



# A Study to Assess the Effectiveness of Advanced Teaching Program on Knowledge Regarding Menopausal Osteoporosis and Its Prevention Among Women in Selected Community Area, Indore

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## ABSTRACT

### Background

Menopause is a natural physiological process associated with hormonal changes that may increase the risk of osteoporosis among women. Osteoporosis is characterized by decreased bone density and deterioration of bone tissue, leading to increased fracture risk and reduced quality of life. Adequate knowledge regarding menopausal osteoporosis and its preventive measures is essential for reducing complications and promoting healthy lifestyles among women.

### Objectives

1. To assess the pre-test knowledge regarding menopausal osteoporosis and its prevention among women.
2. To evaluate the effectiveness of an advanced teaching program on knowledge regarding menopausal osteoporosis and its prevention.
3. To determine the association between post-test knowledge scores and selected demographic variables.

### Methodology

A quantitative research approach with a pre-experimental one-group pre-test post-test design was adopted for the study. The study was conducted among women in selected community areas of Indore. A sample of 100 women was selected using convenient sampling technique. Structured knowledge questionnaires were used for data collection. The intervention consisted of an Advanced Teaching Program regarding menopausal osteoporosis and preventive measures.

## Results

The findings revealed that in the pre-test, 58% had inadequate knowledge, 32% had moderate knowledge, and only 10% had adequate knowledge. After implementation of the advanced teaching program, 72% had adequate knowledge, 24% had moderate knowledge, and only 4% had inadequate knowledge. The mean post-test knowledge score ( $22.45 \pm 3.21$ ) was significantly higher than the mean pre-test score ( $11.28 \pm 4.12$ ). The calculated paired t-value ( $t=18.62$ ) was statistically significant at  $p < 0.001$ .

## Conclusion

The study concluded that the Advanced Teaching Program was effective in improving knowledge regarding menopausal osteoporosis and its prevention among women.

**Keywords:** Menopause, Osteoporosis, Knowledge, Prevention, Teaching Program, Women

## INTRODUCTION

Menopause is a natural biological transition in a woman's life marked by the permanent cessation of menstruation due to the decline in ovarian follicular activity and decreased production of estrogen hormones. It usually occurs between the ages of 45 and 55 years and is accompanied by various physiological, psychological, and social changes. Although menopause is considered a normal stage of aging, it is associated with several health-related issues that can significantly affect the quality of life of women. One of the most important long-term health consequences associated with menopause is osteoporosis.

Osteoporosis is a progressive systemic skeletal disorder characterized by reduced bone mineral density, deterioration of bone tissue, and disruption of bone architecture, leading to increased bone fragility and susceptibility to fractures. It is commonly referred to as a "silent disease" because bone loss occurs gradually without noticeable symptoms until a fracture occurs. The most frequent sites of osteoporotic fractures include the hip, vertebral column, and wrist. These fractures often result in disability, chronic pain, reduced mobility, loss of independence, and increased healthcare expenditure.

Globally, osteoporosis is recognized as a major public health problem affecting millions of postmenopausal women. The prevalence of osteoporosis is increasing due to aging populations, sedentary lifestyles, nutritional deficiencies, and changing health behaviors. Following menopause, the rapid decline in estrogen levels accelerates bone resorption and reduces bone formation, resulting in a significant loss of bone mass. Women are therefore at greater risk of developing osteoporosis compared with men.

Several factors contribute to the development of menopausal osteoporosis, including increasing age, genetic predisposition, inadequate calcium and vitamin D intake, lack of physical activity, smoking, alcohol consumption, low body mass index, long-term use of certain medications, and hormonal changes. Many women remain unaware of these risk factors and preventive measures, which may delay early intervention and increase the likelihood of complications.

Preventive strategies such as maintaining a balanced diet rich in calcium and vitamin D, engaging in regular weight-bearing exercises, avoiding tobacco and alcohol consumption, and adopting healthy lifestyle practices can help reduce the incidence of osteoporosis and improve bone health. Health education and awareness programs play an important role in empowering women with knowledge regarding disease prevention and early management.

Educational interventions in the form of structured teaching programs have demonstrated effectiveness in improving knowledge and promoting positive health behaviors among women. Therefore, increasing

awareness regarding menopausal osteoporosis is essential for reducing disease burden and improving overall health outcomes among women.

## NEED FOR THE STUDY

Menopausal osteoporosis is emerging as a major public health concern due to its increasing prevalence and associated complications among women worldwide. The disease often remains undiagnosed until fractures occur, resulting in significant physical, emotional, social, and economic consequences. Lack of awareness regarding osteoporosis, its risk factors, and preventive measures contributes to delayed diagnosis and inadequate preventive practices among women.

In India, many women living in community settings have limited access to health education and preventive services related to menopausal health. Inadequate knowledge regarding dietary practices, exercise, calcium supplementation, and lifestyle modifications may increase the risk of osteoporosis and its complications. Community-based awareness programs have been identified as effective approaches for improving knowledge and encouraging healthy behaviors among women.

Teaching programs serve as cost-effective interventions that can improve awareness and facilitate early preventive actions. Enhanced knowledge can encourage women to adopt healthier lifestyles and seek timely healthcare services, thereby reducing future disease burden and improving quality of life.

Hence, considering the increasing prevalence of menopausal osteoporosis and the importance of preventive health education, the investigator felt the need to conduct the present study to assess the effectiveness of an Advanced Teaching Program on knowledge regarding menopausal osteoporosis and its prevention among women in selected community areas of Indore.

## OBJECTIVES OF THE STUDY

1. To assess pre-test knowledge regarding menopausal osteoporosis and its prevention.
2. To evaluate the effectiveness of an Advanced Teaching Program.
3. To find association between post-test knowledge and demographic variables.

## HYPOTHESES

**H1:** There will be a significant difference between pre-test and post-test knowledge scores regarding menopausal osteoporosis and its prevention.

**H2:** There will be significant association between post-test knowledge and selected demographic variables.

## METHODOLOGY

The present study was conducted to assess the effectiveness of an Advanced Teaching Program on knowledge regarding menopausal osteoporosis and its prevention among women in selected community areas of Indore. This chapter describes the research methodology adopted for the study, including research approach, research design, setting, population, sampling technique, sample size, data collection tools, intervention, and statistical analysis.

### Research Approach

A quantitative research approach was adopted for the study to assess the effectiveness of the Advanced Teaching Program on knowledge regarding menopausal osteoporosis and its prevention among women. The quantitative approach was considered appropriate as it facilitates objective measurement and statistical analysis of knowledge scores before and after the intervention.

## Research Design

A pre-experimental one-group pre-test post-test research design was used in the study. In this design, participants' baseline knowledge was assessed through a pre-test before implementing the educational intervention. Following the administration of the Advanced Teaching Program, a post-test was conducted to evaluate changes in knowledge levels and determine the effectiveness of the intervention.

The design can be represented as:

**O1 → X → O2**

Where:

**O1 = Pre-test assessment of knowledge**

**X = Advanced Teaching Program**

**O2 = Post-test assessment of knowledge**

## Setting of the Study

The study was conducted in selected community areas of Indore, Madhya Pradesh. The selected areas were considered suitable because of accessibility, availability of participants, and cooperation from local authorities and community members.

## Population

The target population for the study comprised women residing in selected community areas of Indore. The accessible population included women who met the inclusion criteria and were available during the period of data collection.

## Sample Size

The sample size for the present study consisted of **100 women** from selected community areas of Indore. The sample size was considered adequate for evaluating the effectiveness of the educational intervention and for statistical analysis.

## Sampling Technique

Convenient sampling technique was used for selecting the study participants. Women who fulfilled the inclusion criteria and were willing to participate in the study were included.

## Inclusion Criteria

The study included women who:

- Were between the age group of 40–60 years
- Were willing to participate in the study
- Were available during the data collection period
- Could understand Hindi or English language

## Exclusion Criteria

The study excluded women who:

- Were healthcare professionals
- Had previous formal education regarding osteoporosis prevention programs
- Were seriously ill during data collection

### **Description of the Tool**

Data were collected using a structured knowledge questionnaire developed by the investigator based on review of literature and expert guidance.

The tool consisted of two sections:

#### **Section A: Demographic Variables**

This section included information regarding:

- Age
- Educational status
- Occupation
- Monthly family income
- Marital status
- Family type
- Previous knowledge regarding osteoporosis
- Source of information

#### **Section B: Structured Knowledge Questionnaire**

This section contained multiple-choice questions related to:

- Meaning and causes of osteoporosis
- Risk factors associated with menopausal osteoporosis
- Signs and symptoms
- Diagnostic methods
- Prevention and management strategies
- Lifestyle modifications

The total score was categorized as:

- Inadequate knowledge: Less than 50%
- Moderately adequate knowledge: 51–75%
- Adequate knowledge: Above 75%

#### **Intervention: Advanced Teaching Program**

The intervention consisted of an Advanced Teaching Program developed by the investigator regarding menopausal osteoporosis and its prevention.

The teaching content included:

- Introduction and meaning of osteoporosis
- Causes and risk factors
- Signs and symptoms
- Complications of osteoporosis
- Dietary management including calcium and vitamin D intake

- Exercise and lifestyle modifications
- Preventive measures

Teaching methods used:

- Lecture-cum-discussion
- Charts and visual aids
- Demonstration and explanation

Duration of teaching session: **45–60 minutes**

### **Data Collection Procedure**

Formal permission was obtained from concerned authorities before conducting the study. Informed consent was obtained from participants after explaining the purpose of the study.

The data collection procedure involved the following steps:

**Step 1:** Selection of participants according to inclusion criteria.

**Step 2:** Administration of the pre-test using a structured questionnaire.

**Step 3:** Implementation of the Advanced Teaching Program.

**Step 4:** Conducting the post-test after seven days using the same questionnaire.

### **Statistical Analysis**

The collected data were organized, coded, tabulated, and analyzed using descriptive and inferential statistics.

#### **Descriptive Statistics**

- Frequency
- Percentage
- Mean
- Standard deviation

#### **Inferential Statistics**

- Paired t-test was used to determine the effectiveness of the Advanced Teaching Program by comparing pre-test and post-test knowledge scores.
- Chi-square test was used to determine the association between post-test knowledge scores and selected demographic variables.

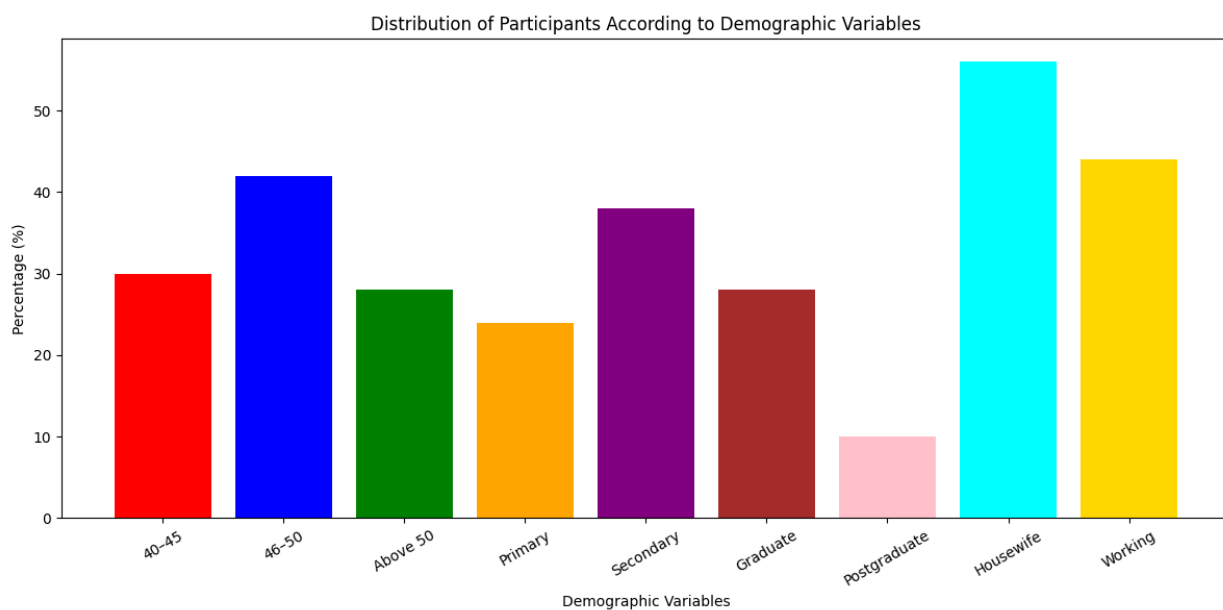
The level of significance for all statistical tests was set at  **$p < 0.05$** .

## RESULT

### DESCRIPTION OF DEMOGRAPHIC VARIABLES

**Table 1: Distribution of Women According to Demographic Variables (N=100)**

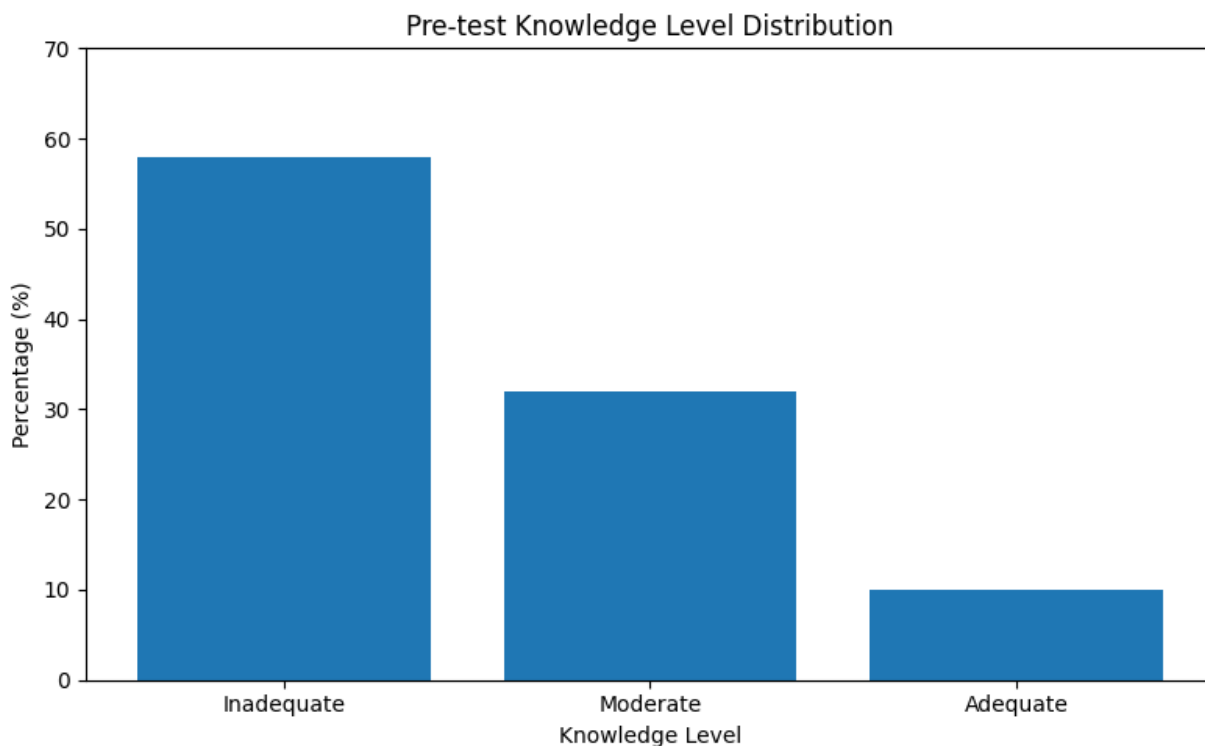
Variables	Frequency	Percentage
<b>Age (Years)</b>		
40–45	30	30
46–50	42	42
Above 50	28	28
<b>Educational Status</b>		
Primary	24	24
Secondary	38	38
Graduate	28	28
Postgraduate	10	10
<b>Occupation</b>		
Housewife	56	56
Working	44	44



### DISTRIBUTION OF KNOWLEDGE SCORES

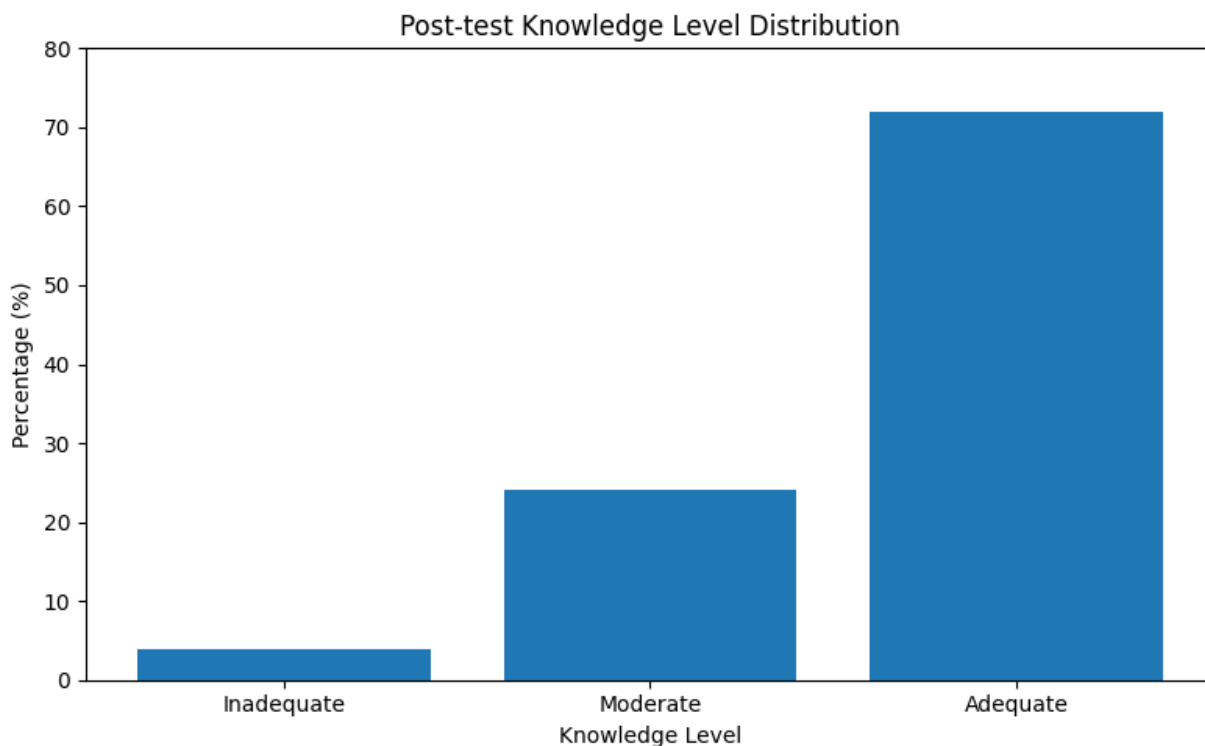
**Table 2: Pre-test Knowledge Level**

Knowledge Level	Frequency	Percentage
Inadequate	58	58
Moderate	32	32
Adequate	10	10



**Table 3: Post-test Knowledge Level**

Knowledge Level	Frequency	Percentage
Inadequate	4	4
Moderate	24	24
Adequate	72	72



**Table 4: Comparison of Pre-test and Post-test Knowledge Scores**

Variables	Mean	SD	Mean Difference	t-value	p-value
Pre-test	11.28	4.12	11.17	18.62	<0.001*
Post-test	22.45	3.21			

*Significant at  $p < 0.001$*

Variables	Mean	SD	Mean Difference	t-value	p-value
Pre-test	11.28	4.12	11.17	18.62	<0.001*
Post-test	22.45	3.21			

The study findings demonstrated that before implementation of the Advanced Teaching Program, the majority of women had inadequate knowledge regarding menopausal osteoporosis and its prevention. After implementation, there was a considerable improvement in knowledge scores.

The paired t-test indicated a statistically significant difference between pre-test and post-test scores, proving the effectiveness of the intervention.

## DISCUSSION

The findings of the present study indicate that educational interventions significantly improve awareness regarding menopausal osteoporosis. The increase in post-test knowledge scores suggests that structured teaching methods can effectively improve understanding among women.

The results are consistent with previous studies demonstrating the positive impact of health education programs in increasing awareness and preventive practices among menopausal women.

## NURSING IMPLICATIONS

### Nursing Practice

Community health nurses should organize educational programs regarding osteoporosis prevention.

### Nursing Education

Nursing curricula should include education on menopausal health and osteoporosis prevention.

### Nursing Administration

Administrators should promote awareness programs in communities.

### Nursing Research

Further studies with larger sample sizes and experimental designs are recommended.

## CONCLUSION

The study concluded that the Advanced Teaching Program significantly improved knowledge regarding menopausal osteoporosis and its prevention among women. Educational interventions can serve as effective tools for promoting preventive health behavior and reducing future complications associated with osteoporosis.

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