

Effectiveness of Structured Educational Programme Regarding Prevention of Osteoporosis on Practice of Middle Aged Women

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Abstract—Osteoporosis is silently progressing metabolic bone disease is widely prevalent in India and osteoporotic fractures are a common cause of morbidity and mortality in adult Indian men and women.

The objective is, to determine the effectiveness of structured educational programme on the practice of middle aged women, to determine the association between demographic variable and practice score, to determine the prevalence of risk factors of developing osteoporosis among middle aged women.

A pre-experimental design with one group pre-test posttest approach was selected to carry out the study. 108 middle aged women were selected by using non probability, purposive sampling technique. Structured interview schedule on practices regarding prevention of osteoporosis was used for data collection. Data was collected by interview method. The post-test was conducted after 7 days of intervention.

The pretest practice mean was 41.25 ± 2.48 which was increased to 43.06 ± 2.12 in post test. There was significant association only between practice score and education. The most prevalent risk factors of developing osteoporosis are early menopause, late menarche, postmenopausal status, and use of Intra Uterine Device

The structured educational programme was effective in increasing practices of middle aged women regarding prevention of osteoporosis.

Index Terms—effectiveness, structured educational programme, practice, prevention of osteoporosis and middle aged women.

I. INTRODUCTION

There are many disease conditions which affect the bone, one among them is osteoporosis. “Osteo” means bone and “Porosis” means porous. Bones become progressively porous, brittle and fragile due to osteoporosis [1]

The most common form of osteoporosis is primary osteoporosis. Primary osteoporosis is not caused by specific disorders; it is mainly a disease of the elderly and is also referred to as age-related osteoporosis [2]. It characteristically begins early in life when corrective action might slow down disease progression. Women are at two to three times’ higher

risk than men for primary osteoporosis. The rapid phase of bone loss at menopause due to loss of oestrogen is the rationale behind the difference in prevalence between genders [3].

Osteoporosis has been labelled as the disease of the 21st century [4]. It is said that “because of the sedentary nature of work option, modern Indian women have hardly any exposure to sunlight”. This leads to higher incidences of osteoporosis.5

Osteoporosis cases are increasing all over the world and because of its fracture morbidity and mortality in the elderly and especially in post-menopausal women become a global health problem. Asia is going to have the highest incidence of cases because of its growing elderly population.6

The investigator hypothesized that after giving the intervention there will be improvement in the practice of middle aged women regarding prevention of osteoporosis and also that there will be association between demographic variables and pre-test practice.

II. MATERIALS AND METHODS

A Quantitative research approach with one group pretest and posttest design was selected to carry out the study. The present study was conducted at Lacchiwala village under Doiwala block, Dehradun. The setting was selected randomly out of 10 villages of Doiwala block. Non probability purposive sampling technique was used for the selection of 108 middle aged women. The inclusion criteria were: (1) Woman who could understand and speak Hindi language. (2) Women who were willing to participate. (3) Women who were available at the time of data collection. (4) Women age between 35-55 years. (5) Women residing in Lacchiwala, Doiwala. The exclusion criteria were-(i) women diagnosed with osteoporosis and were taking treatment for the same. Data was collected by using structured interview schedule on practices regarding prevention of osteoporosis. Informed written consent was obtained from all the study participants. Ethical permission was taken from ethical committee of concerned University.

TABLE I
 FREQUENCY & PERCENTAGE DISTRIBUTION OF THE STUDY SUBJECTS, N=108

S. No.	Demographic Characteristics	Women of middle aged group	
		Frequency (N)	Percentage (%)
1.	Age		
	36-40	37	34.3
	41-45	30	27.8
	46-50	23	21.3
2.	51-55	18	16.6
	Marital status		
3.	Married	107	99.1
	Widow	1	0.9
4.	No of children		
	0-1	13	12
	2-3	70	64.8
5.	4-5	25	23.2
	Education		
	Primary	27	25.0
	Secondary	30	27.8
6.	Higher secondary	25	23.1
	Graduate and post graduate	26	24.1
7.	Occupation		
	Working	13	12
	Homemaker	95	88
8.	Socio economic status		
	Upper middle class	4	3.7
	Lower middle class	16	14.8
	Upper lower class	85	78.7
9.	Lower class	3	2.8
	Ever heard about osteoporosis?		
10.	Yes	82	75.9
	No	26	24.1
11.	Source of information		
	Books or magazines	18	16.7
	Television	31	28.7
	Other peoples or friends	16	14.8
	Newspaper	17	15.7

III. RESULTS

The frequency and percentage distribution of demographic variable of sample revealed that maximum (34.3 %) subjects were between the age group of 36-40 years. Majority (99.1 %) of participants were married. Most (53.7%) of them were having 2-3 children. Most (50.9%) of them were educated up to secondary level and no one was uneducated. Majority (88%) of women were homemakers. Most (78.7%) of the participants were from upper lower class. Most (75.9%) of them had heard about osteoporosis and only (24.1%) had no information about osteoporosis. Less than half (28.7%) women heard about osteoporosis from Television.

A. Comparisons of Pretest & Posttest Mean Practice Scores of the Study Subjects

The pretest mean practice score was 41.25 ± 2.48 which was increased to 43.06 ± 2.12 in post test. The mean difference was 1.81 ± 1.78 . Paired sample 't' test was calculated to find the significance of difference between pre test and post test practice scores. Calculated 't' value 10.59 was greater than that of table value, $p=0.05$ and $df = 107$.

Thus it could be inferred that improvement in practice was not by chance but because of intervention. Therefore the null hypothesis was rejected and research hypothesis was accepted.

B. Comparison of Domains of Pretest and Posttest Mean Practice Score Regarding Prevention of Osteoporosis

Regarding comparison of practice domains in the pretest and posttest practice scores the maximum improvement in the practice was regarding diet for prevention of osteoporosis followed by exercise and sun exposure. Thus it could be inferred that gain in practice score was because of intervention and not by chance. Therefore the null hypothesis was rejected and research hypothesis was accepted

C. Association of Pre-Test Practice Score with Selected Socio demographic Variables

One Way ANOVA was used to find out the association between practice score and demographic variable such as age, number of children, education, source of information, and socio economic status of middle aged women. Mann Whitney U test was used to find out the association between practice scores and Occupation and previous knowledge about Osteoporosis. Kruskal Wallis Test was used to find out the association between practice score and socioeconomic status. There was significant association of pre-test practice score with education and socio economic status. Thus it could be inferred that education and socio economic status is associated with practices related to prevention of osteoporosis among middle aged women.

D. Frequency and Percentage Distribution of Prevalence of Risk Factors of Osteoporosis among Study Subjects

Regarding prevalence of risk factors of osteoporosis among middle aged women, out of 108 women 84(77.8%) had attained

menarche after 15 year, 46 (42.60%) were post-menopausal, 41(38%) were using intra uterine device, 36 (33.3%) were having early menopause, 19(17.6) were diabetic, 18(16.7%) reported taking tobacco.

TABLE II
COMPARISONS OF PRETEST & POSTTEST MEAN PRACTICE SCORES OF THE STUDY SUBJECTS

S. No.	Practice score	Mean±S.D	Mean difference	Standard deviation	't' value	P value
1.	Pre-test score	41.25±2.48	1.81	1.78	10.59**	<0.01
2.	Post-test score	43.06±2.12				

TABLE III
COMPARISON OF DOMAINS OF PRE TEST AND POST TEST MEAN PRACTICE SCORES REGARDING PREVENTION OF OSTEOPOROSIS, N=108

S. No.	Domain	Maximum Score	Pretest	Posttest	Mean Difference
			Mean ± SD	Mean ± SD	
1	Addiction to tobacco	6	5.97±0.165	5.97±0.165	-
2	Getting sun exposure	6	5.72±0.59	5.83±0.46	0.11
3	Performing light exercises	6	5.39±0.68	5.69±0.55	0.3
4	Diet for prevention of osteoporosis	36	24.17±2.18	25.53±1.92	1.36

TABLE IV
ASSOCIATION OF PRETEST PRACTICE SCORE AND SELECTED SOCIO DEMOGRAPHIC VARIABLE, N=108

Demographic characters		N	Practice score Mean ± S.D	F-value	df	P-value
1. Age	36-40	37	40.97±2.00	1.37	104	0.25
	41-45	30	41.78±2.35			
	46-50	23	40.77±3.11			
	51-55	18	41.94±2.23			
2. No of Children	0-1	13	41±2.41	2.49	105	0.08
	2-3	70	41.61±2.13			
	4-5	25	40.36±3.18			
3. Education	Primary	27	41.48±2.35	2.75	104	0.04
	High school	30	41.60±1.92			
	Higher secondary	25	41.80±2.53			
	graduate and postgraduate	26	41.08±2.85			
4. Source of Information	None	26	40.58	2.14	103	0.08
	Books & magazines	18	40.50			
	Television	31	41.26			
	Friends & other People	16	42.25			
	Newspaper	17	41.12			

TABLE V
ASSOCIATION BETWEEN PRE-TEST PRACTICE SCORE WITH OCCUPATION AND PREVIOUS KNOWLEDGE ABOUT OSTEOPOROSIS, N=108

Demographic characters	N	practice score Median	Range	Z-value	P-value	
1. Occupation	Home maker	95	41	40-43	1.02	0.30
	Working	13	41	39-41		
2. Heard about osteoporosis	Yes	82	41	40-43	1.85	0.06
	No	26	41	39-42		

TABLE VI
ASSOCIATION BETWEEN PRE-TEST PRACTICE SCORE WITH SOCIO ECONOMIC STATUS, N=108

Socio economic Status	Demographic characters	N	H-Value	Df	P-value
	Upper Class	4	9.06	3	0.02
	Lower Middle Class	16			
	Upper Lower Class	85			
	Lower Class	3			

TABLE VII
 FREQUENCY AND PERCENTAGE DISTRIBUTION OF PREVALENCE OF RISK FACTORS OF OSTEOPOROSIS AMONG STUDY SUBJECTS

S. No.	Practices of middle aged women	Frequency (f)	Percentage (%)
1.	Family history of osteoporosis?		
	Yes	01	0.9
	No	107	99.1
2.	Any fracture during your adult life which did not result from significant Trauma?		
	Yes	06	5.6
	No	102	94.4
3.	Used to smoke		
	Yes	6	5.6
	No	102	94.4
4.	Use to take alcohol		
	Yes	0	0
	No	108	100
5.	Use to chew tobacco		
	Yes	18	16.7
	No	90	83.3
6.	Use of thyroid medication		
	Yes	13	12
	No	95	88
7.	Use of steroid from 3 month		
	Yes	0	0
	No	108	100
8.	Late menarche after 15 years		
	Yes	84	77.8
	No	24	22.2
9.	Are you post-menopausal?		
	Yes	46	42.6
	No	62	57.4
10.	Have early menopause (before 45 years)?		
	Yes	36	33.3
	No	72	66.7
11.	Are you diabetic?		
	Yes	19	17.6
	No	89	82.4
12.	Under gone total hysterectomy surgery?		
	Yes	07	6.5
	No	101	93.5
13.	Taking hormonal replacement therapy		
	Yes	05	4.6
	No	103	94.4
14.	Use of intrauterine device for family planning?		
	Yes	41	38
	No	67	62
15.	Use of injectable progesterone contraceptive for family planning?		
	Yes	0	0
	No	108	100
16.	Diet low in dairy product and other source of calcium?		
	Yes	2	1.9
	No	106	98.1
17.	BMI		
	Underweight	4	3.7
	Normal range	57	52.8
	Pre obese	42	42.6
	Obese class I	1	0.9

IV. DISCUSSION

Finding of the present study showed that less than half subjects (34.3 %) of middle age women were between the age group of 36-40 years. Majority of participants (99.1 %) were married. Most of them (53.7%) were having 2-3 children. Most of them (50.9%) were educated up to secondary level and no one was uneducated. Majority of women (88%) were homemakers.

Most of the participants (78.7%) were from upper lower class. Most of them (75.9%) had heard about osteoporosis and only (24.1%) had no information about osteoporosis. Less than half women (28.7%) heard about osteoporosis from Television.

The finding were consistent with Cross sectional study conducted by Agrawal.T , Brig A.K. Verma on prevalence of osteopenia & osteoporosis among women. The study showed

that majority (68%) of sample was in the age group of 35-45 yrs. Most (87.97) of them were having more than 2 children [3]. Findings showed that there was increase in the post-test practice mean (19.66 ± 2.28) as compared to the pretest practice mean (10.44 ± 2.26). The mean difference was 9.21 ± 2.88 . Paired sample 't' test was calculated to find difference between pretest and post test practice scores. The Calculated 't' value was 33.19 at $p < 0.05$ level. Hence the intervention was effective to increase the practices of middle aged women regarding prevention of osteoporosis.

Result were consistent with experimental study, conducted by Varghese NM, Kumari V, Madanlal M, result showed that before the administration of informational booklet 48 (96%) had poor practices followed by 2 (4%) of working women had fair practice. Whereas after the administration of informational booklet most of the working women 42 (84%) were having fair practices [7].

Finding of the study showed that regarding prevalence of risk factors of osteoporosis among middle aged women, out of 108 women, 84(77.8%) had attained menarche after 15 year, 46 (42.60%) were post-menopausal, 41(38%) were using intra uterine device, 36 (33.3%) were having early menopause, 19(17.6) were diabetic, 18(16.7%) were chewing tobacco. The findings were consistent with Cross sectional study conducted by Shin C S et al on Prevalence and risk factors of osteoporosis in Korea. The risk factors commonly present were late menarche, more than 3 offspring, and postmenopausal [8].

V. RECOMMENDATION

1. This study can be replicated by using random sampling in selection of samples on a larger population.
2. A cross sectional study can be carried out to assess the risk factors of osteoporosis among women residing in rural and urban communities.
3. Present study can be done on working women.
4. Similar study can be done with larger sample size.
5. Comparative study can be done between rural and urban women regarding practiced related to prevention of osteoporosis.

Limitation:

- Since the study was conducted among middle aged women residing in rural area. Therefore it would be difficult to generalize the findings to women residing in urban area.
- Practices related to prevention of osteoporosis was assessed by the self-report of the study participants and not observed by investigator.

VI. CONCLUSION

Educational program was effective in increasing the practices of middle-aged women regarding the prevention of osteoporosis.

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