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Available online at: www.jpardonline.com**Assessment of Osteoporosis knowledge test among community population in Ootacamund, The Nilgiris**R Vadivelan^{1*}, Sudeep S¹, Vikash S¹, E. Manogaran²¹Department of Pharmacology, JSS College of Pharmacy, (JSS Academy of Higher Education and Research), Ootacamund, The Nilgiris, Tamil Nadu - 643001, India.²Faculty of Pharmaceutical Sciences, UCSI University (South Wing), Cheras, Kuala Lumpur, - 56000, Malaysia.

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ABSTRACT: The present objective of the study is to assess the general knowledge of osteoporosis risks, screening, treatment and physical activity as well as evaluating the awareness about radiological investigations timing and effects. A community based study based survey on a reliable questionnaire among general community in Ooty from Jan 2019 to March 2019 was distributed. Most of subjects were young, females and have college degree. Only 19 % of subjects reported having osteoporosis. Most of participants (62 %) have good overall general knowledge but only 52 % had good knowledge regarding the calcium recommendations and 31 % have good knowledge about importance of physical activity in prevention of osteoporosis. About 70 % of subject have good knowledge about the risk factors of osteoporosis and 75 % had good knowledge regarding the symptoms and radiological investigations. The overall knowledge in Ooty was good in 62 % of subjects however; the levels of knowledge about preventive measures were moderate while the majority had adequate knowledge regarding the risk factors, symptoms and radiological investigations. Although, a moderate prevalence of good knowledge, educational programs must be adopted by health authorities to motivate healthy behaviors for prevention of osteoporosis in our community.

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INTRODUCTION:

Osteoporosis is a disease in which weakening of bones increases the risk of damage to the bones, most common in the elderly and the aged. Bones that commonly break include the bones of the forearm, and the hip, and vertebrae in the spine ^[1]. Smoking and too little exercise are also risk factors. Women are more affected than men where women get easily affected ^[2]. Fracture risk calculators consider the risk of fracture founded upon several reasons, including bone mineral density, age,

smoking, alcohol usage, weight and gender [3]. The improved probability of collapsing related with aging leads to fractures. Those with earlier falls, as well as those with walk or equilibrium disorders, are most at danger [4,5].

Risk factor of osteoporotic ruptures can be split between non-adjustable and potentially variable. In addition, Osteoporosis is a familiar problem of specific illness and syndromes [6]. The most vital risk factors for Osteoporosis are advanced age (in both men and women) oestrogen shortage subsequent menopause or clinical removal of the ovaries is correlated with a quick decrease in bone mineral density, while in men, a decline in testosterone level has a similar (but less pronounced) conclusion [7]. Although small amounts of alcohol are probably beneficial (bone density increase with increasing alcohol intake), chronic heavy drinking (alcohol intake greater than three units/days) increases fracture risk despite any beneficial effects in bone density. Many studies have connected smoking with reduced bone health, but the mechanism is uncertain, also results in amplified collapse of exogenous estrogen, lower body weight and earlier menopause, all of which donate to lower bone mineral density [8]. The diagnosis of osteoporosis can be made using conventional radiography and by measuring the bone mineral density (BMD). The most popular method of measuring BMD is dual-energy X-ray absorptiometry. Dual energy X-ray is considered the gold standard for the diagnosis of osteoporosis [9]. Low BMD has been related to increased cardiovascular mortality and morbidity, inflammation and oxidative stress are positively correlated with the variability of atherosclerotic plaque and the occurrence of acute coronary syndrome [10-12].

The aim of the present study was to explore the awareness of Ootacamund population about osteoporosis risks, physical activities and preventive measures as well as assessing the general knowledge about importance of routine radiological investigations.

METHODS:

Study design and setting:

This was a community survey study conducted among general adult population of Ootacamund.

Sample size and population:

This study included 100 adult subjects aged 20 to 60 years old living in Ootacamund, The Nilgiris. The study population were selected using multi-stratified

randomizing technique from different parts as subjects were interviewed.

Study tools:

A questionnaire was adopted from the Osteoporosis Knowledge Test (OKT) [12]. The scores were based on correct answers were given 1 and incorrect answers will take 0. The original questionnaire included 42 questions but this questionnaire was modified to contain 2 aspects the 1st included demographics of included subjects and the 2nd part consisted of 18 questions about the risks, exercise and treatments. A consent is obtained from all participants who are enrolled on the present study.

RESULTS:

Demographics of the respondents:

Most of included subjects (41 %) aged 21 to 35 years old, 32 % aged from 46 to 50 years old and only 27 % aged from 36 to 45 years old. About 56 % of subjects were female and 44 % were males. The majority of subjects (58 %) had college degree, 27 % high school degree and 15 % had post graduate degree (Table 1).

Table 1. Demographics of Respondents (n=100).

Particulars	N	Percentage (%)
Age (Year)		
21 - 35	41	41
36 – 45	27	27
46 – 60	22	32
Gender		
Male	44	44
Female	56	56
Level of Education		
High School	27	27
Degree	58	58
Post Graduate	15	15

Prevalence of osteoporosis:

The prevalence of osteoporosis showed that 19 % of subjects responded that they were suffering from osteoporosis and 81 % said that they don't have osteoporosis.

Awareness about osteoporosis in included subjects:

The awareness of included subjects about osteoporosis risk factors, most of subjects answered correct questions about the importance of dairy products in diet. About 74 % of them had correct answers regarding the effect of alcohol consuming and eating disorders in predisposing of osteoporosis. About 82 % of subjects had correct answer regarding the adverse effects of smoking on osteoporosis. However, most of participants had

moderate answers regarding the effect of age and postmenopausal period as well as the effect of genetics and being Asian on higher susceptibility to osteoporosis. The knowledge about calcium recommendation showed that most of subjects answered true questions about the importance of drinking 3 cups or more (73 %) as well as viable effects of sunlight (65 %) to prevent osteoporosis. On the other hand, the majority had wrong answered regarding the importance of Cheese, broccoli, sardines and yogurt 72 (%) as sources of calcium and using calcium supplementation for those not having enough calcium in diet (65 %).

Regarding the physical activities, 81 and 78 % of subjects answered wrong questions about importance of 5 days of exercise per week, running and aerobic dancing in prevention of osteoporosis, respectively. Most of participants answered true answered about the symptoms (89 %) and treatments of osteoporosis (90 %). The knowledge about radiological investigations should that most of subjects answered wrong questions regarding using DXA for diagnosis of osteoporosis (62 %) and 79 % had no true knowledge about importance of advising old aged and postmenopausal women to do radiological investigations. However, 68 % had good knowledge about importance of routine radiological investigations and 90 % knows about the harmful effects of excessive exposure to radiation (Table 2).

Knowledge score:

About 62 % of subjects had good general knowledge about osteoporosis while 38 % had poor knowledge. The majority of participants (70 %) have good knowledge about the risk factors of osteoporosis, while only 52 % had good knowledge about calcium recommendations for prevention of osteoporosis. However, only 31 % of subjects had good knowledge about the importance of physical activities in prevention of osteoporosis. The knowledge about the symptoms and radiological investigations was good in 75 % of subjects

DISCUSSION:

This study showed that the level of knowledge among included subjects about osteoporosis is insufficient. This study showed that 62 % of subjects have good knowledge other studies in Ooty showed higher levels of knowledge. As for the knowledge about radiological investigations, most of subjects had good knowledge. Physicians should provide subjects about the importance of DXA scan in diagnosis of osteoporosis as well as the

importance of routine radiological investigations in old aged people and postmenopausal women.

The prevalence of osteoporosis in the present study was only 19 % and this could be attributed to small sample size. The present study has some limitations including that most of subjects are educated and don't resemble the whole population in Ooty.

CONCLUSION:

The overall knowledge in Ooty was good in 62 % of subjects however; the levels of knowledge about preventive measures were moderate while the majority had adequate knowledge regarding the risk factors, symptoms and radiological investigations. Although, a moderate prevalence of good knowledge, educational programs must be adopted by health authorities to motivate healthy behaviors for further prevention of osteoporosis.

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Table 2. Level of awareness about osteoporosis in included subjects.

Sl. No.	Factors	True	False
Risk factors of osteoporosis			
1	Low dairy products in diet could lead to osteoporosis?	79	21
2	Being older or in post-menopause women are at risk factor for osteoporosis?	31	79
3	Genetic and being Asian makes people more susceptible to osteoporosis?	40	60
4	Eating disorder and consuming alcohol are risk factors of osteoporosis?	74	26
5	Daily smoking habits more likely to have osteoporosis?	82	18
Knowledge about calcium recommendations			
6	Is drinking three or more cups of milk daily could prevent from osteoporosis?	73	27
7	Chees, broccoli, sardines and yogurt are the best source of calcium?	28	72
8	Sunlight is the must for viable absorption of calcium?	53	47
9	Is calcium supplementation for people not having enough calcium for food?	65	35
Knowledge about physical exercise			
10	Is drinking three or more cups of milk daily could prevent from osteoporosis?	73	27
11	Chees, broccoli, sardines and yogurt are the best source of calcium?	28	72
12	Sunlight is the must for viable absorption of calcium?	53	47
13	Is calcium supplementation for people not having enough calcium for food?	65	35
Knowledge about physical exercise			
14	Five days of exercise per week could strength bones and prevent osteoporosis?	19	81
15	Running and aerobic dancing are the best activities for decreasing osteoporosis?	22	78
16	Routine physical activity is recommended for prevention of osteoporosis?	78	22
Knowledge about symptoms and treatment			
17	Osteoporosis had no symptoms especially during the early stages?	89	11
18	Osteoporosis can be treated after diagnosis?	90	10
Knowledge about radiological investigations			
19	Osteoporosis had no symptoms especially during the early stages?	38	62
20	Routine radiological investigations should be done for early assessment of osteoporosis?	64	46
21	Doctors should advice old aged and postmenopausal subjects to do radiological investigations?	21	79
22	Excessive exposure to radiation could cause harmful effects?	90	10

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