

Effectiveness of video-assisted teaching module on knowledge of osteoporosis among perimenopausal women in urban slum area of Berhampur, Odisha, India

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Abstract

Background: Osteoporosis is a condition characterized by decreased bone strength and is commonly prevalent among perimenopausal women.

Objective: To assess the effectiveness of video-assisted teaching module (VATM) in improving the knowledge on osteoporosis and its prevention among perimenopausal women in urban slum area of Berhampur, Odisha, India.

Material and Methods: It was an interventional study carried out in the slum areas of Ankuli between September 2013 and February 2014. Sample size was calculated as 369, and systematic random sampling was applied. A structured pretested and predesigned questionnaire consisting of two parts (A and B) was used as the study tool. Immediately after pretest with questionnaire, VATM was presented and the posttest conducted 7 days after using the same structured questionnaire. Both descriptive and inferential statistics applied on data analysis by using SPSS version 16.0. Paired *t* test was applied for pre- and posttest comparison. Confidence interval was also calculated based on standard error.

Result: Majority (75%) were in the age group of 51–60 years; 42% revealed no formal education. Before administration of VATM, 48% knew that osteoporosis is a disorder of bone opined, which increased to 92% post-VATM. There was a statistically significant difference in the mean pretest and posttest scores in all aspects of knowledge on osteoporosis.

Conclusion: Along with other modalities of sensitization such as leaflet distribution and counseling, VATM is an effective mode of increasing the awareness on osteoporosis.

KEY WORDS: Osteoporosis, perimenopausal women, posttest, pretest, video-assisted teaching module (VATM)

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Introduction

Osteoporosis is a condition characterized by decreased bone strength and is prevalent among perimenopausal women. There is a reduction in the bone strength that leads to an increased risk of fractures. More than 50% of fractures among postmenopausal women, including hip fractures, occur in this group with low bone mineral density.^[1] Prevalence

of osteoporosis increases with age and range from 5% in women aged 50 years to about 50% in women older than 85 years.^[2] Globally, osteoporosis is the reason for than 8.9 million fractures annually, with one fracture every 3 s.^[3] In India, the prevalence of osteoporosis in 2011 was about 28 million of which 80% were women, and this was expected to increase by 5 million per year.^[4] It has been recorded that Indian women aged 30–60 years from lower income groups reveal low bone mineral density than women from developed countries. In India, there is a high prevalence of osteopenia (52%) and osteoporosis (29%) related to inadequate nutrition.^[5] Census 2011 reported that, in India, the total slum population to be 65.5 million, of which 31.5 million were female population.^[6] Despite the enormous requirement, health-care services are commonly tough to access in these areas.^[7]

The educational interventions regarding a disease prevention enhance the awareness of the risk factors and prevention behavior. Structured video-assisted teaching module (VATM) has been adapted as an important strategy in the prevention and control of various diseases by improving the knowledge and practice. Literature search revealed that VATM has not yet been adapted as an effective tool for the prevention and control of osteoporosis in perimenopausal women, belonging to lower economic status in the Indian context.

With this background, this study was aimed to assess the effectiveness of a VATM in improving the knowledge on osteoporosis and its prevention among perimenopausal women in urban slum area of Berhampur Odisha, India.

Materials and Methods

Study Design and Study Setting

It was an interventional study carried out in the slum areas of Ankuli, which is the field practice area of the Department of Community Medicine, MKCG Medical College, Berhampur, Odisha, India, between September 2013 and February 2014. The study population included all the perimenopausal women in the selected slum area.

Sample Size and Sampling Technique

Ankuli has five wards (Nos. 35–39 of Berhampur Town) of which two wards (Nos. 35 and 36) were selected randomly, and the entire sample was drawn from the selected wards. Assuming a knowledge proportion of female population of 40% with precision 5 at 95% confidence interval, the sample size was calculated as 369.^[8] The two wards had about 2,838 households.^[9] From the result of our own pilot survey, we found one perimenopausal women per household. The sampling interval was calculated to be eight. So, every eighth household was selected for inclusion in study by applying systematic random sampling. The first house to be included in the survey was selected by simple random sampling. Inclusion criteria were perimenopausal women who were present during the data collection and were willing to participate voluntarily. Sick, bedridden, and women unwilling to participate

were excluded from the study. All the communications was done in local language Odia.

Study Instrument

A structured pretested and predesigned questionnaire consisting of two parts (A and B) was used as the study tool. Part A included information on sociodemographic characteristics and part B had 32 items pertaining to knowledge on osteoporosis, i.e., on concept or meaning of osteoporosis (7 questions), on its risk factor (7 questions), on sign, symptoms, and complications of osteoporosis (7 questions), and on its management and prevention (11 questions). For each correct response, “one” and, for a wrong response, “zero” scores were given. For each participant, the score was calculated, and the level of knowledge was categorized as poor, average, or good. The scores 0–10, 11–20, and 21–32 were taken as poor, average, and good, respectively. Pretest was conducted before administration of the VATM. Average time allowed for the pretest was 30 min. Immediately after pretest, VATM was presented, and after that, they were informed about the date and time of the posttest, which was conducted 7 days after the pretest using the same structured questionnaire. Initially, VATM were prepared in English; then, it was translated into Odia and validated. It was based on the review literature, sample size, and expert opinion.

Steps for preparation of VATM:

1. review literature on osteoporosis and its prevention,
2. organization of the content,
3. establishment of content validity,
4. preparation of the final draft,
5. editing, translation, and retranslation twice into Odia language.

The content validity of VATM was established with the help of an orthopedician, gynecologist, and community medicine experts. Reliability of the contents of the VATM was established by administering the VATM to 10 perimenopausal women in the study setting before the final study. VATM was administered through personal laptop of the investigator to the selected participants. Each session of VATM was of 10-min duration was presented by the principal investigator. Data were collected with the assistance of female paramedical staff of the Urban Health Center attached to the Department of Community Medicine, MKCG Medical College, Berhampur, on informed consent. The data were analyzed by using SPSS version 16.0. Demographic characteristics were analyzed using descriptive statistics. The mean knowledge scores of pretest and posttest were compared using students paired *t* test. *P* value less than 0.05 was taken to be statistically significant. Confidence interval (CI) of each parameter was also calculated basing on standard error of sample population.

Ethical Consideration

The study was approved by Institutional Ethics Committee of the MKCG Medical College ensuring not to harm physically,

psychologically, emotionally, maintaining privacy, self-respect, and confidentiality.

Results

In the study, among the 369 perimenopausal women, 75% were in the age group of 51–60 years; 42% revealed no formal education, and 32% were daily laborer by occupation. About 24% had the average monthly family income of Rs. 5,000 or more [Table 1]. Of total sample population, 36% possessed awareness about osteoporosis from health personnel and an equal number from friends and relatives [Figure 1]. Before administration of VATM, 48% knew that osteoporosis is a disorder of bone opined, which increased to 92% post-VATM. After posttest, 84% women believed that menopause had a role in osteoporosis and 96% agreed that back pain was the commonest. In the pretest, 28% knew that calcium-rich food could prevent osteoporosis, which was 44% in the posttest [Table 2]. The mean score of posttest was highest in the area of “knowledge on risk factor and cause of osteoporosis,” i.e., 5.18 ± 2.37 (95% CI: 4.934–5.426) and was lowest in the area of “concept of meaning of osteoporosis,” i.e., 4.34 ± 1.91 (95% CI: 4.538–4.142). There was a statistically significant difference in the mean pretest and posttest scores in all aspects of knowledge on osteoporosis. This signifies the effectiveness of VATM in enhancing the knowledge on osteoporosis [Table 3]; 12% of women showed poor knowledge (score, 0–10) and 64% good knowledge (score, 21–32), whereas only 24% showed an average knowledge (score, 11–20) [Figure 2].

Table 1: Sociodemographic parameters of the participants

Sociodemographic parameter	Respondents (%)
Age group (year)	
41–50	101 (17)
51–60	198 (75)
>60	70 (8)
Education	
No formal education	157 (42)
Primary education	98 (27)
High school and above	114 (31)
Occupation	
Daily laborer	119 (32)
Business/service	88 (24)
Housewife	162 (44)
Income	
>5,000	90 (24)
3,000–5,000	97 (27)
<3,000	182 (49)

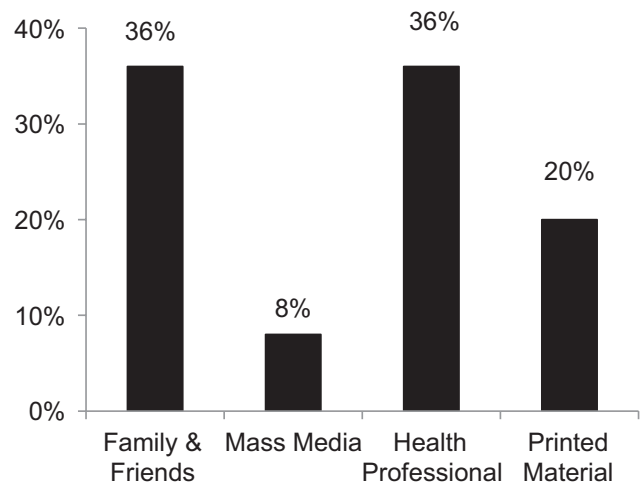


Figure 1: Source of knowledge on osteoporosis in urban slum women.

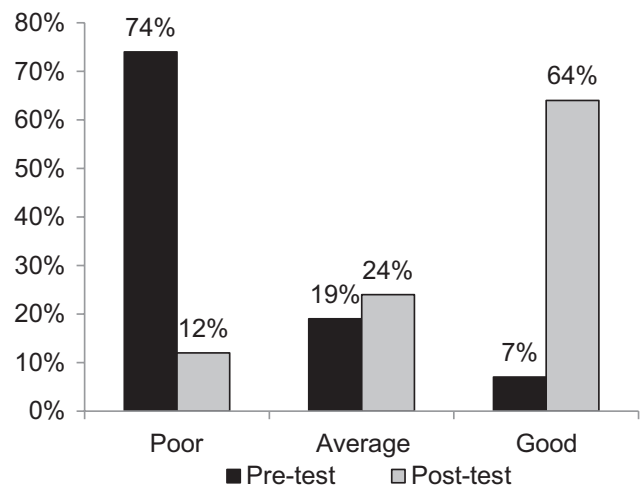


Figure 2: Knowledge score distribution in both pretest and posttest.

Discussion

In this study, before administration of VATM, 74% perimenopausal women revealed poor knowledge on osteoporosis, but after VATM, 64% were found to have a good knowledge on osteoporosis. In a study by Puttapitakpong *et al.* on knowledge, attitude, and preventive behavior among the women around age of peak bone mass in Bangkok,^[10] it was observed that 85.2% women showed good knowledge on osteoporosis. The difference in knowledge level was low even after the information provided by VATM, as only 31% were educated up to high school among study population. In a study by Ungan and Tümer^[11] on Turkish women’s knowledge on osteoporosis, 90% women knew about osteoporosis; this is similar to our observation, where it was 92%. Menopause as a risk of osteoporosis was agreed by 67% in the study by Ungan and

Table 2: Questionnaire to test the knowledge on osteoporosis and the response

Item	Correct response (%)	
	Pretest	Posttest
Item: Concept/meaning of osteoporosis		
Is osteoporosis is a disorder of bone?	48	92
Do you know what means osteoporosis?	28	56
Is osteoporosis common in old age?	28	52
Can you say what percentage postmenopausal women suffer osteoporosis?	0	36
Is osteoporosis common in women than men?	12	52
Do you know it is a silent risk factor for fracture?	24	84
Do you know the total number of bone in human body?	28	64
Item: Risk factors/cause of osteoporosis		
Do you know peak bone growth occurs in adolescence?	35	84
Do you know the age of attending max. bone strength?	0	64
Is there any chance of osteoporosis in women with menopause?	12	84
Is there any role of hormone in osteoporosis?	8	48
Can you say there is a role of weight bearing exercises in osteoporosis?	8	58
Do you know that regular exercise affect bone density?	8	60
Is there any effect of drinks on osteoporosis?	16	52
Item: Sign/symptoms of osteoporosis		
Is back pain a common symptom in osteoporosis?	44	96
Is osteoporosis cause general weakness?	36	80
Do you know there occurs repeated falling in osteoporosis?	4	32
Do you know any commonly affected bone?	8	48
Is there any deformity/fracture occur?	28	60
Any common sites of fracture have you known?	8	52
Do you know any complication due to osteoporosis?	16	72
Item: Preventive measures in osteoporosis		
Do you know any ideal age for prevention of osteoporosis?	16	52
Is there any mineral needed for bone growth?	16	72
Do you know that calcium-rich food can prevent osteoporosis?	28	44
Do you know any dietary source of calcium?	40	64
Do you know about any cheap source of calcium?	36	68
Do you know anything known as source of vitamin D?	24	80
Have you know about any vitamin-rich foods?	40	60
Can exercise prevent osteoporosis?	11	67
Is there any ideal exercise for bone strength?	0	36
Can any medication prevent osteoporosis?	11	52
Is there any lifestyle change for prevention of osteoporosis?	0	44

Table 3: Item-wise distribution of mean score with CI (95%)

Item	Maximum score	Mean score		CI (95%)		t	Remark
		Pretest	Posttest	Pretest	Posttest		
Concept/meaning of osteoporosis	7	1.68	4.34	0.914–1.126	4.142–4.538	8.43	<i>P</i> < 0.05
Risk factors and cause	7	0.864	5.18	0.796–0.932	4.934–5.426	33.9	<i>P</i> < 0.05
Sign, symptoms, and complications	7	1.43	4.6	1.322–1.538	4.436–4.764	2.52	<i>P</i> < 0.05
Preventive aspects of osteoporosis	11	2.21	5.2	2.062–2.358	4.966–5.434	24.83	<i>P</i> < 0.05

Tümer, whereas in this study, 84% agreed that menopause was a risk factor. Osteoporosis as a direct cause of fracture was agreed by 84% in our study after VATM, which was similar to the findings of the study conducted by El-Sayed and Abdel Megeid^[12] among female employees of King Saud University regarding knowledge, attitude, and practice on osteoporosis. In this study, 44% agreed that calcium-rich food can prevent osteoporosis, but in the study by Al-Shahrani *et al.*^[8] in Saudi Arabia about knowledge on osteoporosis among middle age and elderly women, 60% showed a similar response. In another study by Abushaikha *et al.* in 2009,^[13] 90% female school students in Jordan knew that osteoporosis led to pain, but in this study on perimenopausal women, post-VATM the response was 96%. In this study, 36% acknowledged that their source of knowledge on osteoporosis was family and friends, which is similar to the findings of Puttapitakpong *et al.* in Bangkok.^[10] Mean score obtained on the "prevention of osteoporosis" in this study was 2.21 ± 1.42 , which is in contrast to a study conducted by Mohamed *et al.*^[14] on nutritional knowledge and dietary behavior toward osteoporosis among women of slum area under Alexandria University in Egypt, where it was 7.1 ± 0.2 .

Conclusion

Perimenopausal women living in urban slums revealed limited knowledge of osteoporosis, and it improved significantly after introduction of VATM. Thus, along with other modalities of sensitization such as leaflet distribution and counseling, VATM is an effective mode of increasing the awareness on osteoporosis. Making the vulnerable aware of the disease using various modalities such as VATM to bring about a reduction in the risk factors of osteoporosis and enhance the quality of life of women in old age. Osteoporosis being a major public health entity in old age; still, there is no health program launched to create awareness among the target population for its prevention, which should draw attention of public health researcher and policymakers about a rethink.

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