

# A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Prevention of Osteoporosis among Postmenopausal Women in Selected Areas at Bangalore

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## ABSTRACT

Osteoporosis is a progressive systemic skeletal disease characterized by reduced bone mass/density and micro architectural deterioration of bone tissues. It is related to various factors including menopause and aging. It is the most common chronic metabolic bone disease, which is characterized by increased bone fragility. Menopause is a natural biological process leading to transition from reproductive to non-reproductive state experienced universally by all woman due to ovarian failure. Menopause is truly a bio-psycho-socio-cultural phenomenon and highly amenable to incorporation within a life course perspective of health. Post-menopausal osteoporosis is due to the withdrawal of the protective effect of estrogen at menopause and increased bone resorption. Post-menopausal osteoporosis begins after the 12-month period from the final menstrual period. The aim of this study is to assess the knowledge of post-menopausal women in selected rural areas at Bangalore and improve their understanding and knowledge about prevention of post-menopausal Osteoporosis, through structure teaching program.

**KEYWORDS:** Osteoporosis, Menopause, Osteoporotic fractures, Bone mineral density, Porous bones

## INTRODUCTION

Osteoporosis is the most common bone disease in humans, representing a major public health problem. It is commonly known as “porous bones” disease because of a decrease in bone mineral density.

This silent disease affects a large number of the aging population globally and a cause of fragility fracture by trivial injury. Such fractures may increase morbidity and mortality and increase the financial burden on the family. <sup>(1)</sup>

Osteoporosis affects enormous number of people of both sexes and all races, and its prevalence will increase as the population ages. Osteoporosis is three times more common in women than men, because women have a lower peak bone mass, which is compounded by the hormonal changes that occur at the time of menopause.

Menopause is a universal phenomenon defined as generally cessation of periods for 12 months or a

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period equivalent to 3 previous cycles or as time of cessation of ovarian function resulting in permanent amenorrhea.

Menopause is truly a bio-psycho-socio-cultural phenomenon and highly amenable to incorporation within a life course perspective of health. Like many lives course issue, menopause involves complex and overlapping transitions, in this case to women's physiology, mood, cognition and social roles. In turn these are influenced by personal and structural factors, such as disposition and social location along race, class or regional dimension.

Menopause brings psychological and biological changes that effect women's health. Menopause health demand is a priority in Indian scenario due to growing population of menopause women.

Currently it is estimated that over 200 million people worldwide suffer from this disease. Approximately

30% of all Post-Menopausal women have Osteoporosis in the United States and in Europe. In India, the prevalence of Osteoporosis in Postmenopausal women in various studies varies between 25% and 62%.<sup>(3-4)</sup>

High prevalence of Postmenopausal Osteoporosis in Indian women may be due to inadequate nutrition i.e., Protein, Vitamin D3, and Calcium, Sedentary life-style and early menopause. There is wide prevalence of low dietary Calcium intake in Indians of all age groups with the majority of post – menopausal women consuming < 400mg/day. Studies on bone mineral health from different parts of India indicate wide prevalence of Vitamin D deficiency in all age groups including neonates, infants, school children, pregnant/lactating women, adults and Postmenopausal women.<sup>(5-11)</sup>

It is reported that Osteoporotic fractures occur 10-20 years earlier in Indians compared to Caucasians. The probable reason cited are genetic, environmental and nutritional. (12-13)

Studies have shown that bone loss starts from the age of 30 – 40 years in both men and women. In women it has been postulated that menopause is followed by an immediate decrease in bone mass and density within a year. This increased rate of bone loss reaches equilibrium approximately 10 years after menopause and then merges into a continuous age – related loss.<sup>(14)</sup>

Postmenopausal osteoporosis is due to the withdrawal of the protective effect of estrogen at menopause and increased follicle stimulating hormone, all contributing to increased bone resorption.<sup>(15)</sup>

In post-menopausal females, there are hormonal changes which cause an increase in the receptor activation of nuclear factor kb, which causes increase in the osteoblastic activity and hence, shifts the bone remodeling towards a bone resorbing balance which leads to osteoporosis.

Risk factors assessments and bone mineral density (BMD) measurements can identify patients at risk of osteoporotic fractures, in general, bone mass increases during childhood and adolescent to reach a peak level by the third decade of life.

Approximately 30% of all postmenopausal women have osteoporosis in the United States and in Europe. In India, the prevalence of Osteoporosis in postmenopausal women in various studies varies between 25% and 62%. Aging of populations worldwide is responsible for a major increase in the incidence of Osteoporosis.

## Objectives of the study

1. To assess the level of knowledge on prevention of osteoporosis among postmenopausal women
2. To prepare and administer the structured teaching programme regarding prevention of Osteoporosis
3. To find out the effectiveness of structured teaching programme regarding prevention of Osteoporosis
4. To find out the association between knowledge score with selected demographic variables

## Materials and methods

As the investigator wanted to assess the gain in knowledge of postmenopausal women after the administration of STP on prevention of osteoporosis, the evaluative approach seemed to be the most appropriate one.

After considering the entire factors related to the selected problem the investigator has selected quasi experimental one group pretest and posttest design to evaluate the effectiveness of STP on prevention of osteoporosis on a purposely selected 80 sample subjects.

## Structured knowledge questionnaire:

A structured knowledge questionnaire regarding prevention of osteoporosis was prepared consisting of 40 items on knowledge regarding prevention of osteoporosis. It is a multiple-choice questionnaire in which score 1 was awarded to correct response and 0 for wrong response. Thus, the total of 40 score was allotted for knowledge items.

To find out the effectiveness of the structured teaching programme as per the objectives of the study, the pilot study was conducted in 2 phases. In first phase the post-menopausal women were asked to fill the questionnaire. The structured teaching programme was given on the same day. After 7 days the Post-test was administered by using the self-administered questionnaire for assessing the effectiveness of STP on prevention of osteoporosis.

The collected data was analyzed by using descriptive and inferential statistics. The significance of difference between pre and posttest was found by paired 't' test. The result revealed that there was significant gain in knowledge after STP. Hence the tool was found feasible for the main study.

The participants were informed about the purpose of the study and written concern was taken from the participants. Pretest was conducted by self-administered knowledge questionnaire. On an average each participant took 30 minutes to fill the data's. On the same day after the pretest, structured teaching was given to them. Post teaching was conducted with the same questionnaire the seventh day.

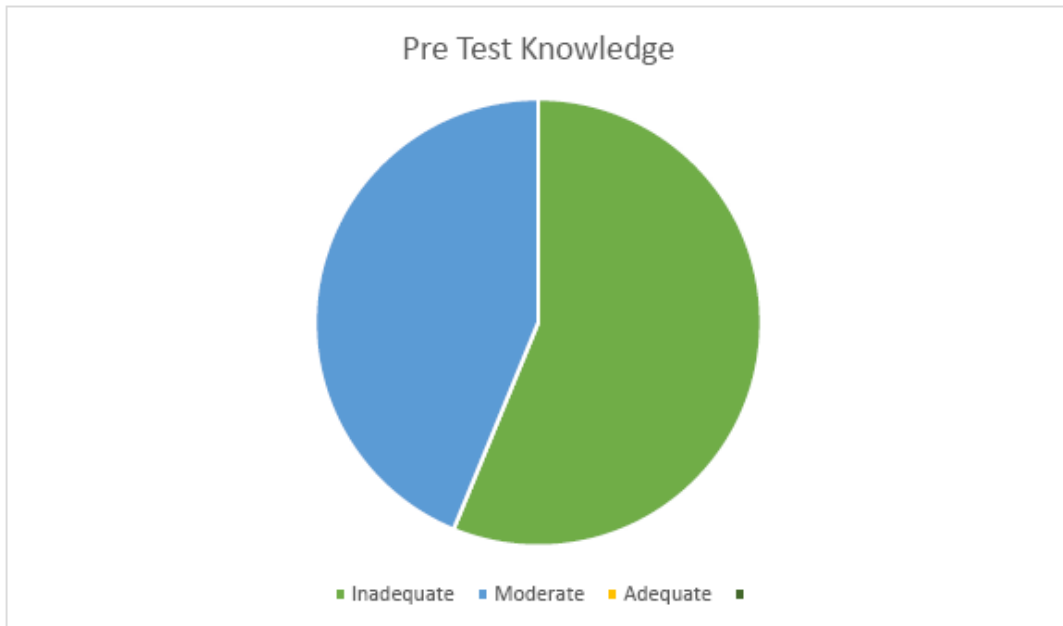
## Result and Discussion

An evaluative approach was adapted to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis. The data collected from post-menopausal was tabulated, analyzed and interpreted by using descriptive and inferential statistics.

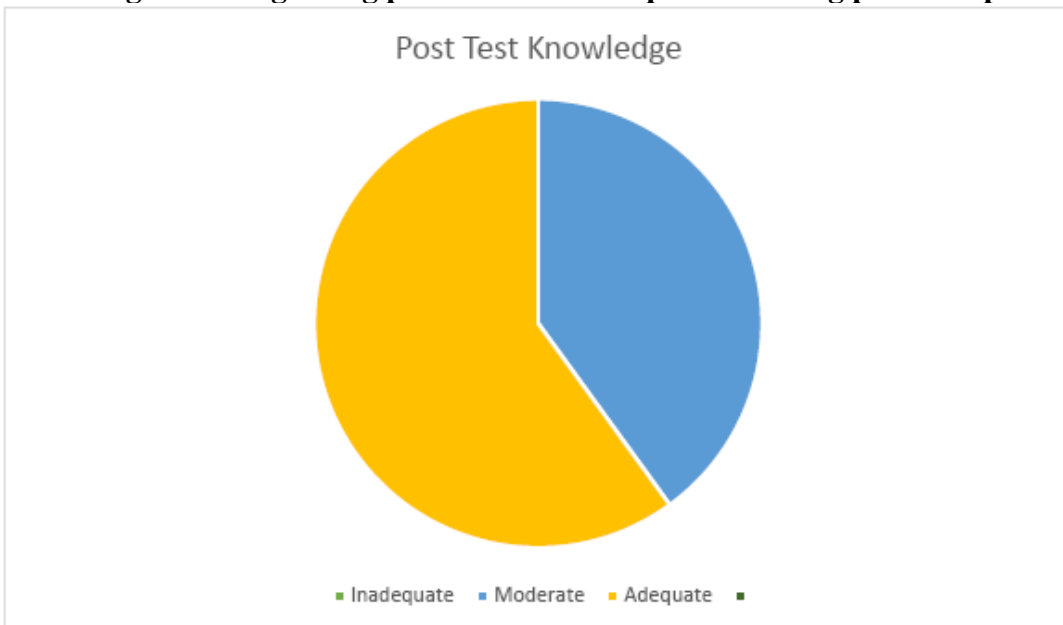
### A: Distribution of Post-menopausal women according to demographic variables.

S. No	Demographic variables	Categories	No:	%
1	Age	45 – 50	31	38.8
		51-55	59	61.2
2	Education	Primary	52	65
		Middle	18	22.5
		Pre-University	8	10
		Graduate/PG	2	2.5
3	Religion	Hindu	63	78.8
		Muslim	11	13.8
		Christian	5	6.3
		Sikh	1	1.3
4	Marital status	Married	76	95.0
		Unmarried	4	5.0
		Widow	-	-
		Divorced	-	-
5	Employed	Yes	8	10.0
		No	72	90.0
6	Occupation of Husband/Widow	Coolie	50	62.5
		Private employee	14	17.5
		Government employee	12	15.0
		Self-employed/Business	4	5.0
7	Family income/month	Below Rs. 2000	4	5.0
		Rs. 2001-3000	16	20
		Rs. 3001-4000	54	67.5
		Rs.4001–and above	6	7.5
8	Type of family	Nuclear	64	80.0
		Joined	16	20.0
		Extended	-	-
9	Food habit	Vegetarian	31	38.8
		Vegetarian with egg	6	7.5
		Non-Vegetarian	43	53.8
10	Source of information	Print media	1	1.3
		Electronic media	5	6.3
		Friends/Neighbors	7	8.8
		Health personnel	2	2.5
		Family members/relatives	65	81.3

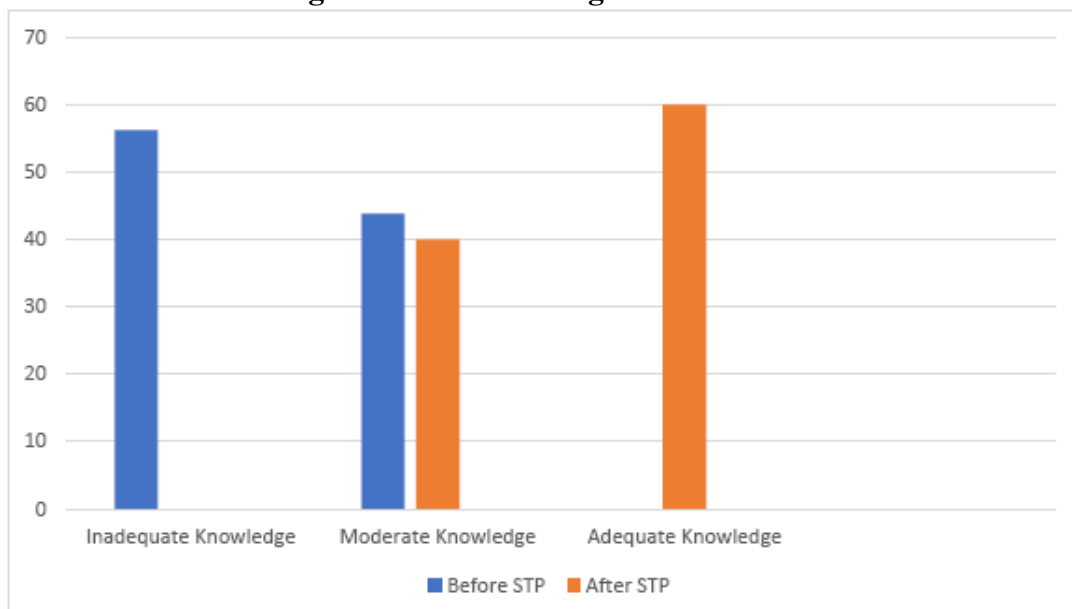
**B: Pretest knowledge score regarding prevention of osteoporosis among postmenopausal women**



**C: Post-test knowledge score regarding prevention of osteoporosis among postmenopausal women**



**D: Distribution of PMW according to level of knowledge before and after STP.**



**E1: Mean, SD and mean score percent of knowledge before and after STP among PMW**

S.NO	Variable	Max score	Before STP				After STP			
			Range	Mean	SD	Mean %	Range	Mean	SD	Mean %
1	Knowledge	40	12-24	18.64	3.74	46.7	21-40	29.90	4.95	74.4

**E2: Enhancement of knowledge and significance on prevention of osteoporosis among PMW before and after STP**

S.NO	Variable	Max score	Mean difference	SD	Mean %	t-value	df	p-value
1	Knowledge	40	11.26	1.21	28.0	14.23	79	p≤0.05

The present study is an evaluation approach to assess the effectiveness of STP on knowledge regarding prevention of osteoporosis among postmenopausal women.

The findings were discussed under the demographic characteristics, objectives and testing of hypothesis.

In the present study, the mean percentage of pretest knowledge score regarding prevention of osteoporosis was 46.7% compared to Post-test the mean knowledge score was 74.7% after implementation of STP. The present study is supported by Riberio .V<sup>(16)</sup> to assess the women's knowledge and practice regarding Osteoporosis. The study done by Saw. S.M, Hong. C.Y<sup>(17)</sup> states that only 58% of sample had heard about osteoporosis and majority of them were largely unaware of the potential threat.

The present study confirms that there was a considerable improvement of knowledge after structured teaching programme and is statistically established as Post-test 74.7% with an enhancement of 29.90%.

In the present study comparison was done between pretest and Post-test of knowledge scores (t = 14.23) revealing significance at 5% level. A study conducted by Blalock. S.J and Currey S.S<sup>(18)</sup>. have also shown a significant increase in knowledge after distributing written educational materials on osteoporosis.

Among demographic variables analyzed in this study age, employment and family income of the respondents are found significantly associated with knowledge regarding prevention of osteoporosis among postmenopausal women. Remaining variables such as education, religion, marital status, occupation of husband/widow, type of family, food habit and source of information are found to be non-significant.

**Conclusion**

The findings of this study suggest that comprehensive education which is delivered as soon as possible on knowledge, attitude, symptom and management of menopause should be regarded as crucial for midlife women.

Physical, mental, psychological and social aspects need to be taken into consideration in developing

programs. In addition, the pre- and post-menopausal education intervention is required according to status, symptoms and severity of menopause.

Reaching menopause after meant that their life was nearing an end. With the increasing life expectance today's women will live a third of her life after menopause. Health and education and planning ahead for challenges can make this period as one of the most rewarding and enriching time for her life.

The prevention of osteoporosis should become early and continue all the way through life with measures that improve or maintain bone health including regular physical activity and a balanced diet, considering not only an adequate intake of calcium but also of other minerals, proteins and food rich in antioxidants.

The conclusions drawn on the basis of the findings of the study were as follows.

1. The knowledge score for postmenopausal women regarding prevention of osteoporosis was inadequate before the implementation of STP.
2. Overall knowledge scores of postmenopausal women were found 46.7% before implementation of STP.
3. Overall knowledge scores of PMW were found 74.7% after implementation of STP.
4. The STP was effective in increasing the knowledge of PMW in all areas.
5. Overall findings reveal the knowledge of PMW regarding prevention of osteoporosis was not adequate before implementation of STP. But it showed gain in knowledge after the implementation of STP towards prevention of osteoporosis.

**Reference**

- [1] World Health Organization. *Assessment of Fracture Risk and Its Application to Screening for Postmenopausal Osteoporosis*. Geneva: WHO; 1994.
- [2] Hunter, M. S., and Rendall, M. Bio-psycho socio-cultural perspectives on menopause. *Best Practice & Research Clinical Obstetrics & Gynaecology*.2007; 21(2): 261– 274.

- [3] Paul TV, Nihal Thomas, Mandalam S Sheshadri, Regi Oomman, Arun jose, Narayana V Mahendri. Prevalence of osteoporosis in ambulatory postmenopausal women from a semiurban region in Southern India: Relationship to calcium nutrition and Vitamin D status. *Endocr Pract* .2008; 14:665-71.
- [4] Chhibber G, Roy R, Eunice M, Srivatsava M, Ammini AC. Prevalence of osteoporosis among elderly women living in Delhi and rural Haryana. *IJEM*, 2007; (1&2):11-4. 2007.
- [5] Harinarayan CV, Joshi SR. Vitamin D status in India – Its implications and remedial measures. *J Assoc Physicians India*.2009; 57:40–8.
- [6] Agarwal N, Faridi MM, Aggarwal A, Singh O. Vitamin D Status of term exclusively breastfed infants and their mothers from India. *Acta Paediatr*. 2010; 99:1671–4.
- [7] Kalra S, Kalra B, Khandelwal SK. Vitamin D deficiency in healthy postmenopausal women in Haryana. *World J Life Sci Med Res*.2011; 1:11;
- [8] Marwaha RK, Tandon N, Garg MK, Kanwar R, Narang A, Sastry A, et al. Vitamin D status in healthy Indians aged 50 years and above. *J Assoc Physicians India*. 2011; 59:706–9.
- [9] Harinarayan CV, Ramalakshmi T, Prasad UV, Kumar EG, Srinivasa Rao PV. Ultrasound bone mineral density of os calcis-its relationship with bone mineral markers and 25(OH) vitamin D in endemic fluorotic and non-fluorotic villages. *J Clin Sci Res*.2012; 1:157–62.
- [10] Singh M. Early age of natural menopause in India, a biological marker for early preventive health programs. *Climacteric*. 2012; 15:581–6.
- [11] Teotia SP, Teotia M. Nutritional bone disease: The continuing challenge to neonatal bone health. *Postgrad Med*.2009; 23:30–8.
- [12] Vaidya RA, Dound YA, Nabar NS, Pandey SN, Vaidya AD. Therapeutic Activity and Safety of Vitamin K2-7 in Muscle Cramps. *Indian Pract*. 2010; 63:287–91.
- [13] Meeta, Harinarayan CV, Marwah R, Sahah R, Kalra S, Babhulkar S. Clinical practice guidelines on Post-menopausal Osteoporosis: an executive summary and recommendations. *J Midlife Health*. 2013; 4(2): 107 – 126.
- [14] Hunter DJ, Zhang YQ, Tu X, Lavalley M, Niu JB, Amin S, Guermazi A, Genant H, Gale D, Felson DT. Change in joint space width: hyaline articular cartilage loss or alteration in meniscus? *Arthritis Rheum*. 2006; 54(8):2488–95.
- [15] Rajan R, Paul J, Kapoor N, Cherian KE, Paul TV. Post-menopausal osteoporosis- An Indian perspective. *Curr Med Issues* 2020; 18:98-104.
- [16] Ribeiro V, Women’s knowledge and practices regarding osteoporosis. Department of medicine, Mc Gill University Health Center. Montreal.2022; 82 (10): 4431-4437.
- [17] Saw. S. M, Hong C.Y. Awareness of Health belief of Women’s towards osteoporosis India; 2003. 595-601.
- [18] Blalock SJ, Currey SS, DeVellis RF, DeVellis BM, Giorgino KB, Anderson JJ, Dooley MA, Gold DT. Effects of educational materials concerning osteoporosis on women's knowledge, beliefs, and behavior. *Am J Health Promot*. 2000; 14:161–169.