

# A Study to Assess the Effectiveness of Structured Teaching Programme on Osteoporosis among Middle Aged Women Residing at Selected Rural Area of Bangalore District Karnataka

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## Abstract

Bone is a living, dynamic tissue that undergoes constant remodeling through life. This is necessary to allow the skeleton to increase in size during growth, respond to the physical stresses placed on it and repair structural damage due to structural fatigue or fracture. This process requires range of proteins and minerals, which are absorbed from the blood stream. Osteoporosis often known as the silent thief because bone loss occurs without symptoms; one in four women over the age of 50 has osteoporosis. One in eight men over 50 year also has the disease. However, the disease can strike at any age. More women die each year as a result of osteoporotic fractures than from breast and ovarian cancer. This study is the Quasi experimental -one group pre test post test design to assess the effectiveness of STP on osteoporosis among middle aged women. In this study non-probability sampling technique with convenient sampling was used. Sample size consists of 50 middle aged women. The overall knowledge score in pre test is 14.300 and post test score is 26.260. The paired t-test score (21.532) shows that the Structured Teaching Programme has effectiveness on increasing knowledge of middle aged women regarding osteoporosis and its prevention. It is revealed that there is significant association between the post test knowledge score with education (Chi-square=4.920) and occupation (Chi-square value=5.048). The association was calculated using Chi square test. Therefore the Research hypothesis H<sub>2</sub> has been accepted.

## Introduction

The osteoporosis is a major public health problem affecting millions of people all around the world. Osteoporosis is much more common in women than men and occurs frequently in women. Osteoporosis is a disease in which the density and quality of bone are reduced, leading to weakness of skeleton and increase the risk of fracture, particularly of the spine, wrist and hip. Osteoporosis and associated

fractures are an important cause of mortality and morbidity.

The bone disease osteoporosis is a costly disorder not only in terms of health care dollars but also in terms of human suffering, pain, disability and death. It is estimated that osteoporosis and its precursor, osteopenia, will affect approximately 40 million American older than 50 years by 2010. Ten million persons in the United States (80% of them



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women) have Osteoporosis, with the projected increase in life expectancy, this number is expected to grow. One in two women and one in 8 men over the age of 50 will sustain an osteoporosis related fracture during their lifetime. In the United States, the total cost of osteoporosis in terms of medical care, nursing home fees, and loss of income is estimated to exceed \$13 billion.

Osteoporosis is a major health problem in many parts of the world, and its scope will increase as the population ages. One in two Caucasian women will experience a bone fracture due to osteoporosis in her lifetime. Indian women from low socioeconomic group in community and other area consume diets that have inadequate calcium coupled with too few calories' proteins, micronutrients.

Hospital data and other researchers suggest that these women have osteoporosis hip fracture at a much earlier age than Western women. According to W.H.O, osteoporosis is second only to cardiovascular disease as global health care problem.

## Methodology

### Research Approach

The research approach indicates the procedure for conducting the study. It guides the researcher what to research, whom to analysis and interpret the results.

In the present study the investigator wished to assess the gain in knowledge of middle aged women after the administration of structured teaching programme on osteoporosis, hence the research approach adopted for this study was an evaluative approach. Evaluative approach helps to explain the effect of independent variable on the dependent variable.

### Research Design

The research design refers to the researchers over all plans for obtaining answers to the research questions and for testing the research hypothesis.

The research designs provide an overall or blueprint to carry out the study. The research design used in this study is the Quasi experimental -one group pre test post test design to assess the effectiveness of STP on osteoporosis.

**Table 1:** Schematic Representation of Research Design.

Group	Pre test	Intervention	Post test
50 middle aged women.	O <sub>1</sub>	X	O <sub>2</sub>

### Keys

X-Structured Teaching Programme on osteoporosis.

O<sub>1</sub> - Pre test on knowledge of middle aged women regarding osteoporosis.

O<sub>2</sub> - Post test on knowledge of middle aged women regarding osteoporosis.

### Setting of the Study

Setting is the general location and condition in which data collection takes place in study.

*Population:* The population is all elements that meet certain criteria for inclusions in a study. The requirement of defining population for research project arises from the need to which the result of the study can be applied.

The population for the study was the middle aged women in Bettahalsur Community Area, Bangalore.

### Sample and Sampling Technique

Sample is the small proportion of population selected for observation and analysis. Sampling is the process of selecting representative units of a population for study in a research process. In the present study non- probability sampling technique with convenient sampling was used to select middle aged women in Bettahalsur Community Area, Bangalore.

### Sample Size

Sample size consists of 50 middle aged women in Bettahalsur Community Area, Bangalore.

### Criteria for Selection of the Sample

#### Inclusive Criteria

The study will include:

1. Women above 35 years of age.
2. Middle aged women who are willing to participate in the study.
3. Middle aged women who are available during data collection.
4. Middle aged women who are able to speak and read Kannada or English.

### Exclusion Criteria

The study will not include:

1. Middle aged women who are not willing to participate during data collection.
2. Middle aged women who are not able to speak and read Kannada or English.
3. Middle aged women who have any medical problems.
4. Women with hysterectomy.

### Description of the Tool

The tool was organized as follows.

*Part I:* Socio demographic variables of the middle aged women. This dealt with demographic data which was used to collect the characteristics of the samples with an instruction to participants to write an opinion of the correct answer in the box provided with each question

*Part II:* Contains Section A,B,C and D, which mention the Knowledge Questionnaire on concept, causes risk factors ,clinical manifestations, complications and prevention of osteoporosis. Consists of the structured knowledge Questionnaire with 30 items based on the, concept of bones, definition, risk factors, causes, clinical manifestations, complications and prevention of osteoporosis.

*Part III:* Structured Teaching Programme of osteoporosis.

**Table 2:** Assessment of Variables.

Assessment of Variables	Number of Questions	Incorrect Response	Correct Response
Concept and types of osteoporosis	8	0	1
Causes and risk factors of Osteoporosis.	7	0	1
Clinical manifestation, diagnosis and complication of Osteoporosis.	4	0	1
Prevention of Osteoporosis	11	0	1

This contains multiple choices and yes/no types. A score value of 1 was allotted to each correct response and for wrong response zero was awarded. Thus there were 30 maximum obtainable scores. The level of knowledge was categorized based on the percentage of scores obtained.

The score was converted into percentage by using following formula.

$$\text{Percentage} = \frac{\text{Obtained score}}{\text{Total score}} \times 100$$

**Table 3:** Scoring Key for the Knowledge on Prevention of Osteoporosis among Middle Aged Women.

Score	Knowledge of Patients Undergoing Abdominal Surgery
<50%	Poor
51- 75%	Average
>75%	Good

### Validation of the Tool

When an instrument is valid, it truly reflects concept, it is supposed to measure. Content validity of the instruments was assessed by obtaining opinion from 2 Medical experts and 3 community health nursing experts. As per the suggestions of the experts the investigator had made necessary modification in the tool with the permission of the guide.

**Table 4:** Distribution of Demographic Variablestable.

Demographic variables	Frequency	Percentage (%)
<b>Age</b>		
40-50	17	34%
50-60	16	32%
60-70	15	30%
70 Above	2	4%
<b>Educational status</b>		
Pre graduate	24	48%
graduate	5	10%
postgraduate	11	22%
others	10	20%
<b>Occupation</b>		
Job holder	20	40.0
House wife	30	60.0
<b>Monthly income</b>		
Below 5000	2	4.0
5000-10000	29	58.0
10000-20000	17	34.0
above 20000	2	4.0
<b>Food pattern</b>		
Vegetarian	16	32.0
Non vegetarian	34	68.0
<b>Any family history of fractures without any accident or injury</b>		
present	2	4.0
absent	48	96.0
Mass media	33	66.0
Academic education	2	4.0
Contact with any health personnel	14	28.0
Any other	1	2.0

## Method of Data Collection

### Plan for Data Analysis

The plan for data analysis includes both inferential and descriptive statistics. The collected data were statistically analyzed and tabulated by applying descriptive statistics such as mean and standard deviation, and inferential statistics such as student paired 't' test, chi-square test and Karl Pearson correlation coefficient. The 't' test was used to find out the differences in the scores of knowledge between pre test and post test. The chi-square was used to find out the association between demographic variables with knowledge in the post test. The findings of the study were presented in the form of tables and figures.

## Results and Analysis

### Section II

**Table 5:** Pre Test Knowledge Score on Different Aspects of Osteoporosis among Middle Aged Women. N=50

Level of knowledge	Pre test knowledge score							
	Concept of the osteoporosis		Causes and risk factors		Manifestation complications and diagnosis		Preventive practice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Inadequate	34	68%	28	56%	41	82%	37	74%
Moderately adequate	13	26%	17	34%	9	18%	10	20%
Adequate	3	6%	5	10%	-	-	3	6%

### Section III

**Table 6:** Post Test Knowledge Score on Different Aspects of Osteoporosis among Middle Aged Women.

Level of knowledge	Post test knowledge score							
	Concept of the osteoporosis		Causes and risk factors		Manifestation complications and diagnosis		Preventive Practice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Inadequate	21	42%	-	-	-	-	-	-
Moderately adequate	10	20%	-	-	-	-	-	-
Adequate	19	38%	50	100%	50	100%	50	100%

The above tables of pre-test scores represents the frequency and percentage, then it is divided in to 3 levels inadequate , moderately adequate, adequate on aspects of knowledge of the concept, causes ,risk factors, manifestations, complications, diagnosis and prevention of osteoporosis.

Regarding the concept 34 (68%) were inadequate, 13(26%) were moderately adequate, 3(6%) was adequate.

Regarding the causes and risk factors 28 (56%) were inadequate, 17(34%) were moderately adequate, 5(10%) was adequate.

Regarding the manifestations, diagnosis and complications 41 (82%) were inadequate, 9(18%) was moderately adequate.

Regarding the prevention 37 (74%) were inadequate, 10(20%) were moderately adequate, 3(6%) was adequate.

The above tables of post-test scores represents the frequency and percentage, then it is divided in to 3 levels inadequate, moderately adequate, adequate on aspects of knowledge of the concept, causes ,risk factors, manifestations, complications, diagnosis and prevention of osteoporosis.

Regarding the concept 21 (42%) were inadequate,

10(20%) were moderately adequate, 19(38%) was adequate.

Regarding the causes and risk factors 50 (100%) was adequate.

Regarding the manifestations, diagnosis and complications 50 (100%) was adequate.

Regarding the prevention 50 (100%) was adequate.

#### Section IV

**Table 7:** Comparison of Pre and Post Test Knowledge Scores Regarding Prevention of Osteoporosis among Middle Aged Women before and after Administration of Structured Teaching Programme.

Area of Knowledge	Pre-test		Post-test		Student's paired t-test	'p' value
	Mean	SD	Mean	SD		
Concept of the osteoporosis	3.2400	.79693	4.3400	1.36442	5.276	< 0.001(s)
Causes and risk factors	4.4600	1.50116	7.3400	.47852	13.052	< 0.001(s)
Manifestation, complications and diagnosis	1.4200	.99160	3.7600	.43142	14.567	< 0.001(s)
Preventive practice	5.1800	2.15416	10.8200	.80026	19.764	< 0.001(s)

N=50

**Table 8:** Determination of Overall Means Knowledge Score Before and after Structured Teaching Programme.

Knowledge	No. of Patients	Pre-test	Post-test	Mean of differences	paired t-test
Overall Knowledge score	50	14.300	26.260	11.96 (SD=3.9277)	21.532

N=60

HS, p-0.000, df=49

The given table determines the overall mean knowledge score before and after Structured Teaching Programme. The overall knowledge score in pre test is 14.300 and post test score is 26.260. The paired t-test score(21.532) shows that the Structured Teaching Programme has effectiveness on increasing knowledge of middle aged women regarding osteoporosis and its prevention.

**Table 9:** Comparison of Average Knowledge Score Percentage on Prevention of Osteoporosis before and after Administration of Structured Teaching Programme.

Area of Knowledge	Pre-test %	Post-test %	% Enhancement
Concept of the osteoporosis	54	72.33	18.33
Causes and risk factors	55.75	91.75	36
Manifestation, complications and diagnosis	35.50	94	58.50
Preventive Practice	43.16	90.17	47.01
Over all	47.67	87.53	39.86

The above table shows the association between socio-demographic variables and the pre test knowledge of middle aged women. Educational status (Chi-square value=4.920) and Occupational (Chi-square value=5.048) are significantly associated with their pre test Knowledge score. These types of association are statistically significant and it was calculated using Pearson chi square test.

H2: There will be an association between knowledge scores with their selected socio-demographic variables.

It is revealed that there is significant association between the post test knowledge score with education (Chi-square =4.920) and occupation (Chi-square value=5.048).The association was calculated using Chi square test. Therefore the Research hypothesis H2 has been accepted.

#### Discussion

For this study the data was obtained from middle aged women at Bettahalsur regarding prevention of osteoporosis. In order to achieve the objectives of the study a pre experimental (single group pre

**Table 10:** Association of Pre Test Level of Knowledge on Prevention of Osteoporosis among Middle Aged Women with Selected Demographic Variables of Students.

N=50					
Demographic variables	Frequency	Mean	SD	Mann Whitney/ Kruskal wallis test	'p' Value
<i>Age</i>					
35-40	17	13.5294	2.26709	4.436	0.218 NS
40-45	16	13.8125	2.78613		
45-50	15	16.1333	5.16674		
50 Above	2	11.0000	1.41421		
<i>Educational status</i>					
Pre Graduate	24	12.2500	3.92594	4.920	0.0465
Graduate	5	15.4000	1.48324		
Postgraduate	11	15.9273	3.22116		
Others	10	13.6000	2.98887		
<i>Occupation</i>					
Job holder	20	15.2500	3.50751	5.048	0.025
House wife	30	13.6667	3.69840		
<i>Monthly income</i>					
Below 5000	2	11.5000	2.12132	2.880	0.410 NS
5000-10000	29	14.5517	4.33908		
10000-20000	17	14.0588	2.53650		
above 20000	2	15.5000	2.12132		
<i>Food pattern</i>					
Vegetarian	16	13.6250	2.65518	0.243	0.622 NS
Non vegetarian	34	14.6176	4.06026		
<i>Any family history of fractures without any accident or injury</i>					
Present	2	14.0000	2.82843	0.010	0.920 NS
Absent	48	14.3125	3.72545		
<i>Sources of information regarding osteoporosis</i>					
Mass media	33	14.3030	3.82005	2.742	0.433 NS
Academic education	2	14.5000	3.53553		
Contact with any health personnel	14	13.5714	2.47182		
Any other	1	24.0000	-		

test post test) design was adopted and 50 middle aged women were selected by using convenient sampling, fulfilling the inclusion and exclusion criteria.

The subjects were evaluated using structured questionnaire for socio demographic data and knowledge questionnaire on osteoporosis H1. The mean post test knowledge scores of middle aged women regarding prevention of osteoporosis will be significantly higher than that of the mean pre test knowledge score. It is revealed that there is significant difference between the pre test and

post test knowledge score. Comparison was done using student's paired 't' test and the value is  $t=21.532$ , which is significant. Therefore the research hypothesis H1 has accepted.

H2. There will be significant association between pre test and post test knowledge and selected demographic variables of middle aged women such as age, education, occupation, income, dietary habits, family history and sources of information. It reveals that out of several demographic variables the educational status and occupational status are significantly associated with the pre test

knowledge scores. Association with education status (Chi-square=4.920, P=0.046), association with occupational status (Chi-square=5.048, P=0.025) are significantly associated with their pre test scores. Therefore the Research hypothesis H2 has been accepted.

### Conclusion

The findings of the study revealed that there was a marked increase in overall knowledge level scores (87.53) of post test than the pre test (47.67). The overall improvement in the mean score was with the paired 't' value 21.532 which was highly significant at  $p < 0.001$ . Thus, the structured teaching programme was effective in improving the knowledge of the mothers.

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