Knowledge Awareness and Perception about Osteoporosis among Housekeeping Employees – A Survey

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Osteoporosis is a serious health concern that affects millions of people around the world, and India is not an exception. Osteoporosis is a common skeletal disease characterised by low bone mass and deterioration of the microarchitecture of bone tissue, with a consequent increase in the bone fragility and increased susceptibility to trauma fractures. Awareness and perceptions of belief and susceptibility in the seriousness of a disease can help in its prevention and control. It includes a questionnaire based study. The survey was conducted among 150 housekeeping employees of age group 45 and above from a private college. The results were obtained and statistically analysed through SPSS software, chi square test was done to check the association and a p value of 0.05 was said to be statistically significant. Osteoporosis is considered to be the most common skeletal disorder affecting humans with high prevalence, worldwide. About 73% of employees were aware of osteoporosis in which 45% of women had experienced bone pain and fracture. Fracture is one of the most serious consequences of osteoporosis that hinders the patient's quality of life.

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About 75% of employees have moderate awareness about low calcium or high salt intake and family history predispose a person to osteoporosis. The current study concluded that the knowledge on osteoporosis risk factors, exercise and calcium intake among housekeeping employees could be considered moderate. Furthermore, education of the public regarding prevention of osteoporosis must be incorporated in the health services.

1. INTRODUCTION

Osteoporosis is a serious health concern that affects millions of people around the world, and India is not an exception. Osteoporosis is a common skeletal disease characterized by low bone mass and deterioration of the microarchitecture of bone tissue, with a consequent increase in the bone fragility and increased susceptibility to trauma [1]. and awareness of belief and susceptibility in the seriousness of a disease can help in its control and prevention. More apparent with the aging of the population and has become a serious health problem. The end-point of osteoporosis consequence is fracture, which has social, economic and psychological consequences among the society. To prevent fractures risk factors are being modifiable whereas, there are no pharmacologic therapies available to reduce the risk factors [2].

Osteoporosis is defined as a skeletal disorder characterized by compromised bone strength, predisposing to an increased risk of fracture. It is estimated that ten million individuals have osteoporosis and another thirty-four million suffer from low bone density, By 2020, approximately sixty-one million individuals will have osteoporosis or low bone density [3]. As when bone strength decreases, the risk of fractures increases. The increased risk of fractures leads to increased morbidity and mortality of individuals living. It is projected that over fifty years, one in two women and one in four men will experience an osteoporotic related fracture [4]. Bone tissue is one of the distinctive forms of connective tissue. However, the extracellular material of bone is hard and calcified. Long bones make up the forearm, and short bones are found in the wrist. The irregular bones consist of the hip bones and vertebrae [5].

The disease is medically diagnosed as having reduced bone mineral density and there is a standard deviation below the adult peak mean [6] which decreases the bone strength and increases the risk of skeletal disorder. Females have vitamin D deficiency higher than males as they wear protective clothing and avoid sun exposure. Several studies from different populations assessed the knowledge and attitudes toward osteoporosis aiming at providing data essential for planning an educational intervention. Although osteoporosis is difficult to treat, it can be prevented to a great extent [7]. Following a healthy lifestyle, proper nutrition, and doing exercise are among these behaviors. It should be noted that prevention should be started at the time of bone formation and continued during adolescence and adult periods [8,9]. Studies have shown that planning for osteoporosis prevention requires sufficient information about people's health knowledge and beliefs. Meanwhile for early diagnosis of the disease, awareness of osteoporosis symptoms helps and encourages help-seeking behaviors and decreases the disease complications [2].

However, men do think osteoporosis is something they need to be concerned about, and many are not aware of their risk for the disease and fail to engage in preventative behaviors. Many physicians may also believe osteoporosis is strictly a female disease which leads to the under-reporting in men [10,11]. About one in eight men aged 50 and over have an osteoporosis related problem.

Due to devastating consequences of osteoporosis, it demands a huge expense for diagnosis, treatment as well as management of its complications it is no longer considered as only a public health concern, rather it has emerged as a socio-economic issue, .Major determinant symptoms of osteoporosis includes fragility fractures, among which most common one are hip fractures followed by severe acute back pain, vertebral and wrist fracturesloss of height (dowager's hump),, limitation of mobility and stooped posture (kyphosis) in chronic severe cases. Though osteoporosis quietly develops over years, most considerable risk factors includes genetics, being female especially postmenopausal women, advance age, petite body structure, low consumption of calcium and

vitamin D, lack of exposure to sunlight, sedentary life style, chronic ingestion of alcohol.

Calcium is crucial for achieving peak bone mass in an individual's twenties and thirties of life and for maintaining bone mass for later in life [12,13]. The size of this reserve is controlled by the mechanical function of the skeleton, and the body maintains only as much bone as needed to support mechanical loads. Calcium absorption declines with age; therefore, recommendations for dietary intake of calcium are higher for adults aged fifty-one years and older [14]. Two additional reasons calcium requirements increase with age are that physical activity typically declines with age and food intake is reduced as individuals grow old [15].

The recommendation for calcium varies by age. A steady increase in calcium intake is required as children age, beginning with 210 mg per day in infants and rising to 1,300 mg per day in those ages nine to eighteen. Recommended levels drop to 1,000 mg per day in those ages nineteen to fifty, and then increase to 1,200 mg per day for those over age fifty. The same age- dependent recommendations for calcium apply to pregnant or nursing women [16]. Milk, yogurt, and cheese are the main sources of calcium in the diet.

Vitamin D is essential because it aids in the absorption and utilization of calcium [17] Vitamin D is supplied to the body through sunlight. Those who obtain adequate amounts of calcium and vitamin D should have higher bone mass and fewer fractures. A deficiency in vitamin D causes a decrease in the effectiveness of intestinal absorption of dietary calcium and phosphorus. It seems that on-time prevention of osteoporosis and also early diagnosis and for a adequate treatment our community requires a sufficient awareness of the disease and its prevention in the community, especially among women; therefore, the present study was designed and performed with the aim of determining the awareness of housekeeping employees in relation to osteoporosis.

2. MATERIALS AND METHODS

Survey to evaluate the awareness of osteoporosis was conducted among housekeeping employees from a private Institution. A total of 150 housekeeping female employees of age group 45 and above were included in the study. A self administered questionnaire was used. The questionnaire consisted of the major aspects of knowledge about osteoporosis and its symptoms. This survey was a questionnaire based study which consisted of necessary questions.

2.1 Data Collection

The survey was taken by 150 female housekeeping employees from a private Institution. All data was entered in an excel sheet. Data was analysed by multiple logistic regression analysis using SPSS software version 20, Chi square test was used to find an association between the study variables. p value less than or equal to 0.005 was taken statistically significant. Inference of the study is given below.

3. RESULTS AND DISCUSSION

Osteoporosis is considered to be the most common skeletal disorder affecting humans with high prevalence, worldwide. About 48.67% of employees were aware of osteoporosis in which 61.33% of women had experienced bone pain and fracture which is illustrated in Fig. 1. Fracture is the most serious consequence of osteoporosis that hinders the patient's quality of life. Whereas, 78% of employees have no awareness that family history, low calcium or high salt intake can predispose a person to osteoporosis. About 78.67% of women were unaware that family history can increase the risk for osteoporosis which is illustrated in Fig. 2. Whereas,72% of womens were unaware that calcium supplements will reduce the risk of osteoporosis (Fig. 3). Regarding the role of exercise on bone physiology, 12.7% of the participants do regular exercise which will improve bone health (Fig. 4). Fig. 5 shows the the association between the total knowledge score for osteoporosis and women's age, it was found that the highest score was among the age group of 45 and 55. Fig. 6 shows the association between the total knowledge score of risk factors for osteoporosis and age groups, it was found that the highest score was among the age group of 45 to 55. Pearson's correlation to assess the age group and knowledge on risk factor of osteoporosis was found to be statistically significant p =0.00(p<0.05).
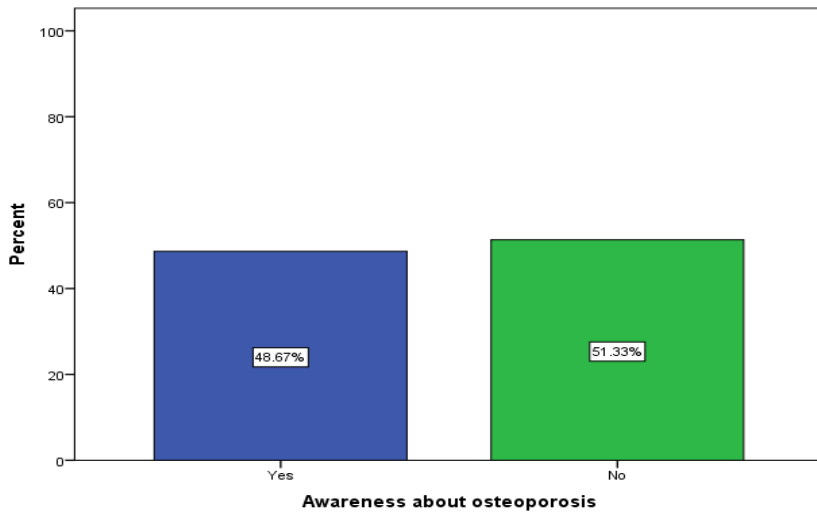
Fig. 1. Showing the distribution of participants based on their awareness about osteoporosis among housekeeping womens. X axis represents the participants awareness of osteoporosis and Y axis represents the percentage of responses. The bar chart shows that 48.67% of participants were aware of osteoporosis (Yes - blue) and 51.33% of participants were unaware of it (No - green)
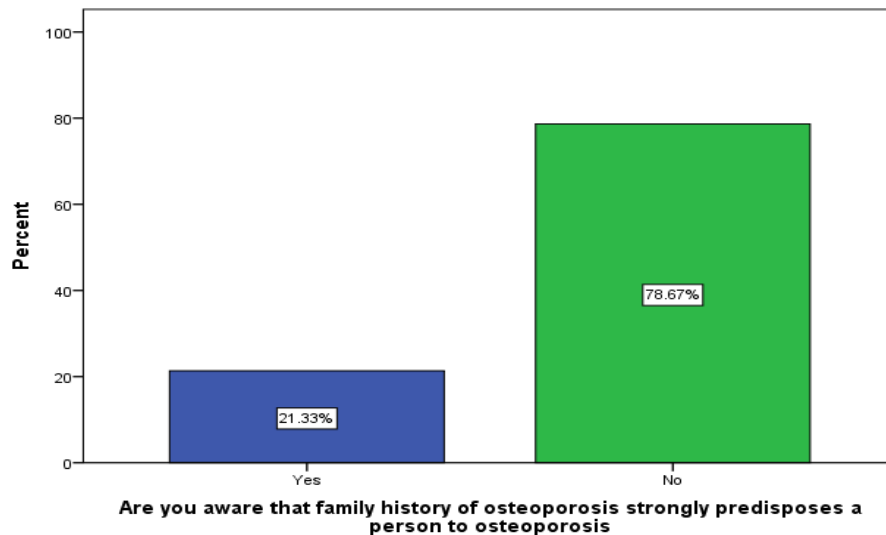
Fig. 2. Showing the distribution of participants based on their awareness that family history predisposes a person to osteoporosis. X axis represents the awareness of the participants that family history predisposes a person to osteoporosis and Y axis represents the percentage of responses. The bar chart shows that 21.33% of participants were aware that family history can predisposes a person to osteoporosis (Yes - blue) and 78.67% of participants were unaware of it (No - green)

The purpose of this study was to assess the knowledge of Osteoporosis among housekeeping employees and to observe the association between knowledge score and background variables. Overall, this study shows

moderate levels of knowledge regarding osteoporosis among housekeeping employees and half of the studied participants were unaware of the osteoporosis prevention options. One of the findings was that the study participants had

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inadequate knowledge regarding vitamin D which is required for the absorption of calcium. Compared to other ethnicities and ages, Older white women have a higher prevalence of the disease. Women over age fifty accounted for over 75% of the total cases. Women are at more risk than men; this is attributed to the fact that fewer mens have low levels of bone density. Osteoporosis in men is under-diagnosed, under-reported, undertreated, and inadequately researched [18]. A more reassuring finding was about 78.67% of women were unaware that family history can increase the risk for osteoporosis which is illustrated in Fig. 2. This result is in accordance with studies conducted by shrestha et al. [19] reported that 80% of women were unaware that family history can increase the risk for osteoporosis. The existing evidence showed that the majority of the participants were aware of the source of calcium supply. Few participants knew about the best way to reduce a person's chance of getting osteoporosis.

A troubling finding was the low level of knowledge regarding the medications and supplements related to the treatment of osteoporosis. Participants (about 82%) also showed a weak understanding of the role of calcium supplements, intake of milk, and regular exercise are the best way to reduce a person's chance of getting osteoporosis in the prevention

of osteoporosis. In consensus, study by Juby et al. [20] reported that osteoporosis related risk factors, calcium intake and exercise have got some effects on the women's body.

About 77.3% of employees are unaware about high salt intake which increases the chance of osteoporosis and this concept is coincided by the study reported by Bukowska et al. [21] that lifestyle factors such as: a dietary intake low in calcium, low bodyweight, lack of exercise resulting in pose risks for the development of osteoporosis. About 61.3% of women have experienced bone pain and 54.7% had fractures. Still they haven't started their treatment for osteoporosis, many women are negotiating the risk factors of osteoporosis. Among 78% of females don't follow a proper diet.

Regarding the association between the total knowledge score for osteoporosis and women's age, it was found that the highest score was among the age group of 45 and 55 (Fig. 5).The study interestingly also found a significant correlation (p=0.000) between age groups and the awareness about osteoporosis.45 to 55 years age group showed a higher percentage of response in awareness about osteoporosis which was also in accordance with the previous studies done by Saw et al an Silbayeh et al. [10,22].
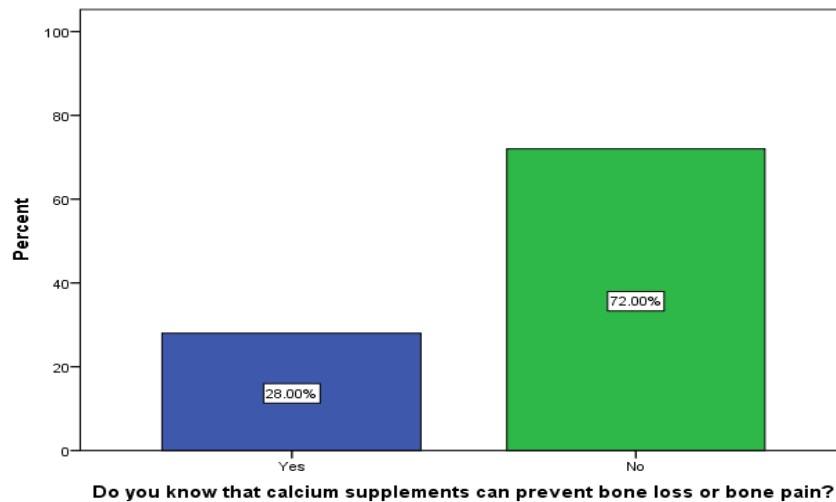
Fig. 3. Showing the distribution of participants based on their awareness about prevention of bone loss or bone pain by taking calcium supplements. X axis represents the participants awareness about prevention of bone loss or bone pain by taking calcium supplements and Y axis represents the percentage of responses. The bar chart shows that 28% of participants were aware of prevention of bone loss or bone pain by taking calcium supplements (Yes - blue) and 72% of participants were unaware of it (No - green)
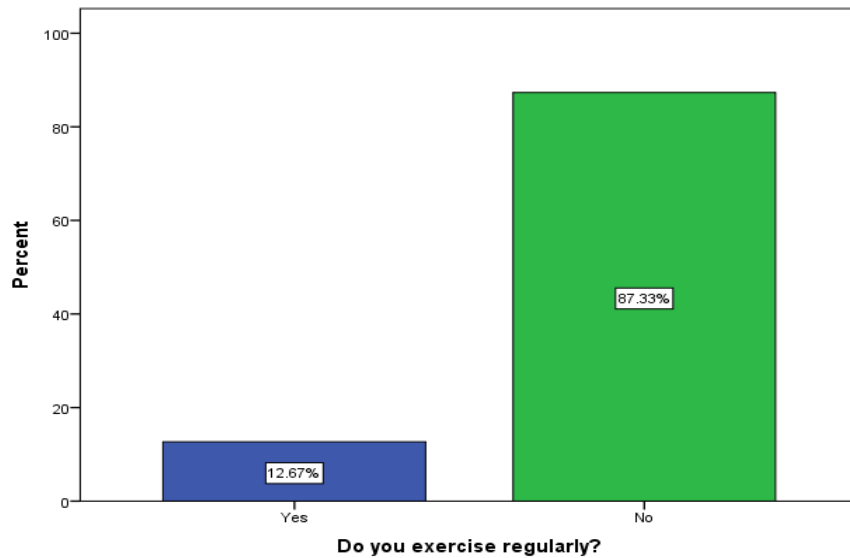
Fig. 4. Showing the distribution of participants based on their habit of exercising regularly .X axis represents the habit of exercising regularly and Y axis represents the percentage of responses. The bar chart shows that 12.67% of participants exercise regularly (Yes - blue) and 87.33% of participants don't exercise regularly (No - green)
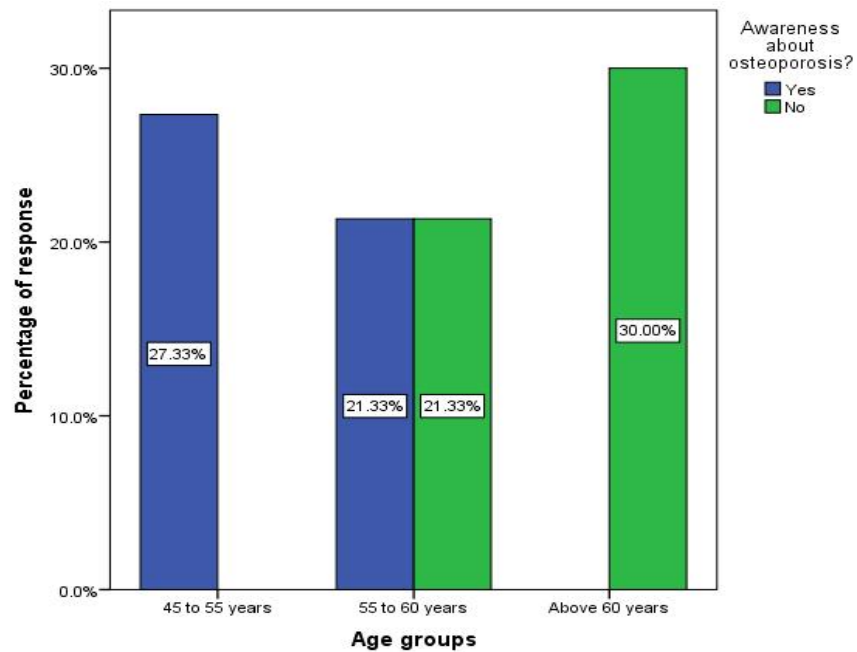
Fig. 5. Bar chart represents the association of age group and awareness of osteoporosis among housekeeping employees. X axis represents the age group of the participants who were aware of osteoporosis and Y axis represents the percentage of responses. 27.33% belonging to the 45 to 55 years of age group were aware of osteoporosis (blue) which is the maximum response. Chi square test was performed and association between the age groups and awareness of osteoporosis was found to be statistically significant. Pearson's correlation value =0.000 (p<0.05), hence statistically significant

Osteoporosis is the most common bone disease in humans, representing a major public health problem as outlined in bone health and osteoporosis. It is characterized by low bone mass, deterioration of bone tissue and disruption of bone architecture, compromised bone strength, and an increase in the risk of fracture [23,21] Osteoporosis medications include bisphosphonates, receptor activator of nuclear factor kappa-B ligand inhibitors, estrogen agonists/antagonists, parathyroid hormone analogs, and calcitonin [22]. Bisphosphonates are a synthetic class of pyrophosphate analogs that are powerful inhibitors of bone resorption which are commonly used as a medication for the prevention and therapy of osteoporosis and osteopenia, also used to treat tumor diseases [24].

Awareness and knowledge about any disease is the first step to prevent and treat it, so this study evaluates osteoporosis awareness and knowledge among female housekeeping employees. Our results showed a low awareness and good knowledge of osteoporosis. Hence, on planning health education programs for prevention of osteoporosis, the health education messages should emphasize the different risk factors of osteoporosis and importance of calcium intake and the regular habit of doing exercise [25].

Table 1. Table representing the questions of this survey and the frequency of responses in percentage

Questions	Answer	Percentage
Age	45 to 55 years	27.3%
	55 to 60 years	42.7%
	Above 60 years	30%
Are you aware of osteoporosis?	Yes	48.67%
	No	51.33%
Do you have osteoporosis?	Yes	67.3%
	No	32.7%
Do you take calcium supplements?	Yes	72%
	No	28%
How many hours do you used to work per day?	7 hours	28%
	10 hours	54%
	More than 10 hours	18%
Do you exercise regularly?	Yes	12.67%
	No	87.33%
Did you had menopause?	Yes	58.7%
	No	41.3%
Do you have family history of osteoporosis?	Yes	45.3%
	No	54.7%
Weight	50 to 60 kg	28.7%
	60 to 70 kg	56.7%
	Above 70 kg	14.7%
Do you maintain a healthy diet?	Yes	22%
	No	78%
Are you aware that osteoporosis usually cause symptoms such as pain before fracture occurs?	Yes	26.7%
	No	73.3%
Are you aware high salt intake is a risk factor for osteoporosis?	Yes	22.7%
	No	77.3%
Are you aware that family history of osteoporosis strongly predisposes a person to osteoporosis?	Yes	21.33%
	No	78.67%
Are you diabetic?	Yes	52.7%
	No	47.3%
Do you know that calcium intake can prevent bone loss or bone pain?	Yes	28%
	No	72%
Do you know adequate calcium intake can be achieved from a glass of milk in a day?	Yes	26.7%
	No	73.3%
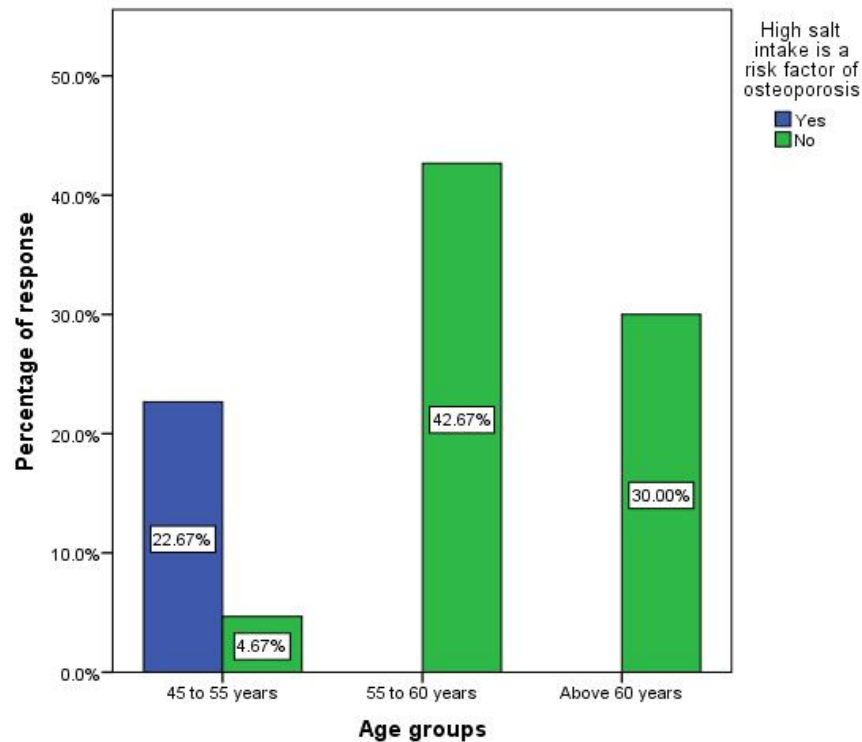
Fig. 6. Bar chart represents the association of age group and awareness of high salt intake as a risk factor for osteoporosis. X axis represents the age group of the participants who were aware of high salt intake as a risk factor for osteoporosis and Y axis represents the percentage of responses. 22.67% belonging to the 45 to 55 years of age group were aware of risk factors of osteoporosis (blue) which is the maximum response. Chi square test was performed and association between the age groups and awareness of high salt intake is a risk factor for osteoporosis was found to be statistically significant. Pearson's correlation value =0.000 (p<0.05), hence statistically significant

4. LIMITATIONS

The limits of the study include a short sample size and doesn't represent all ethnic groups.

5. FUTURE SCOPE

The future scope of the study focuses on a study for a larger population and providing proper awareness about osteoporosis among womens.

6. CONCLUSION

The current study concluded that the knowledge on osteoporosis among female housekeeping employees could be considered moderate, among them the participants who were 45-55 years old were found to be more aware of the causes of osteoporosis and it was statistically significant. Furthermore, education of the public

regarding prevention of osteoporosis must be incorporated in the health services provided for post menopausal and elderly care services. It is very important to train the health care professionals in utilizing the clinical and community visit as an opportunity to give information about osteoporosis and its prevention. There is a need of the hour for widespread information about osteoporosis, specially targeting premenopausal women, to halt the progression of this silent disease.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

ACKNOWLEDGEMENTS

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/59748