



A Study to Assess the Osteoporosis Knowledge and Preventive Practice among Menopausal Women: A Community Based Survey

Timi Thomas¹ Shynee Paul²

¹Department of Obstetrics and Gynaecological Nursing, Nitte Usha Institute of Nursing Sciences, Nitte (Deemed to be University), Mangalore, Karnataka, India

²Department of Obstetrics and Gynaecological Nursing, PVS College of Nursing, Calicut, Kerala, India

Address for correspondence Timi Thomas, MSc (N), MPhil (N), PhD Scholar, Department of Obstetrics and Gynaecological Nursing, Nitte Usha Institute of Nursing Sciences, Nitte (Deemed to be University), Mangalore, Karnataka 575018, India (e-mail: timi@nitte.edu.in).

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Abstract

Background and Objectives Osteoporosis is a multifactorial and slowly emerging global health problem. Along with menopause, one out of three women between the age group of 50 to 60 years in India suffers from osteoporosis. Indian women have an early age onset of osteoporosis as compared to their Western counterparts. The current study assessed osteoporosis knowledge and preventive practice among menopausal women. The study's objectives were to 1) assess the osteoporosis knowledge and preventive practice among women, 2) find the correlation between the knowledge and preventive practice among menopausal women, and 3) find the association of knowledge and preventive practice with selected demographic variables.

Methods A quantitative nonexperimental research approach with a descriptive correlational survey design was adopted in the study. A total of 100 samples between the ages of 45 and 56 years were the participants. Data were collected using demographic proforma, a self-structured knowledge questionnaire, and a preventive practice checklist. Descriptive and inferential statistics were used to analyze the data.

Results The majority of the menopausal women (65%) were between the age group of 53 and 56 years and 79% of menopausal women were having primary education, 77% of them were unskilled workers. Fifty percent of the participants had shown adequate knowledge with a median score of 12 and the remaining half of the participants had a knowledge score < 12. The knowledge score among women was 11.47 ± 2.4 with a maximum score of 17 and the minimum score of 5. With regard to the preventive practice, the participants were 20.12 ± 2.22 .

Conclusion The study showed a gross deficit in osteoporosis knowledge among menopausal women and they were following unhealthy practices in their lifetime. There is a need to prioritize designing appropriate awareness campaigns regarding osteoporosis among subjects who are at risk, according to their level of literacy.

Keywords

- ▶ knowledge
- ▶ preventive practice
- ▶ osteoporosis
- ▶ menopausal women
- ▶ survey

Introduction

Osteoporosis is a major and growing public health problem in both sexes but particularly among women. It is a systemic skeletal disorder, characterized by reduction of bone mass, deterioration of the bone structure, increased bone fragility and fracture risk.¹ It is a major cause of fractures in the elderly, resulting in pain, disability, costly rehabilitation, poor quality of life, and premature death.² Developing countries continue to be ill-equipped to handle the burden of this disease. This coupled with poor literacy rates and lack of awareness of the risk factors and symptoms results in a poor prognosis.³ Despite emerging therapies to treat osteoporosis, prevention is still preferable for controlling this disease. To plan for the prevention of osteoporosis, sufficient information about people's health beliefs and knowledge is necessary, and to change the health behaviors related to modifiable risk factors of osteoporosis. Besides, it is also necessary to be familiar with the individuals' practice in case of prevention and also their cultural and socioeconomic features.⁴ Good lifestyle practices such as adequate exposure to sunlight, regular exercise, and appropriate diet prove to have a positive impact on bone health and metabolism among Indians. These measures prove to be safe and cost-efficient for large populations and are recommended as an important health measure to overcome the condition.⁵ The World Health Organization (WHO) reported that osteoporosis accounts for greater co-morbidity second only to cardiovascular disease and studies proved that post-menopausal women's chance of getting hip fractures as from breast cancer risk is almost equal to it. The burden among the health care system on the elderly population, which is escalated day to day, is more as the treatments are costly. Rapid action needs to be taken to counter this economic threat.⁶ The peak occurrence of osteoporosis is during old age in India but it is not so in other Western countries as it occurs during 70 to 80 years with a comparative difference of about 10 to 20 years between Eastern countries.⁷ Osteoporosis is caused by a combination of genetic, hormonal, environmental, and dietary factors. Attempts to monitor, identify and where possible, control these factors are the only recourse for managing this condition. The need to fully understand the impact of age-related diseases such as osteoporosis is critically apparent.⁸ Health care providers must also explore strategies to deal with the increasing numbers of elderly people who are susceptible to a condition known as osteoporosis. Therefore, during the transition into menopause, an emphasis on understanding and managing osteoporosis remains crucial.

Materials and Methods

Study Design and Participants

A descriptive correlational survey design was carried out, using a purposive sampling technique. The study was conducted in one of the primary health centers of Mangalore Taluk, named Natekal. A total of 100 samples between the ages of 45 and 56 years were surveyed for the study. The

survey was carried out between 5/12/2019 and 13/01/2020. The inclusion criteria for the study participants were menopausal women who were 1) aged between 45 and 56 years, 2) able to read and understand Kannada, 3) not menstruated for the past 12 months, 4) willing to participate in the study, and 5) presently not under any sort of medications for osteoporosis. The exclusion criteria for study participants were 1) having any condition that prevents the subjects to provide consent in written format and 2) having physical or mental diseases which restrict the respondents from finishing the study as scheduled.

Data Collection Instruments

The data were collected using the socio-demographic proforma, self-structured knowledge questionnaire, and preventive practice checklist. The socio-demographic proforma consist of eight items which include age in years, age at menopause, education and nature of work of women, income status of women (per month), the total number of years after menopause, type of family, and do you have any information regarding osteoporosis. Self-structured knowledge questionnaire consists of 25 items. The maximum score was 25 and the minimum score was 0. The scoring was graded as follows: adequate (>12) and inadequate (<12). The respondents were requested to place a tick mark against the appropriate response. The Preventive Practice Checklist includes 15 items regarding the preventive aspect of osteoporosis. The respondents were asked to tick against their practice to prevent osteoporosis in their lifetime. The maximum score was 30 and the minimum score was 15. The scoring was graded as follows: favorable practice (>20) and unfavorable practice (<20). To establish reliability, a structured knowledge questionnaire and preventive practice checklist were administered to 10 menopausal women. The reliability of the structured knowledge questionnaire was established by the split-half technique, and the computed coefficient correlation value was found to be $r = 0.92$ and considered reliable. The internal consistency of the preventive practice checklist was established by Cronbach's alpha technique and computed coefficient correlation values were found to be $r = 0.88$. Women were approached by the research investigators at their houses, followed by which, the participants' knowledge and preventive practices were assessed.

Ethical Considerations

The study was reviewed and approved on 11/04/2019 by the Institutional Review and Ethics Committee of Nitte Usha Institute of Nursing Sciences, NITTE (Deemed to be University) and the registration number was NUINS/CON/NU/IEC/2019-20. The present study fits into the principles defined in the Declaration of Helsinki⁹ (World Medical Association, 2013). A subject information sheet was provided with a clear explanation of the study purpose and written informed consent was obtained before surveying the study participants. Confidentiality was assured to the entire subjects. They were instructed to sign the consent form, and fill out the demographic Proforma, structured knowledge questionnaire, and preventive practice checklist.

Data Collection Procedure

Before data collection, administrative permission was obtained from the Principal, Nitte Usha Institute Nursing Sciences. Next, formal written permission was also obtained from the Medical officer of the respective PHC. A house-to-house survey was conducted and 100 respondents who fulfilled the sampling criteria were selected purposively. The aim of the research study was explained to the participants and wholehearted risk-free participation was requested. The data collection instruments were administered to the participants after obtaining their informed consent. The design was found to be feasible by the investigator. Purposive sampling technique was used to survey the participants of the study. The data collection period was from 05/12/2019 to 13/01/2020. The data analysis was done using SPSS 20.

Table 1 Distribution of demographic characteristics among participants

Demographic characteristics (n = 100)	f	%
Age in years		
45-48	6	6
49-52	29	29
53-56	65	65
Age at menopause (y)		
45-48	39	39
49-52	61	61
Educational status of women		
Primary education	79	79
High school education	15	15
Higher secondary education	6	6
Nature of work of women		
Unskilled workers	77	77
Semi-skilled workers	26	26
Skilled workers	7	7
Income status of women per month (in rupees)		
> 2,424	89	89
2,425-6,662	8	8
6,663-11,103	3	3
Total number of years after menopause		
1-4 years	38	38
5-8 years	46	46
> 8 years	16	16
Type of family		
Nuclear family	76	76
Joint family	24	24
Do you have any information regarding osteoporosis		
Yes	—	—
No	100	100

Result

Baseline Information

The distributions of the demographic characteristics were analyzed by descriptive statistics such as frequency and percentage. The data in ► **Table 1** show that the majority of the menopausal women (65%) were between the age group of 53 and 56 years, out of 100 samples, 79% of menopausal women were having primary education, 77% of the menopausal women were unskilled workers, 89% were having a monthly income of > 2,424. With regard to the total number of years after menopause, 38% of menopausal women expressed they were between 1 and 4 years and 76% of menopausal women were from nuclear families. In this study, out of 100 samples, 44% attained menopause between 49 and 52 years of age and none of the participants had health information regarding osteoporosis.

The data in ► **Table 2** show that 50% of the participants had attained adequate knowledge with a median score of 12 and the remaining half of the participants attained less than 12, and had inadequate knowledge.

The data in ► **Table 3** show that 56% of the participants had favorable practices toward the prevention of osteoporosis and 44% of the participants had unfavorable practices toward osteoporosis.

The data in ► **Table 4** shows that the maximum knowledge score was 17 and the minimum score was 5 with 11.47 ± 2.4 .

Table 2 Frequency and percentage of knowledge score of menopausal women regarding osteoporosis

Level of knowledge	Frequency	Percentage
Adequate >12	50	50
In adequate < 12	50	50

n = 100.

Table 3 Frequency and percentage of preventive practice level among menopausal women regarding osteoporosis

Preventive practice level	Frequency	Percentage
Favorable > 20	56	56
Unfavorable < 20	44	44

n = 100.

Table 4 Mean and standard distribution of knowledge and preventive practice regarding osteoporosis among menopausal women

Variable (n = 100)	Mean	SD	Minimum	Maximum
Knowledge	11.47	2.46	5	17
Preventive practice	20.12	2.22	14	25

Table 5 Correlation between knowledge and preventive practice using Spearman rank correlation coefficient

Variable (n = 100)	Median	IQR		p-Value
Knowledge	11.5	3.75	0.017	0.869
Preventive practice	20	3		

With regard to preventive practice, the maximum score was 25 and the minimum score was 14 with 2.12 + 2.22.

The data in ►Table 5 show that the median value for the knowledge score was 11.5 with an IQR ratio of 3.75, whereas for preventive practice, the median score was 20 with an IQR ratio of 3. The calculated spearman rank correlation was 0.017 with a p-value of 0.869.

Discussion

The purpose of the study was to assess the level of osteoporosis knowledge among menopausal women in the selected community area, especially with regard to preventive practice. The purpose of selecting menopausal women as study subjects was that they are at the highest risk for osteoporosis and fragility fractures, and this warrants timely and preemptive screening among women.

In this study, the majority of the menopausal women (65%) were between the age group of 53 and 56 years. A study conducted by El-Tawab *et al*¹⁰ revealed that the mean age of studied women was 49.92 ± 7.75 years.

Study conducted by Senthilraja *et al*¹¹ demonstrates that the mean age of attainment of menopause was 46 years. This is consistent with another study conducted by Ahuja¹² in which the average age of menopause of an Indian woman was 46.2 years. However, in the present study, 61% of the participants attained menopause between the age group of 49 and 52 years.

In the present study, 79% of menopausal women were having primary education and 77% of the menopausal women were unskilled workers. A study conducted by Agarwal and Badkur⁹ showed that 20% had elementary education, 12% had high school education, and 14% were graduates.

The participants of our study had poor knowledge about the risk factors and the consequences of osteoporosis and the findings show that 50% of the participants had attained adequate knowledge with a median score of 12 and the remaining half of the participants attained less than 12, and they are with inadequate knowledge. A similar deficit in knowledge was observed in a study conducted by Senthilraja *et al*,¹¹ where 60% of participants had very poor knowledge.

In the present study, 56% of the participants had favorable practices toward the prevention of osteoporosis and 44% of the participants had unfavorable practices toward osteoporosis. The study findings are consistent with findings of another unpublished study, which revealed that 71.9% of post-menopausal women had healthy practices and remarkable health status and 28.1% had unhealthy practices and resulted in poor health status.¹³

In our study, the median value for the knowledge score was 11.5 with an IQR ratio of 3.75, whereas for the preventive practice the median score was 20 with an IQR ratio of 3. The calculated Spearman rank correlation was 0.017 with a p-value of 0.869. An unpublished study findings revealed that there was a moderately positive ($r = 0.410$) correlation between knowledge and attitude toward osteoporosis among post-menopausal women.¹³

Conclusion

Ideally, conducting a teaching session on osteoporosis, its risk factors, and treatment modalities and assessing the questionnaire responses before and after the same will help in determining the result of education on participants' existing state of awareness. However, menopausal women in our country reside in rural areas, and belong to a lower socioeconomic status, it is reasonable to imagine that the state of awareness among the subjects might be worse than what was noted in this study. This justifies the widespread use of osteoporosis awareness campaigns to promote knowledge in this regard, especially at the grass-root level in the community.

Thus, this study was an attempt to identify the level of awareness among menopausal women, and hence these results can be used to implement health education measures to improve awareness of and preventive practice toward osteoporosis.

Authors' Contributions

T.T. and S.P. conceptualized the study and contributed to protocol development, data collection, and final writing of the report. The pilot study and the main study were supervised, and the final draft of the article was finalized for publication.

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Conflict of Interest

None declared.

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References

- 1 Cosman F, de Beur SJ, LeBoff MS, *et al*; National Osteoporosis Foundation. Clinician's guide to prevention and treatment of osteoporosis. *Osteoporos Int* 2014;25(10):2359–2381
- 2 Rockville MD. Bone health and osteoporosis: a report of the Surgeon General. Accessed September 26, 2022, <https://www.surgeongeneral.gov/library/2004>
- 3 NIH Consensus Development Panel on Osteoporosis Prevention, Diagnosis, and Therapy. *Osteoporosis prevention, diagnosis, and therapy*. *JAMA* 2001;285(06):785–795
- 4 Ebeling PR, Seeman E, Center J, *et al*. Position Statement on the Management of Osteoporosis. *Glebe Osteoporosis Australia*; 2020

- 5 Selvey LA, Carey MG. Australia's dietary guidelines and the environmental impact of food "from paddock to plate". *Med J Aust* 2013;198(01):18–19
- 6 "Boning Up On Osteoporosis", *India Times* 2004. Accessed September 26, 2022, at: <http://healthindiatimes.com/article/show/329953.cms>
- 7 Damodaran P, Subramaniam R, Omar SZ, Nadkarni P, Paramsothy M. Profile of a menopause clinic in an urban population in Malaysia. *Singapore Med J* 2000;41(09):431–435
- 8 Joshi VR, Mangat G, Balakrishnan C, Mittal G. Osteoporosis—approach in Indian scenario. *J Assoc Physicians India* 1998;46(11):965–967
- 9 Agrawal J, Badkur P. Knowledge, attitude and preventive practice of women concerning osteoporosis above 45 years women. *Int J Reprod Contracept Obstet Gynecol* 2018;7:3863–3867
- 10 El-Tawab SS, Saba EK, Elweshahi HM, Ashry MH. Knowledge of osteoporosis among women in Alexandria (Egypt): a community based survey. *Egypt Rheumatol* 2016;38(03):225–231
- 11 Senthilraja M, Cherian KE, Jebasingh FK, Kapoor N, Paul TV, Asha HS. Osteoporosis knowledge and beliefs among postmenopausal women: A cross-sectional study from a teaching hospital in southern India. *J Family Med Prim Care* 2019;8(04):1374–1378
- 12 Ahuja M. Age of menopause and determinants of menopause age: A PAN India survey by IMS. *J Midlife Health* 2016;7(03):126–131
- 13 Paul R A study to assess the knowledge, attitude, health status and osteoporotic risk among post-menopausal women who are at risk of osteoporosis