

Assessment of osteoporosis knowledge in perimenopausal females attending outpatient department at tertiary care hospital at central Gujarat

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Abstract

Background: Osteoporosis is a major health issue affecting the perimenopausal women, however not addressed effectively by them due to inadequate knowledge about the condition. **Aims and Objectives:** Evaluation of knowledge of osteoporosis in female of perimenopausal and menopausal age attending tertiary health care centre. **Material and Methods:** This is a questionnaire-based survey study. A validated (OKAT) questionnaire was prepared and answered by 300 women (above 40 years.) after consent. Results were tabulated, analysed and presented as frequency and percentage. Association of knowledge score with variables of age, education was analysed. **Results:** Out of total 300 subjects, 158(52.7%) subjects had poor OKAT knowledge score, whereas 121(40.3%) subjects had average knowledge and 21(7%) had good knowledge of all aspects of Osteoporosis. There was statistically significant association of good knowledge with age, education level and perimenopausal status, however, strength of association was poor with a subject's marital status. **Conclusion:** In spite of Osteoporosis being common condition, majority of females are still unaware of its inevitable association with age and menopause, modifiable, non-modifiable risk factors. Majority are unaware about the disease status until they develop fractures secondary to Osteoporosis. Beyond adequate amount of calcium, importance of adequate nutrition, sunlight and exercise needs to be stressed upon. Educative programmes covering preventive and treatment of osteoporosis should be undertaken on routine basis along with other noncommunicable diseases.

Key Word: osteoporosis

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INTRODUCTION

Most women experience menopause between 40-58 years, average age of Menopause being 51 years. Physical changes begin years before menopause. The transition is called as perimenopause. During this period the hormonal

changes in the body lead to many physical changes which impact morbidity pattern in the women. Of the many health issues, Osteoporosis has emerged as a common health problem often neglected in perimenopausal women. This disease is a systemic disease of thin bone disease where the bones had weakening of its micro-architecture tissue, low bone mass, fragile bones with a high vulnerability to fractures.¹ It can result in devastating physical, psychosocial, and economic consequences. It is often overlooked and undertreated, however, in large part because it is clinically silent before manifesting as fracture. Fractures secondary to Osteoporosis take long to heal, patients are often bedridden and secondary complications are common. This affects quality of life and increases mortality. The importance of early detection and prevention of Osteoporosis cannot be ignored. This is possible if women themselves are aware

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of the condition and take proactive steps. According to the International Osteoporosis Foundation, the symptoms of osteoporosis are not clear till the occurrence of the first fracture and it significantly affect old women.² The risk factors for osteoporosis are female gender, old age, low levels of sex hormones, smoking, low levels of vitamin D and menopause.^{3,6} Also, bad life style habits and low exposure to sunshine are also important predisposing factors for osteoporosis^{4,5}

MATERIALS AND METHODS

Study design and setting- This is a cross sectional survey study conducted among female patients of perimenopausal and menopausal age group attending the outpatient department of GMERS hospital Gotri over a period of 1 week in the month of May 2019. Selected patients on basis of inclusion criteria were explained regarding the study, verbally in their language and questions asked as per the questionnaire. Data was collected approximately over a period of 1 week in the month of May 2019. Subjects were indirectly identified in order to maintain patient confidentiality.

Selection criteria- All Females in age group of >40years and willing to participate in the study.

Sample size- Sample size of 300 females.

Study tool- A questionnaire is designed on basis of the validated OKAT questionnaire of T.M.

Wizenberg *et al*⁷. The questionnaire was translated in Gujarati which is the local commonly spoken and understood language. The questionnaire in Gujarati language was validated by 3 local physicians (content validation through experts). The questionnaire had maximum score of 20. It was based on different aspects of Osteoporosis vis-

i) Knowledge about non-modifiable risk factors ii) knowledge about symptoms of osteoporosis iii) knowledge about relation of nutrition with osteoporosis iv) knowledge about modifiable risk factors of osteoporosis v) knowledge about prevention and treatment of osteoporosis. 1 mark given for correct answer and 0 mark for no or don't know or wrong answer. Demographic information of the females recruited taken in terms of their age, educational level, Marital status.

Results were tabulated on Microsoft excel, analysed by SPSS software and presented as percentages and frequencies. The strength of association between the demographics and knowledge was checked by chi-squared test to check p value significance. The study was approved by institutional ethics committee.

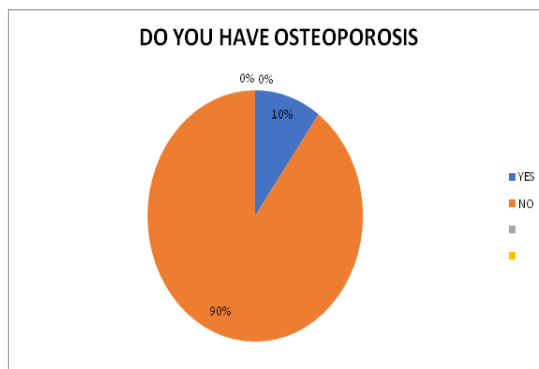
RESULTS

Demographics of studied subjects: As per table 1, 49 patients (16.3%) were from age group 40-44 years, 74 (24.6%) patients were in age group of 45-49 years, and 55 (17%) patients in 50-54 years age group, 55-59 age group consists of 33 (11%) while total of 93 patients (30.9%) were more than 60 years old. Educational status of subjects in our study showed majority 113 (37.7%) were illiterate with no education followed by equal number of subjects 113 (37.7%) with primary education till 7th standard. 62 (20.7%) subjects were schooled till secondary schooling education till 10th std. 8 (2.7%) were educated till 12th and 4 (1.3%) were graduates. Out of included subjects, 92.7% subjects were married females and 7.3% were widows. Menopause was attained by 153 patients (51%) and 147 patients (49%) were in premenopausal status.

Table 1: demographic variables of study subjects:

Age group	Frequency	Percentage(%)
40-44 years	49	16.3%
45-49 years	74	24.6%
50-55 years	51	17%
55-59 years	33	11%
60-64 years	37	12.3%
More than 65 years	56	18.6%
Educational status	Frequency	Percentage(%)
illiterate	113	37.7%
Primary school	113	37.7%
Secondary school	62	20.7%
Higher secondary	8	2.7%
Graduation	4	1.3%
Marital status	Frequency	Percentage(%)
Married	278	92.7%
Widow	22	7.3%
Menopausal status	Frequency	Percentage(%)
Menopausal	153	51%
Pre-menopausal	147	49%

Prevalence of osteoporosis in study subjects: Out of 300 study subjects only 10% subjects were aware that they might be suffering from osteoporosis, although actual prevalence might be higher considering age group we included for our study.



Awareness about osteoporosis in included subjects: Majority of the respondents 236(78.6%) were aware about osteoporosis being common condition associated with female sex, however almost 64 (21.4%) were not aware of Osteoporosis as a condition. 107,106(35.6%,35.4%) subjects had no idea about contribution of ageing and menopause on osteoporosis as a non-modifiable risk factor. Regarding early detection and symptoms of osteoporosis only 15(5%) subjects could give correct answer Question 4 and 6(2%) Question 5, although 221(73.6%) and 163(52.3%) subjects were respectively aware about risk of fracture and morbidity created secondary to fractures. Upon inquiring about essentiality about calcium in osteoporosis, 243(81%) subjects were aware that milk is essential to get calcium by natural means but only 56(18.6%) subjects were aware of quantity of same to get the required amount from milk. About calcium supplementation, 161(53.6%) were aware about its need, but only 132(44%)56% subjects knew about need of sunlight along with calcium supplementation. Inquiring about knowledge of role of modifiable risk factors, only 77(25.6%) subjects knew that sedentary lifestyle is a risk factor for Osteoporosis and only 13(4.3%) subjects knew that household work is not enough to prevent Osteoporosis. 118(39.3%) knew high salt intake, 152(50.6%) knew smoking, 147(49%) subjects knew alcohol as individual risk factors for Osteoporosis which can be modified. Only 11(3%) knew that taking long term medications like steroids prescribed for other ailments can lead to Osteoporosis. Only 68 (22.6%) knew that Osteoporosis can be prevented and 141(47%) subjects were aware that osteoporosis is a treatable condition, none (zero) subjects were aware about role of hormonal therapy along with calcium for osteoporosis.

Table 2: Level of awareness about osteoporosis in included subjects

Questions	Correct Freq. (%)	Incorrect Freq. (%)
knowledge about non-modifiable risk factors		
1) Do you think Osteoporosis is a common condition in females?	236(78.6%)	64(21.4%)
2) Being in menopausal age group increases chances of Osteoporosis?	107(35.6%)	193(64.4%)
3) Do you know that Osteoporosis is an inevitable part of aging?	106(35.3%)	194(64.7%)
knowledge about symptoms of osteoporosis		
4) Osteoporosis is silent, often asymptomatic during early stages?	15(5%)	285(95%)
5) Can Osteoporosis lead to loss of height?	6(2%)	294(98%)
6) Does osteoporosis lead to increase in your risk for fractures?	221(73.6%)	79(26.4%)
7) Do you know fractures secondary to Osteoporosis can increase morbidity significantly?	163(52.3%)	137(47.7%)
knowledge about relation of nutrition with osteoporosis		
8) Does, not drinking milk and non-consumption of dairy products on regular basis increase chances of Osteoporosis?	243(81%)	57(19%)
9) Is one glass of Milk or Milk tea per day enough to supply required calcium?	56(18.6%)	244(81.4%)
10) Is Calcium supplementation mandatory if you are not taking calcium rich diet?	161(53.6%)	139(46.4%)
11) Is sunlight necessary for body to absorb Calcium?	132(44%)	168(56%)
knowledge about modifiable risk factors of osteoporosis		
12) Does sedentary lifestyle increase chances of Osteoporosis?	77(25.6%)	223(74.4%)
13) Is routine household work enough to prevent Osteoporosis?	13(4.3%)	287(95.7%)

14) Does taking certain medications for other common ailments can increase chances of osteoporosis?	11(3.6%)	289(96.4%)
15) Do you know high intake of salt can increase risk of Osteoporosis?	118(39.3%)	182(60.7%)
16) Does Smoking (including passive) increase chance of Osteoporosis?	152(50.6%)	148(49.4%)
17) Does drinking alcohol increase chances of Osteoporosis?	147(49%)	153(51%)
knowledge about prevention and treatment of osteoporosis		
18) Do you know Osteoporosis can be prevented?	68(22.6%)	232(77.4%)
19) Osteoporosis can be treated after diagnosis?	141(47%)	159(53%)
20) Apart from Calcium supplements, hormone therapy is available to prevent further bone loss?	0(0%)	300(100%)

Depending upon total number of correct questions answered by the subjects (maximum score 20), Knowledge score of the subjects was estimated as good, average and poor. **Good score:** 12 or more ($\geq 60\%$), **Average score:** between 8-12 (40 -60%) and **Poor score:** less than 8 (less than 40%).

Table 3: Knowledge of osteoporosis score

Knowledge score	frequency	Percentages (%)
good	21	7%
average	121	40.3%
poor	158	52.7%

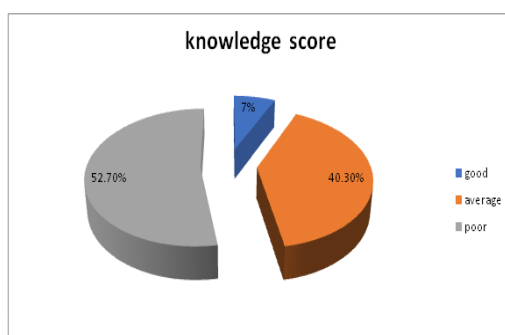


Table shows 52.7% subjects have poor OKAT knowledge, whereas 40.3% subjects has average knowledge and 7 % had good knowledge of all aspects of Osteoporosis.

Association of knowledge and demographics of included subjects: There was statistically significant association of good knowledge with age, education level and perimenopausal status, however, strength of association was poor with a subject’s marital status.

Table 4: Association between knowledge of osteoporosis and demographic variables:

			Knowledge score			
			Good	Average	poor	
Age group	40-44 years	N % within group	15(30.6%)	5(10.2%)	29(59.2%)	P<0.05
	45-49 years	N % within group	39(52.7%)	9(12.2%)	26(35.1%)	
	50-54 years	N % within group	23(45.1%)	2(3.9%)	26(51%)	
	55-59 years	N % within group	14(42.4%)	2(6.1%)	17(51.5%)	
	60-65 years	N % within group	9(24.3%)	2(5.4%)	26(70.3%)	
	More than 65 years	N % within group	21(37.5%)	1(1.8%)	34(60.7%)	
Education	graduation	N % within group	1(25%)	3(75%)	0	P<0.01
	Higher secondary	N % within group	4(50%)	4(50%)	0	
	illiterate	N % within group	33(29.2%)	3(2.7%)	77(68.1%)	

Menopausal status	Primary schooling	N % within group	48(42.5%)	2(1.8%)	63(55.8%)	P<0.01
	Secondary schooling	N % within group	35(56.5%)	9(14.5%)	18(29%)	
	menopausal	N % within group	57(37.3%)	5(3.3%)	91(59.5%)	
	Pre-menopausal	N % within group	64(43.5%)	16(10.9%)	67(45.6%)	

DISCUSSION

Risk of Osteoporosis is high, affecting the quality of life in women of menopausal age group. People at large are aware about the cancer risks associated with Ovary, breast and Cervical cancer, but Osteoporosis as a condition characterised by thinning of bones which can be prevented, is often overlooked. This study highlights the awareness of the women of different demographic background towards Osteoporosis. Backache, leg pains with or without joint pains are thought to be due to Arthritis. Medications like Steroids commonly prescribed for such “arthritic” pain, proton-pump inhibitors for gastritis and even taken over the counter contributing further to osteoporosis. In our study though 236(78.6%) subjects were aware of osteoporosis as a condition characterised with bone thinning, only 107(35.6%) were aware of the association of aging and menopause has with osteoporosis. 221(73.6%) of the subjects knew that bone thinning increases risk of fractures, but 285 (95%) didn't know about the symptoms to be identified with it. Various factors are involved in the aetiology of osteoporosis among Indian women. The non modifiable factors include female gender, advancing age, ethnicity, and genetic factors. Women have a smaller body frame size, are more likely to have lower portions of calcium-rich foods and for socio-cultural reasons are likely to have poor sunlight exposure. This has been reported to be a significant risk factor for the development of osteoporosis in Indian women.^{8,9} Numerous studies have reported increasing prevalence of osteoporosis with advancing age, and this trend had been observed to a great extent among Indian women than men.⁹ Nutritional factors play an important role in development of osteoporosis. calcium and vitamin D, the two main nutrients involved in bone health, play a major role in influencing the risk of osteoporosis.

Calcium: calcium in the form of hydroxyapatite crystals is deposited in the bone matrix and is responsible for the hardness of bone. Calcium is obtained from the diet through dairy as well as non-dairy sources. The bioavailability of calcium from dairy sources is much higher than non-dairy sources. Several studies have reported that Indian diets do not meet the recommended dietary allowances of 600 mg/d of calcium for adult women, which has been recommended by the Indian Council of Medical Research.¹⁰ One of the reasons for

this is the poor consumption of dairy products. According to the reports by Harinarayan *et al* Indian diets have a higher ratio of phytates to calcium, especially among rural Indians.¹¹ Phytates may hinder calcium absorption from the already calcium-deficient diets. Thus, bone remodelling may be retarded, resulting in lower BMD, increasing the risk of osteoporosis.

Vitamin D: vitamin D is synthesized in the human skin upon exposure to sunlight. Although India has abundant sunlight, several reports state that Indians suffer from vitamin D deficiency.^{11,12,13,14} Some of the reasons for vitamin D deficiency among Indians may be low sun exposure, traditional clothing (saris, salwar suits), inadequate dietary intake, poor vitamin D fortification of food. Vitamin D deficiency results in ineffective calcium absorption from the gut. Reports suggest that risk of osteoporotic fractures in subjects taking calcium and vitamin D supplements were less.¹⁵ In our study 81% of the subjects realised that consumption of dairy products necessary for improving bone strength but majority 244(81.4%) subjects didn't know how much is enough to meet daily requirement of calcium. This leads to false assurance that adequate calcium is being consumed. Modifiable risk factors like lifestyle, daily exercise and type of exercise, smoking alcohol consumption etc also influence development of osteoporosis. Need to control these factors for control of disease like Diabetes, Hypertension Ischaemic heart disease is very well known however knowledge about these factors affecting osteoporosis is varying. Urbanization has resulted in a sedentary lifestyle, decreased sun exposure, and lesser physical activity, which are detrimental to bone health.¹⁴ Physical exercise, especially weight-bearing exercise, helps to improve and maintain muscle and bone strength and also helps to improve body balance Lack of exercise has been found to be significantly associated with lower BMD in Indian women.^{15,16} In our study only 77(25.6%) were aware that sedentary lifestyle increases chances of osteoporosis and only 13 (4.3%) realised that routine household work is not enough to prevent osteoporosis. Cigarette smoking, while being a major risk factor for osteoporosis, has been found to be too low among Indian women to majorly increase their risk of osteoporosis. On average 50% of our study subjects were aware of detrimental effects of smoking

and alcohol consumption has on osteoporosis. However, whether they were aware of specific implications it has on osteoporosis or they considered smoking and alcohol as a bad influence on health in general could not be ascertained. Long-term glucocorticoid use by elderly population has also been reported as a major contributor to the increasing prevalence of osteoporosis in elderly Indian population.¹⁷ Many women as stated earlier take over the counter medicines for “bone pains” but in our study only 11(3.6%) are aware of its side effects which can cause osteoporosis. Osteoporosis can be prevented as asserted correctly by only 68(22.6%) subjects, 141(47%) knew that treatment is available once diagnosed with it. None were aware of the availability of hormone therapy available along with Calcium and Vit D supplements to prevent further bone loss. More than 50% of the subjects had poor overall knowledge of Osteoporosis in our study and it showed statistically significant association with age and educational level of the subject. Women in age group 45-55 years (N=125), 62(51.6%) had good knowledge score with $p < 0.05$. Also women with secondary schooling and above (N=74), 40 (54.05%) had good knowledge score and women with primary schooling or no schooling (N=226), only 81 (35.84%) had good knowledge score with $p < 0.01$. In the study by Pandey et al 2005¹⁸ showed poor knowledge score even in educated women. Osteoporosis is a silent disease. However, once fractures occur, they result in pain and disabilities; fractures are also an enormous economic burden. Hence, prevention is critical in this disorder. In postmenopausal women, testing for BMD is based on the risk profile, while for women older than 65 years, measurement of BMD is recommended. Yearly measurement of height is also advised (for vertebral fractures). Suggested lifestyle changes include a diet rich in calcium (up to 1,000–1,200 mg/d) and exposure to sunlight to make or vitamin D supplementation to achieve 800–1,000 IU/d. Regular weight-bearing and muscle-strengthening exercises are also advocated. Further, avoiding behaviours such as smoking that impair bone health and prevention of falls to avoid fragility fractures are important.

CONCLUSION

In spite of Osteoporosis being common condition, majority of females are still unaware of its inevitable association with age and menopause, modifiable non modifiable risk factors. Majority are not knowledgeable about the disease status until they develop fractures secondary to Osteoporosis. Over and above adequate amount of calcium, importance of adequate nutrition, sunlight and exercise needs to be stressed upon. Educative programmes covering preventive and treatment

of osteoporosis should be undertaken on routine basis along with other non communicable diseases.

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