

Osteoporosis Awareness in Indian Men : A Cross Sectional Study



ORTHOPAEDIC

KEYWORDS: BMD, Osteoporosis, Calcium, Osteoporotic fracture.

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ABSTRACT

Objective: To assess osteoporosis awareness in educated working Indian men.

Design: A Cross Sectional study.

Methods: This study was conducted in the urban and suburban areas of the City of Lucknow (India) in government and private sector workplace male employees with minimum graduate level qualification not related to the medical profession and belonging to middle and upper socioeconomic groups. A questionnaire was used as the data collection tool and the collected data was statistically analyzed.

Results: 1260 patients were enrolled out of which 1218 (96.66%) were analyzed by help of questionnaires. The mean age of participants was 38 ± 8.21 years, and the age of participants ranged from 21 to 60 years. The mean weight of the study participants was 69.9 ± 2.10 kg; and mean height was 5.7 ± 0.37 feet. 469 (37.22%) participants were smokers. Only 689 men (54.68%) had ever heard of osteoporosis, 531 participants of the study (42.14%) had heard of osteoporotic fracture, 503 (39.9%) knew that osteoporosis can occur in males too, 487 (38.65%) were aware that osteoporosis occurs secondary to smoking and consumption of alcohol, 612 (48.57%) had the knowledge that it can be prevented with an adequate intake of calcium and vitamin D, and 581 (46.11%) had used internet to seek knowledge regarding medical issues. In total study group, 763 (60.55%) reported regular milk intake, 476 (37.77%) took calcium supplements at some point of time, 398 (31.58%) took vitamin D, 527 (41.82%) performed regular physical exercise, and 489 (38.80%) had got their serum vitamin D and calcium levels checked. No association was found between smoking and the level of awareness ($p=0.198$). A significant association was found between those who had taken 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: More studies should be carried out in all economic and educational group of people across India, accordingly awareness campaigns should be organized at national level in order to increase awareness and take preventive measures among common people, especially the low socioeconomic and less educated men.

INTRODUCTION

Osteoporosis is characterized by micro-architectural deterioration of bone tissue due to decreased Bone Mineral Density (BMD) which leads to an increased risk of fracture¹. Nowadays osteoporosis is one of the major public health problem world wide². In 1994 WHO has defined osteoporosis based on **bone mineral density** (BMD). A standardized score, called **T-score**, comparing BMD to average values for young healthy women is used to define the categories. The categories for diagnosis are: normal (T-score -1.0 and above), low bone mass, referred to as osteopenia (T-score between -1.0 and -2.5), osteoporosis (T-score -2.5 and below), severe osteoporosis (T-score -2.5 and below with history of a fracture)³. In 2008 WHO revised osteoporosis assessment and included BMD with selected **risk factors** for fracture along with height and weight. A fracture risk score, called **FRAX**, is calculated to determine 10-year probability of fracture. Two scores are given: probability of hip fracture and the other for a major osteoporotic fracture, defined as wrist, shoulder, hip, or painful spine fractures⁴. Osteoporosis and osteoporotic fractures are important public health issues worldwide causing a heavy burden on the economy of the country⁵. According to Sutton et al by the age of 50 years, one in three women and one in 5 men will sustain a fragility fracture during the remaining lifetime⁶. Orwig et al of Canada observed in their study that osteoporotic hip fracture occurred 71% in women and 29% in men, but in-hospital mortality of women was half than that of men (5% and 10%, respectively)⁷. WHO systematic review and Meta analysis 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 BMD⁸. Screening for osteoporosis in men is very important because fragility fractures are more likely to increase the mortality rate among them compared to females. By increasing awareness about osteoporosis in the population, better health outcomes for men at risk for osteoporosis can be achieved⁹. Actual status of current awareness in men about osteoporosis is needed to determine planning of preventive and interventional projects. Till date several studies have already been

done for awareness of osteoporosis in women, in contrary very few studies have been done for awareness of osteoporosis in men worldwide. This study was planned to determine the basic awareness about osteoporosis in males in India so that effective and efficient strategies can be made for prevention, diagnosis and treatment.

MATERIALS AND METHODS

After approval from institutional ethical committee (IEC), this study was conducted in urban and suburban areas of city of Lucknow (India) in government and private sector workplace male employees with minimum graduate level qualification not related to the medical profession and belonging to middle and upper socioeconomic groups. 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. After taking informed consent, the subjects were given the questionnaire comprising demographic characteristics (including age, gender, weight, height, educational status, socioeconomic 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 be Yes or No. Preliminary data was double-checked. 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.

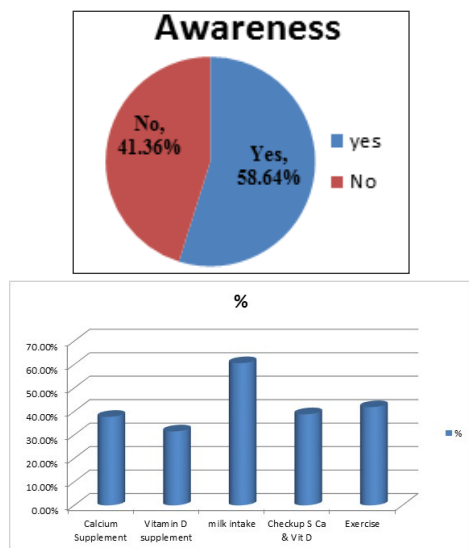
STATISTICAL ANALYSIS

The statistical analysis was done using SPSS (Statistical Package for Social Sciences) Version 15.0 statistical Analysis Software. The values were represented in Number (%) and Mean $\pm$ SD.

RESULTS

Baseline data-

No of questionnaire analyzed / total	1218 / 1260 (96.66%)
Age of patients Mean $\pm$ SD	38 $\pm$ 8.21 yrs, Range 21-60 yrs
Height	5.7 $\pm$ 0.37 feet
Weight	69.9 $\pm$ 2.10 kg
Smokers	469 (37.22%)
Aware of osteoporosis	689 (54.68%)
Calcium and Vit D supplement	476(37.77%) /398 (31.58%)
S. calcium & Vit D check up	489 (38.80%)



Among the 1260 enrolled patients 1218(96.66%) were analyzed by means of questionnaires and the mean age of participants was 38 $\pm$ 8.21 years, range of age of participants was from 21 to 60 years. Mean weight of the study participants was 69.9 $\pm$ 2.10 kg; the mean height was 5.7 $\pm$ 0.37 feet. 469 (37.22%) of the total participants were smokers and only 689 (54.68%) had heard of osteoporosis, 531 (42.14%) among the total had heard of osteoporotic fracture, 503 (39.9%) of the total knew that osteoporosis can occur in males also, 487 (38.65%) knew that osteoporosis occurs secondary to smoking and consumption of alcohol, 612 (48.57%) knew that it can be prevented with adequate intake of calcium and vitamin D, and 581 (46.11%) used internet to seek knowledge regarding medical issues. In total, 763 (60.55%) reported regular intake of milk, 476 (37.77%) took calcium supplementation, 398 (31.58%) took vitamin D supplements, 527 (41.82%) had undergone regular exercise, 489 (38.80%) had got their serum calcium and vitamin D levels investigated. No association was found between smoking and the level of awareness ($p=0.198$). There was a significant association between the participants of the study who took calcium and their level of awareness ($p=0.00$), and between those participants who performed regular 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 educated male employees, because in order to promote specific behavior 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 38 $\pm$ 8.21 years. The study revealed that only 54.68% 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 osteoporosis¹⁰. According to Chan (2006)¹¹, 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 practice. Our study also showed that only 41.82% subjects performed regular exercise, 60.55% had regular intake of milk, 37.77% took calcium and 31.58% 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%¹². A study done at Harvard Medical School found no benefit of calcium supplementation on its own¹³. An adequate intake of vitamin D is actually more important than an increased calcium intake. In our study 37.22% respondents were smokers, and out of them only 13.8% 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 fracture¹⁴. Osteoporosis is commonly called a "silent disease" because it is asymptomatic until fracture occurs¹⁵. This is the reason why subjects with a history of osteoporotic fracture know about osteoporosis well compared to other individuals.

In our study Indian men were much better aware than their Chinese counterparts as in China only 18.5% had heard of osteoporotic fracture¹⁶ whereas in India 42.14 % males were aware of osteoporotic fracture.

Risk of osteoporosis and osteoporotic fracture can be reduced by provision of knowledge about osteoporosis. 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 treatment¹⁷. 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. Although the sample size was large, but our data came only from one city and highly educated group so is not necessarily representative of the whole country.

CONCLUSION

More studies should be carried out in all economic and educational group of people across India, accordingly awareness campaigns should be organized at national level in order to increase awareness and take preventive measures among common people, especially the low socioeconomic and less educated men.

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