineral density (BMD) "that lies 2.5 standard deviation (SD) or more below the average value for young healthy women (a T Score of <2.5 SD) is included in osteoporosis."[1,2]

Osteoporosis is a major public health problem affecting millions of people around the world.[3] It is characterised by reduced BMD and micro-architectural deterioration of bone tissue, leading to an increased risk of fracture.[4] It is estimated that by the age of 50 years, one in three women and one in 5 men will sustain a fragility fracture during the remaining lifetime.[5] It is estimated that an osteoporotic fracture occurs every three seconds worldwide. High mortality is associated with any type of fracture in both men and women; hip fracture is particularly a powerful independent predictor of long-term mortality.[6]

Worldwide, osteoporosis and osteoporotic fractures are important public health issues causing a heavy burden on the economy of the country.[7] Patients sustaining fragility fractures, operated in hospitals may develop postoperative complications e.g. chest infections, deep vein thrombosis (DVT), pneumonia and wound infections. All of these complications may increase the morbidity and mortality rates.[8] According to a Swedish study, more than twice as many women than men aged ≥50 years were hospitalised for hip fractures,[9] and studies have reported higher mortality rates after hip fracture in men than in women. A Canadian study observed 71% of hip fractures in women and 29% in men, but in-hospital mortality of women was half that of men (5% and 10%, respectively).[10]

The use of a common reference range arises from several lines of evidence. A WHO systematic review and meta-analysis of data from 12 cohort studies including approximately 39,000 men and women assessed relationship between BMD and fracture risk. Data suggested a consistent increase in the relative risk (RR) of fracture for each SD decrease in femoral neck BMD. The gradient of risk was higher for hip fracture than for all osteoporotic fractures, but was the same in men as in women for both outcomes,[11] so that the fracture risk in men and women at any given age was similar for a same

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absolute BMD value. The same study showed a decreasing gradient of risk for hip fracture with advancing age, but the age-dependency of fracture risk was similar in men and women.[11] The systematic review expressed absolute fracture risk as 10-year probability of hip fracture according to age and BMD T-score and concluded that the age-adjusted hip fracture incidence was identical in men and women of the same age and the same BMD.[11]

In order to reduce the incidence of osteoporosis and its complications, preventive strategies should be implemented.[6] Screening for osteoporosis in men is very important because fragility fractures are more likely to increase the mortality rate among them compared to females. Better health outcomes for men at risk for osteoporosis can be achieved with greater awareness about the disease in the population.[12] Three steps to unbreakable bone is recommended by International Osteoporosis Foundation, which shows a combination of staying active, eating a diet rich in calcium, and avoiding vitamin D deficiency to improve bone and muscle health and reduce the risk of osteoporosis.[11]

According to the 2004 Surgeon-General's Report on Bone Health and Osteoporosis, the medical expense for treating broken bones from osteoporosis was as high as $18 billion each year according to U.S. Department of Health and Human Services, 2004. The work lost and the cost of patient care added a billion more to this figure with the aging population, the number of hip fractures and related cost expenditures is expected to triple by 2040[13].

In order to plan interventional projects, there is a need to determine the actual status of current awareness in men about osteoporosis. There are several studies done about osteoporosis awareness in women, but very few about awareness in men worldwide. No study has yet been done in Pakistan about this silent disease. Previously done studies in other parts of world are survey-based on selected sample or small sample size which may contain a degree of bias.

The current study was planned to determine the basic awareness about osteoporosis in males in Pakistan so that effective and efficient strategies can be made for prevention, diagnosis and treatment.

Subjects and Methods

The cross-sectional study was conducted in different offices in the 5 districts of Karachi from June to December 2014, and comprised office workers not related to the medical profession and belonging to middle and upper socioeconomic groups with education level of Masters and above, and age 20 years or more.

Same size was calculated using power and sample size software (PASS) version 11. A sample size of 360 achieved 83% power to detect a difference (P1-P0) of 0.0500 using a two-sided binomial test. The target significance level was 0.0500. The actual significance level achieved was 0.0398. These results assumed that the population proportion under the null hypothesis was 0.0970.

A simple self-administered questionnaire was distributed by orthopaedic surgeons in the offices. The questionnaire was aimed at assessing knowledge in office workers regarding osteoporosis in men. It was a comprehensive questionnaire covering all aspects of knowledge. The level of variation on individual basis for seeking medical knowledge may have been a limitation of the questionnaire, but its language was simple, and no medical terminology was used. Since the participants had a decent educational level, they were able to understand it easily in English.

After taking informed consent, the subjects were given the questionnaire comprising demographic characteristics (including age, gender, weight, height, educational status, social-economic status, history of addiction to alcohol and smoking) and 13 simple questions concerning basic awareness about osteoporosis. The answers to the questions were required to beYes or No. Preliminary data was double-checked. All analyses were performed using SPSS version 16. Descriptive statistics (means, standard deviations, frequencies and percentages) were used to describe the characteristics of the participants. Chi square test was used to compare the level of awareness of osteoporosis according to awareness about osteoporosis in smokers and those who took regular calcium and vitamin D.

Results

A total of 420 questionnaires were distributed of which 360(86%) were analysed keeping in view sample size requirements. The mean age of the respondents was 44±9.11 years; mean height was 5.6±0.26 feet; mean weight was 70.8±1.20 kg; and 55%(198) participants were smokers. Only 14.7%(53) had heard of osteoporosis,

Table-1: Alcohol, Smoking * Do you know osteoporosis can occur secondary to smoking and alcohol consumption Crosstabulation.

Count	Do you know osteoporosis can occur secondary to smoking and alcohol consumption		Total
	Yes	No	
Alcohol, Smoking			
Yes	24	174	198
No	27	135	162
Total	51	309	360

Table-2: Chi-square tests.

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.514[a]	1	0.219		
Continuity Correction[b]	1.163	1	0.281		
Likelihood Ratio	1.506	1	0.220		
Fisher's Exact Test				0.228	0.140
Linear-by-Linear Association	1.510	1	0.219		
N of Valid Cases[b]	360				

[a]. 0 cells (.0%) have expected count less than 5. The minimum expected count is 22.95.

[b]. Computed only for a 2x2 table

Table-3: Do you consciously take calcium daily (such as calcium carbonate).

Count	Do you know osteoporosis can be prevented with adequate intake of calcium, vitamin D and weight bearing exercises		Total
	Yes	No	
Yes	31	50	81
No	50	229	279
Total	81	279	360

*Do you know osteoporosis can be prevented with adequate intake of calcium, vitamin D and weight bearing exercises Crosstabulation.
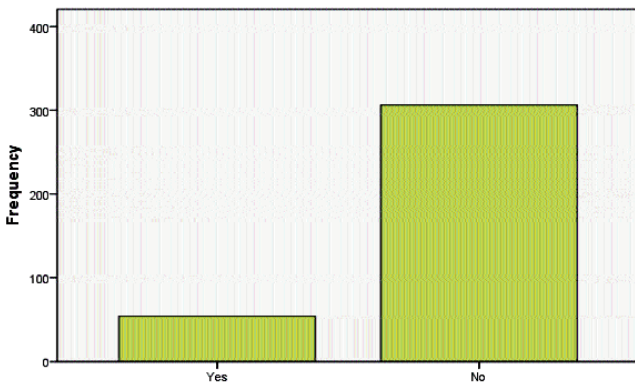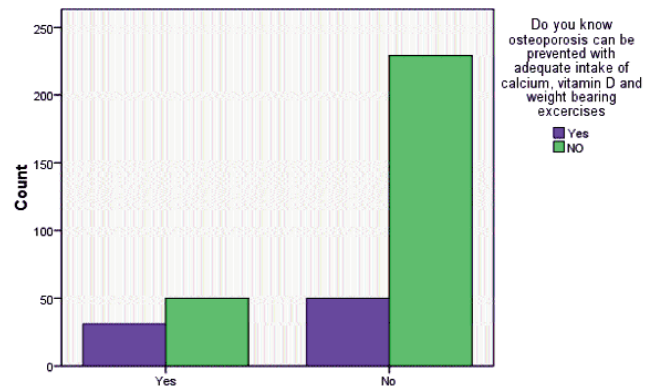

Figure-2: Do you conciously take calcium daily (such as calcium carbonate).

13.3%(48) had heard of osteoporotic fracture, 17.5%(63) knew that osteoporosis can occur in males also, 14.25(51)% knew that osteoporosis occurs secondary to smoking and alcohol consumption 9 (Table-1), 15%(54) knew worldwide 1 in every 8 males after 60 years suffers from osteoporosis, 22.5%(81) knew that it can be prevented with adequate calcium and vitamin D (Figure-1), and 30%(108) used internet to seek information regarding medical issues. In total, 54.4%(196) reported regular milk intake, 22.5%(81) took calcium supplements (Figure-2), 23.6% took vitamin D, 33.1%performed regular exercise, 18.1%(65) had got their serum calcium and

Figure-1: Do you know worldwide 1 in every 8 males, after the age of 60 years suffer from osteoporosis.

Table-4: Chi-Square Tests.

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14.909[a]	1	0.000		
Continuity Correction[b]	13.765	1	0.000		
Likelihood Ratio	13.718	1	0.000		
Fisher's Exact Test				0.000	0.000
Linear-by-Linear Association	14.868	1	0.000		
N of Valid Cases[b]	360				

[a]. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.23.

[b]. Computed only for a 2x2 table.

vitamin D levels checked. There was no association between smoking and the level of awareness (p=0.219). There was significant association between those who took calcium and the level of awareness (p=0.00), and between those who performed regular physical exercise and their level of awareness (P=0.001).

Discussion

Osteoporosis is generally accepted as a "women health issue". In men it is an inadequately appreciated problem. This is partly a result of disproportionate emphasis on osteoporosis in women. There has been insufficient awareness among both the public and medical profession that osteoporosis is common in older men as well. The purpose of this study was to assess osteoporosis knowledge among male office workers, because in order to promote specific behaviour strategies for osteoporosis prevention and treatment, the level of basic awareness is of great importance.

Our study includes male respondents of different age groups; mean age of the patient was 44 years. The study revealed that only 14.7% respondents knew about osteoporosis. A recent study carried out in Saint Joseph Hospital in Chicago showed results that were entirely different from our study. It reported 77% of male respondents aged 21-73 years had heard of osteoporosis.[14] According to Chan (2006),[15] walking and exercise can help build stronger bones and muscles and the strength, flexibility and balance can be increased but unfortunately this knowledge does not translate into practices. Our study also showed that only 33.1% subjects performed regular exercise.

When identifying a good sources of calcium, 54.4% had regular milk regularly, 22.5 took calcium and 23.6 took vitamin D supplements. A study conducted in 1998 at Boston University School of Medicine concluded that 2x500mg of calcium carbonate taken with meals for 2 years improved bone density in spine and femoral neck by about 3%.[16] A study done at Harvard Medical School found no benefit of calcium supplementation on its own.[17] An adequate intake of vitamin D is actually more important than an increased calcium intake. But as per our knowledge no clinical trial has yet been done to address this question.

In our study 55% respondents were smokers, and out of them only 14.2% knew that osteoporosis can occur secondary to smoking. Researchers at the University of Melbourne have discovered that women who smoke have significantly higher rate of developing osteoporosis, concluding that women who smoke a pack of cigarettes a day through adulthood will, by the time of menopause, have 5-10% lower bone density than non-smokers. Besides, 10% decrease in bone density corresponds to 44% increase in the risk of a hip fracture.[18]

Osteoporosis is commonly called a "silent disease" because it is asymptomatic until fracture occur.[19] This is the reason why subjects with a history of osteoporotic fracture know about osteoporosis well compared to other individuals. A study done in China showed that only 18.5% had heard of osteoporotic fracture[8] whereas in our study only 13.3% males were aware of osteoporotic fracture. According to Chinese Health Promotion Society's Summary Statement of Osteoporosis White Paper, osteoporosis has not been recognised as a major health problem despite the fact that large number of people in China are suffering from osteoporosis.[19]

Risk of osteoporosis and osteoporotic fracture can be reduced by provision of knowledge about osteoporosis.[20] It is therefore recommended that osteoporosis prevention should be started in young age in men and women. Awareness should be spread regarding the definition of osteoporosis, its complications and major risk factors for this condition. Increased knowledge about the disease is associated with improved patient compliance with treatment.[21]

Our survey has several limitations. We found no confounder and this is the limitation of our study as all the respondents were of high education level working in different professions not related to Medicine. Since it was a cross-sectional survey-based study, therefore no follow-up was required. Pakistan is a developing country and very few resources are spent on research activities. Although the sample was large, but our data came only from one city and is not necessarily representative of the whole country.

Conclusion

Knowledge about osteoporosis and its complication was very low in study population. Studies at national levels should be carried out across Pakistan and awareness campaigns should be organised in order to increase awareness among common people, especially the poorly educated men.

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