"A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME REGARDING KNOWLEDGE ON PREVENTION OF OSTEOPOROSIS AND ITS RELATED COMPLICATIONS AMONG WOMEN WORKING IN SELECTED SCHOOLS AND COLLEGES OF KOLAR, KARNATAKA."

By

MS. PRASANNA.M

Dissertation submitted to the

Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka

In partial fulfillment of the requirement for the degree of

MASTER OF SCIENCE IN NURSING

in

MEDICAL SURGICAL NURSING SPECIALITY

Under the guidance of

Prof. ZEANATH CARIENA JOSEPH

HOD of Medical Surgical Nursing

Sri Devaraj Urs College of Nursing

Tamaka, Kolar- 563101, Karnataka

2014

DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."** is a bonafide and genuine research work carried out by me under the guidance of **Prof. Zeanath Cariena Joseph,** HOD of Medical Surgical Nursing**,** Sri Devaraj Urs College of Nursing, Tamaka, Kolar- 563 101.

Signature of the candidate

(Ms. Prasanna. M)

Date:

Place: Tamaka, Kolar

CERTIFICATE BY THE GUIDE

This is to certify that the dissertation entitled **"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."** is a bonafide research work done by **Ms. Prasanna. M** in partial fulfillment of the requirement for the degree of Master of Science in Medical Surgical Nursing.

Signature of the Guide

Prof. Zeanath Cariena Joseph
HOD of Medical Surgical Nursing,
Sri Devaraj Urs College of Nursing,
Tamaka, Kolar - 563101

Date :

Place : Tamaka, Kolar

ENDORSEMENT BY THE HOD AND PRINCIPAL

This is to certify that the dissertation entitled **"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."** is a bonafide research work done by **Ms. Prasanna.M** under the Guidance of **Mrs. Zeanath Cariena Joseph**, HOD of Medical Surgical Nursing, Sri Devaraj Urs College of Nursing, Tamaka, Kolar in partial fulfillment of the requirement for the degree of Master of Science in Medical Surgical Nursing.

Signature of the HOD	Signature of the Principal
Prof. Zeanath Cariena Joseph	**Dr. G. Vijayalakshmi**
HOD of Medical Surgical Nursing,	Principal,
Sri Devaraj Urs College of Nursing,	Sri Devaraj Urs College of Nursing,
Tamaka, Kolar – 563101.	Tamaka, Kolar – 563101.
Place :	**Place :**
Date :	**Date :**

COPY RIGHT

Declaration by the Candidate

I hereby declare that the **Rajiv Gandhi University of Health Sciences, Karnataka** shall have the rights to preserve, use and disseminate this dissertation / thesis in print or electronic format for academic / research purpose.

Signature of the Candidate

(Ms. Prasanna.M)

Date:

Place: Tamaka, Kolar

ACKNOWLEDGEMENT

"Real life isn't always going to be perfect or go our way, but the recurring acknowledgement of what is working in our lives can help us not only to survive but surmount our difficulties."

I would like to express a deep sense of gratitude to ***God Almighty*** *for his guidance, Strength and Wisdom, Which was bestowed upon me at every step throughout this endeavor and for the successful completion of this study.*

I have no words to express the gratitude towards my guide, ***Mrs. Zeanath Cariena Joseph,*** *Professor & Head of the Department of Medical Surgical Nursing, Sri Devaraj Urs College of Nursing, Tamaka, Kolar for her valuable suggestions, constant interaction, for boosting my spirits through all ups and downs and above all for being a catalyst in completion of the study.*

I immensely thank **Dr. G. Vijayalakshmi,** *Principal of Sri Devaraj Urs College of Nursing, Tamaka, Kolar for giving vital suggestions learning atmosphere, timely advice and constant support to complete this study.*

I wish to acknowledge the encouragement, patience and untiring guidance offered by ***Prof. Mildred Rani****, P.G Co-ordinator, Sri Devaraj Urs College of Nursing, Tamaka, Kolar.*

I express my sincere gratitude to ***Mrs. Silvia Surekha****, IIMSc(N) Coordinator, Sri Devaraj Urs College of Nursing for her guidance and support for the study.*

I express my sincere gratitude to all ***HOD's*** *of Sri Devaraj Urs College of Nursing, and other* ***M.Sc Nursing faculty members*** *of Sri Devaraj Urs College of Nursing for their encouragement, guidance, support and valuable suggestions which helped me throughout my study.*

My deep sense of gratitude to ***Prof. Mr. Ravi Shankar****, Assistant registrar, Sri Devaraj Urs Academic of Higher Education and Statistician, for his guidance and valuable suggestions in statistical analysis of the data.*

*I would like to extent my gratitude to all the **Subject Experts** who have contributed in the form of constructive criticism and suggestions to formulate the tool and Structured Teaching Programme.*

*I express my sincere gratitude to the **Study Subjects** who had spent their generous time and co-operation by participation in the research study.*

*My special word of thanks to **Librarians** of Sri Devaraj Urs College of Nursing and Sri Devaraj Urs Medical College for their constant help in terms of orienting me to broader range of source where appropriate literature was available.*

*I wish to thank sincerely **Mr.Anthony Das**, Assistant Master, St. Anne's High School, Kolar for his prompt and expert skill in translation of tool and Structured Teaching Programme from English to Kannada and Kannada to English.*

*I am indeed privileged to show my heartfelt gratitude to my family without whom my study would not have been possible. I wish to acknowledge my beloved parents **Sri.M.Bhaskar Reddy and Mrs.M.Nagarathna** who had been a source of strength and support through their prayers and encouragement. I thank my brother **Mr.M.Jayashekar Reddy** and I thank my sister and brother-in-law, **Mr & Mrs.Yogendra Reddy and Ramya** whose support and constant encouragement had been a source of inspiration throughout my study.*

*I express my thanks to **Bharath Printers** for their genuine work in the typing and binding services.*

There are many people who have worked, behind the screen in their own loving ways to help me to accomplish this task.

With grateful heart…….

Signature of the candidate

Place: Tamaka, Kolar *(Ms.Prasanna.M)*

Date:

ABSTRACT

BACKGROUND AND OBJECTIVES

INTRODUCTION

About 300 million people in India suffer from osteoporosis[11]. In India the prevalence of osteoporosis among women aged between 30-60 years is 30%. It is more frequently found in women than men at the ratio of 4:1.[1]Osteoporosis is largely preventable for most people, and it is accomplished through medical, nutritional and lifestyle interventions. Prevention of this disease is very important because while there are treatments for osteoporosis, there is currently no cure[14].

The purpose of the present study was to assess the knowledge regarding prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

STATEMENT OF THE PROBLEM:

"A Study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

OBJECTIVES OF THE STUDY

1. To assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges by using Structured Knowledge Questionnaire.

2. To assess the effectiveness of Structured Teaching Programme regarding knowledge on prevention of osteoporosis and its related complications among women working in selected schools and colleges by comparing pre test and post test knowledge scores.

3. To find out the association between post test knowledge scores with selected socio-demographic variables like age, education, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and

exposure to mass media with in six months, on osteoporosis and its related complications.

HYPOTHESIS

H_1 : The mean post test knowledge score of women will be significantly higher than the mean pre-test knowledge score.

H_2: There will be significant association between post test knowledge score of women on prevention of osteoporosis and its related complications with selected socio-demographic variables like age, education, income, marital status, religion, residency (rural and urban), family history of osteoporosis , body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

METHODS

The study involved a single group without control group, pre experimental design and purposive sampling technique was used. The study was conducted in selected schools and colleges of Kolar. Karnataka. The formal permission along with subjects consent was taken before collecting the data.

Structured Knowledge Questionnaire was administered to 50 women who were working in selected schools and colleges of Kolar, Karnataka. STP was administered on the same day. A post-test was conducted after 8 days with same tool.

STUDY FINDINGS:

The obtained data of the study was analyzed based on objectives and hypothesis of the study by using Descriptive and Inferential statistics.

Regarding the socio-demographic variables in terms of age (in years), majority (48%), of them were in 30-40 yrs. In terms of qualification, majority (100%) were Degree holders. In terms of monthly income in Rs/month, majority (64%) of them had income of Rs. 10,001-15,000. In terms of marital status, majority (82%) were married.

In terms of religion, majority (54%) were Hindus. In terms of residential areas, majority (74%) were living in Urban areas. With regard to family history of Osteoporosis, majority (88%) of the subjects were not having the family history of Osteoporosis. In terms of Body mass index, majority (50%) were having the BMI between 25 to 29.9 kg/m^2. In terms of Exposure to mass media within six months, on osteoporosis and its related Complications, majority (74%) were not having exposure to mass media.

With regard to the first objective the overall mean Knowledge score of working women regarding prevention of Osteoporosis and its related complications was found to be inadequate (84%) in pre-test and adequate (60%) in post-test after administering structured teaching programme.

As per the second objective the mean post test knowledge score of the subjects was higher than (74.5%) the mean pre-test score (43.75%) . The Paired 't' test was done and it was found that there was a significant change in knowledge level after STP ('t' value 18.156) at 0.05 level and it was significant. Hence H_1 was accepted.

As per the third objective the findings revealed that there was not significant association between the post test knowledge scores with socio-demographic variables like age, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications at 0.05 level through ' χ^2 ' test . Hence H_2 is rejected.

Recommendations

1. A similar study can be replicated by using a large sample.
2. It would be of immense value to conduct a study in different settings like, community areas, women's work places, pensioners offices, etc.
3. A follow up study need to be conducted to find the effectiveness in terms of retention of knowledge and to reinforce health promotion behavior.
4. It is vital to conduct a comparative knowledge assessment study among men and women.

5. Teaching and demonstration materials can be video recorded and can be encouraged in outpatient departments and wards of the hospitals.
6. A special clinic for osteoporosis has to be established in each hospital.

Conclusion

As the mean post-test score is significantly higher than that of the pre-test it is evident that the Knowledge of women working in selected schools and colleges about prevention of Osteoporosis and its related complications was improved after the educational intervention. The study highlights about the working women aware about the prevention of Osteoporosis and its related complications thus reinforcing the statement, **"Prevention is better than the Cure".**

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

LIST OF ABBREVIATION

Sl. No.	Abbreviation
1.	H_1 : Research hypothesis one
2.	H_2 : Research hypothesis two
3.	STP : Structured Teaching Program me
4.	DV: Dependent variable
5.	IV: Independent variable
6.	O_1: Pre-test
7.	X: Administration of STP
8.	O_2: Post-test

CHAPTER-I

INTRODUCTION

OSTEOPOROSIS

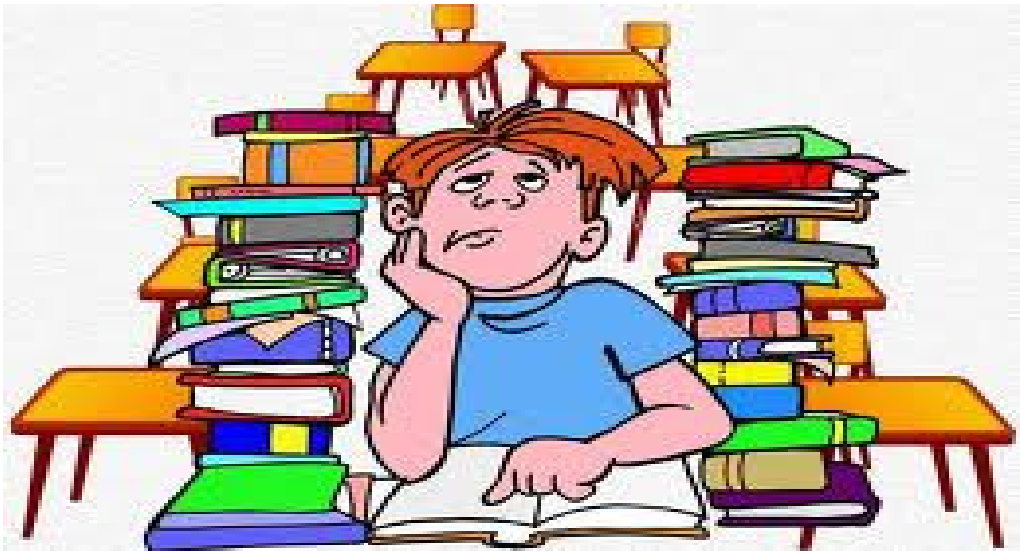
CHAPTER-II

OBJECTIVES

OSTEOPOROSIS

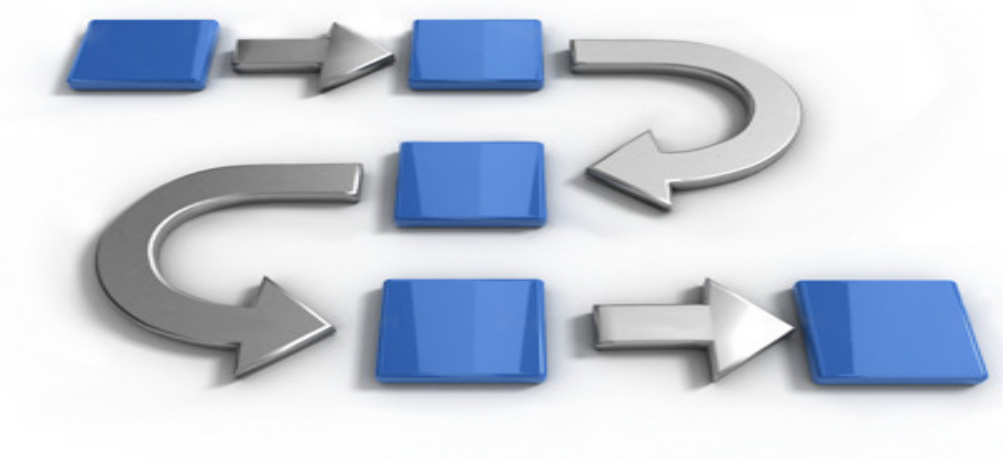
CHAPTER-III

REVIEW OF LITERATURE



OSTEOPOROSIS

CHAPTER-IV
METHODOLOGY



OSTEOPOROSIS

CHAPTER-V

DATA ANALYSIS & INTERPRETATION

OSTEOPOROSIS

CHAPTER-VI

DISCUSSION

OSTEOPOROSIS

CHAPTER-VII

CONCLUSION

OSTEOPOROSIS

CHAPTER-VIII

SUMMARY

OSTEOPOROSIS

CHAPTER-IX

BIBLIOGRAPHY

OSTEOPOROSIS

CHAPTER-X
ANNEXURE

OSTEOPOROSIS

1. INTRODUCTION

"***Osteoporosis –A Silent thief of the skeleton"***[1]

A woman is the essence of life and she has the innate capacity to take care. She is a friend, guide, nurturer and partner. Thus, women needs awareness to control the health problems for maintaining physical and mental health to fulfill her role.[2] In India the health condition of women is moderate. The common women health problems are diabetes, osteoporosis and heart diseases.[3]

The human body is rather like a highly technical and sophisticated machine. It operates as a single entity, but is made up of a number of systems that works inter-dependently. The skeletal system (bones and joints) works interdependently with the skeletal muscle system and provides basic functions that are essential to life such as it protects the brain and internal organs, maintains upright posture, blood cell formation, mineral homeostasis, stores fat and minerals. Inappropriate functioning of the metabolic processes results in disorders manifested by changes in both physical and chemical structure of the bone.[4]

Osteoporosis or 'porous bone' is a disease characterized by low bone mass and structural deterioration of bone tissue leading to bone fragility and an increased susceptibility to fractures[5]. So, ignored as a medical condition, today this silent epidemic is recognized as a matter of great concern due to associated high morbidity and mortality.[6]

As observed by the American physician in 1940's the estrogen deficiency was the underlying cause of osteoporosis and fracture in older women.[7] In 1960's, it was suggested that as many as 9 out of 10 hip fractures in older women are associated with osteoporosis.[8]

Global statistics

Osteoporosis is a global public health problem currently affecting more than 200 million people worldwide. In the United States alone, 10 million people have osteoporosis.[9]*According to International Osteoporosis Foundation : 1 in 3 women over 50 will experience osteoporotic fractures, as with 1 in 5 men.*[10]

Indian statistics

About 300 million people in India suffer from osteoporosis[11]. In India the prevalence of osteoporosis among women aged between 30-60 years is 30%. It is more frequently found in women than men at the ratio of 4:1.[1]

Karnataka statistics

In Karnataka the prevalence of osteoporosis is 62%. Osteoporotic fractures are common cause of morbidity and mortality in adult men and women.[5]

In addition to age some factors that place women at risk of skeletal fragility[12]. Bone loss in osteoporosis occurs without any symptoms, a sudden strain, bump, a sneeze, a hug or fall causes a fracture or vertebral collapse.[13]

Osteoporosis is largely preventable for most people, and it is accomplished through medical, nutritional and lifestyle interventions. Prevention of this disease is very important because while there are treatments for osteoporosis, there is currently no cure[14]. Prognosis of osteoporosis is poor because there is no cure for the disease. The repeated fractures from this disease can lead to death.[15]

According to the Osteoporosis Research Nurse, NHS Trust, the basic strategy of care planning is to prevent the disease in those who don't yet have it (Primary prevention) and prevent fractures in those who do (Secondary prevention).[16]

Nurses play an important role in giving health education to adult working women regarding prevention of osteoporosis and its related complications, encourage them to assess their risk and help them to develop prevention strategies, particularly giving more emphasis to primary and secondary prevention .

Thus, working women requires knowledge on prevention of osteoporosis along with its related complications. Studies have suggested that a significant proportion of adult working women have some knowledge on osteoporosis. So, it can be prevented by creating awareness through education.

NEED FOR THE STUDY

"Osteoporosis – the disease of the 21st century"

Osteoporosis, a major global health problem, which increases in significance as the population of the World both grows and ages[9]. It is the time to recognize that osteoporosis does not only affect the elderly but it can strike at any age.[1]

Even though men and women can be effected with osteoporosis ; women are most likely to develop it because of several reasons.[1] They are :

1. Women tend to have lower calcium intake than men throughout their lives.
2. Women have less bone mass because of their general smaller frame.
3. Bone resorption begins at an earlier age in women and is accelerated at Menopause.
4. Pregnancy and Breast – feeding deplete a women's skeletal reserve unless calcium intake is adequate.
5. Longevity increases the likelihood of osteoporosis and women live longer than men.

Worldwide statistics reveal that more than 200 million people are effected with osteoporosis and 80 % of them are women.[9]

India shows the highest prevalence of osteoporosis. About 300 million Indians suffer from osteoporosis. This means that Indian's problem is far more serious than that of US where only 75 million suffer from osteoporosis[11].

According to the report of Osteoporosis Society of India, "Over 30 million women in India have osteoporosis, and one in two Indian women above 45 years suffer from it.[17]

Despite these alarming statistics, appropriate interventions can prevent or slow the disease progression. Because bone loss prevention can begin at an early age ; nurses can help to increase the patient's understanding of the disease, encourage them to assess their risk and help them to develop prevention strategies.[18]

According to estimates there are about 300 million people in India with osteoporosis. The evidence based on ageing population indicates that there may be a 50% increase in the number of people with osteoporosis in India in the next 10 years[19] and over 30 million women in India have osteoporosis[20].

According to the Arthritis Foundation of India, there would be an estimated 200 percent rise in cases across Asia over 10 years[21]. A women's risk of developing an osteoporosis related hip fracture is equal to her combined risk of developing breast, uterine and ovarian cancer.[22]

Osteoporosis and related fractures are a major cause of disability, institutionalization and death among aging women**.** Major complication associated with osteoporosis is fracture. Osteoporosis is responsible for more than 1.5 million fractures annually, including 300,000 hip fractures approximately 700,000 vertebral fractures 2, 50, 000 wrist fractures and more than 300,000 fractures at other sites.[23.]

The last two decades have brought major changes in women's health care but the magnitude of the problem "Osteoporosis is increasing worldwide, especially in India. This indicates a need for conducting mass education to enhance the knowledge in preventing occurrence of osteoporosis and its related complications especially among adult Women.

In the light of above findings and with investigators own experience in caring for women with Osteoporosis, the investigator felt the need for assessing the knowledge of adult women regarding prevention of osteoporosis and its related complications and thereby giving an education programme which helps in preventing the occurrence of osteoporosis and its related complications.

2. OBJECTIVES

This chapter deals with the statement of the problem, objectives of the study, Operational definition, Assumption, Hypothesis and Conceptual framework which provides a frame of reference.

The statement of the problem selected for the study is as follow:

STATEMENT OF THE PROBLEM

"A Study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

OBJECTIVES OF THE STUDY

1) To assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges by using Structured Knowledge Questionnaire.

2) To assess the effectiveness of Structured Teaching Programme regarding knowledge on prevention of osteoporosis and its related complications among women working in selected schools and colleges by comparing pre test and post test knowledge scores.

3) To find out the association between post test knowledge scores with selected socio-demographic variables like age, qualification, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

OPERATIONAL DEFINITIONS

Effectiveness

In this study it refers to the improved knowledge scores of women working in selected schools and colleges, on the prevention of osteoporosis and its related complications as measured by Structured Knowledge Questionnaire scores in post-test.

Structured Teaching Programme

In this study it refers to the process of systematically gathering, organizing the content for teaching programme on osteoporosis and its related complications. The content of Structured Teaching Programme, highlights on, meaning, definition, incidence, causes, types, pathophysiological changes, signs and symptoms, diagnostic tests, preventive measures, management techniques along with its related complications and its management.

Knowledge

It refers to level of understanding of women working in selected schools and colleges as measured by using Structured Knowledge Questionnaire on prevention of osteoporosis and its related complications.

Prevention

It refers to the activities which aims to avoid/prevent the occurrence of osteoporosis and its related complications in future.

Osteoporosis

It refers to "osteoporosis is a commonest metabolic bone disease characterized by a diffuse reduction in the bone density due to a decrease in the bone mass. It occurs when the rate of bone resorption exceeds the rate of bone formation.

Its related complications

The selected complications in this study refers to falls, fracture of hip, vertebra, wrist, and ribs.

Working women

It refers to women who are employed in selected schools and colleges of Kolar.

ASSUMPTIONS

1. Women working in selected schools and colleges will have some knowledge regarding the prevention of osteoporosis and its related complications.
2. Knowledge about prevention of osteoporosis and its related complications helps in reducing the occurance of osteoporosis and its related complications.

HYPOTHESES

H_1 : The mean post test knowledge score of women will be significantly higher than the mean pre-test knowledge score.

H_2: There will be significant association between post-test knowledge score of women on prevention of osteoporosis and its related complications with selected socio-demographic variables like age, qualification, income, marital status, religion, residency (rural and urban), family history of osteoporosis , body mass index and exposure to mass media within six months, on osteoporosis and its related complications.

CONCEPTUAL FRAMEWORK

Conceptual framework refers to interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to the common theme. Research studies are based on theoretical or conceptual framework that facilitates visualizing the problem and places the variable in a logical content.

Conceptual framework is a theoretical approach to the study of problem that is scientifically based and emphasizes selection, arrangement and classification of concepts.[20]

Conceptual framework facilitates communication and provides the study based on a systematic approach to nursing research, education, administration, and practice. The conceptual framework selected for the study is health promotion model by Pender in 1987, which focuses on explaining health promotion behavior.

According to the model, health promotion is defined as activities directed towards the development of resources that maintain or enhance an individual's wellbeing.

The health promotion model encompasses two phases, a decision making phase and an action phase.

In the decision making phase, the model explains seven cognitive perceptual factors and five modifying factors that indirectly influence pattern of health behavior.

In action phase the people participate in health promoting behavior.

In the present study, cognitive perceptual factors are

1. Working women's perception regarding importance of maintaining health against osteoporosis.
2. Working women's perception regarding importance of preventive measures and related complications of osteoporosis.
3. Working women's knowledge regarding osteoporosis, preventive measures and its related complications.
4. Working women's perception on benefits of preventive measures and its related complications of osteoporosis.
5. Working women's perception on barriers to health promoting behavior like lack of knowledge, skill, deficit, cultural and traditional beliefs.
6. Working women's confidence in changing the unhealthy behavior.

The modifying factors applicable in this study are:-

1. Demographic factors: Age, education, income, marital status, religion, residency (rural and urban), family history of osteoporosis , body mass index and exposure to mass media within six months, on osteoporosis and its related complications.
2. Influence of health personnel that is health education given by nurse on osteoporosis.
3. Biological characteristics like weight of the patient, presence of any other diseases.
4. Situational factors like influence of other patients, doctors, nurses, other health care professionals, etc.
5. Behavioral factors like practice of doing exercises.

Participation in health promotion behavior:-

Gain in knowledge after health education helps the women working in schools and colleges of Kolar, to promote personal habits, healthy living practices and prevent complications.

This study is limited to:

Women who are working in selected schools and colleges;

1. Willing to participate in the study
2. Available at the time of study.

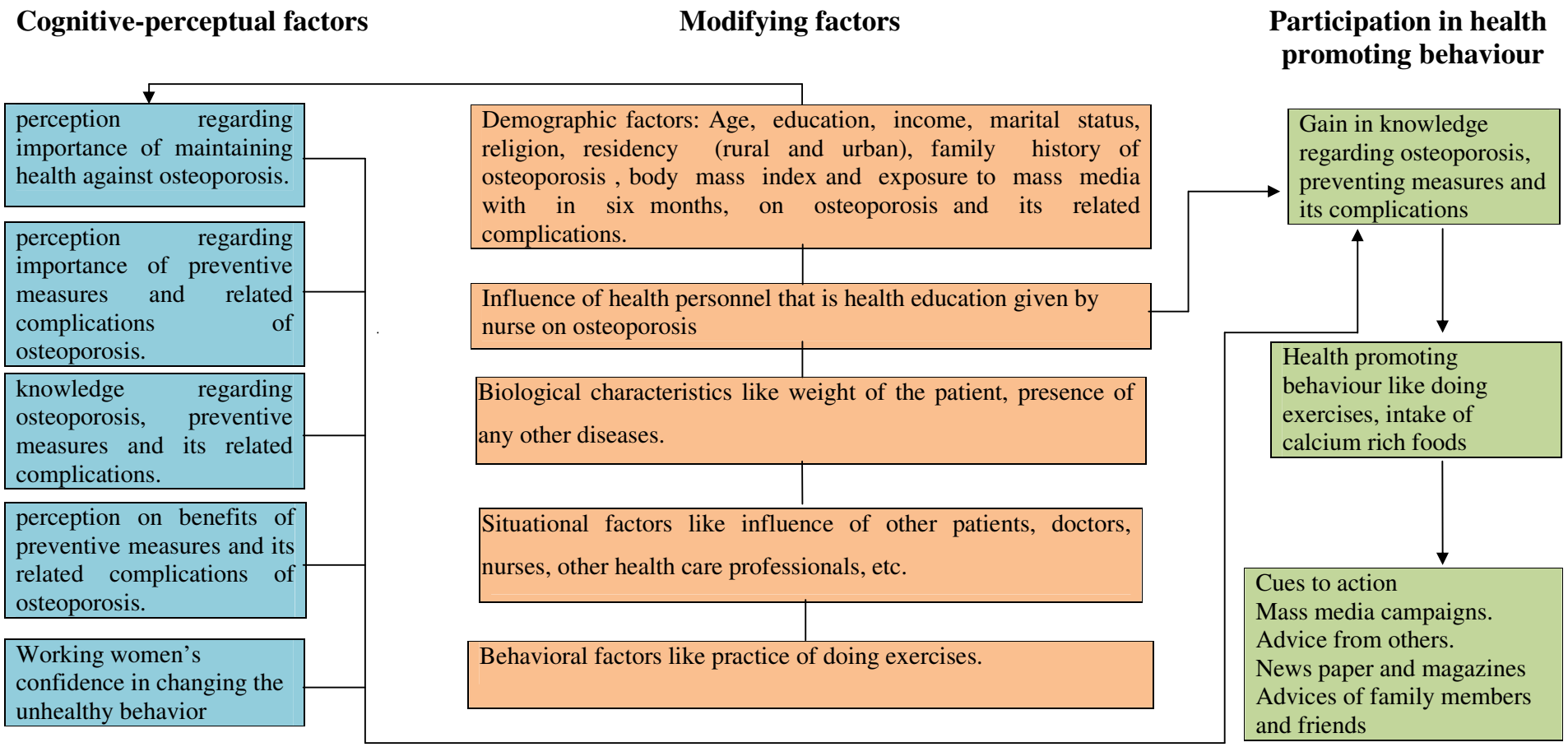


FIG-1. CONCEPTUAL MODEL BASED ON PENDER'S HEALTH PROMOTION MODEL (1987)

Projected outcome

The study will help the working women specifically in terms of improving their knowledge regarding prevention of osteoporosis and its related complications. This knowledge will help the working women to improve the knowledge regarding prevention of osteoporosis and its related complications.

Summary

This chapter has outlined on statement of the problem, objectives, operational definitions, hypothesis, assumptions, conceptual framework and the projected outcome of the study.

3. REVIEW OF LITERATURE

The term review of literature refers to the activities involved in identifying for information on a topic and developing an understanding of the state of knowledge of the topic[32].

The literature for the present study was reviewed from the text books, journals, electronic resources, articles and dissertations, and organized under the following headings;

Studies related to;

1. Effectiveness of Structured Teaching Programme.
2. Prevalence of osteoporosis.
3. Prevention and management of complications related to Osteoporosis.

1. Studies related to the effectiveness of Structured Teaching Programme:

An experimental study was conducted at United states in the year 2012 to assess the higher levels of knowledge regarding osteoporosis prevention among sample of thirty young college women by using Convenience sampling technique assigned to an experimental group or to a controlled group to receive an osteoporosis prevention programme. Both groups completed the knowledge test, the osteoporosis health belief scale and self efficacy scale. The osteoporosis programme was found to be effective in increasing knowledge and awareness on osteoporosis prevention, in the experimental group of young women, when compared to control group[24].

A quantitative study was conducted at Hong Kong in the year 2011 to evaluate whether a nurse initiated education programme on four specific osteoporosis-prevention related behaviors leads to their adoption or positive attitude changes compared with women, who did not participate in this programme. Pre and post and follow-up education data compared attitude and conception frequency before and after the education programme by using randomized controlled technique. The study found that Hong Kong women resulted in significantly increasing consumption of calcium including Soya based foods, milk and vitamin D[25.]

2. Studies related to the prevalence of osteoporosis

An experimental study was conducted at Japan in the year 2013 on secondary causes of osteoporosis for the sample of men and women who are coming to Loyola University Medical Center by using purposive technique to provide an updated review of several causes of secondary osteoporosis as well as screening recommendations for these disorders. The result showed that Secondary osteoporosis occurs in almost two thirds of men, more than half of premenopausal women, and about 30% of postmenopausal women. Conclusion: The causes of secondary osteoporosis are numerous, and an understanding of their characteristics with respect to bone density and potential fracture risk is essential in the management of osteoporosis[26].

A co-relational qualitative study was conducted at Thai in the year 2012 on prevalence of clinical risk index for osteoporosis in Thai women at Phramongkutklao Hospital for the sample of Four hundred forty six Thai women, aged 40 years or more attending the Gynecologic Clinic of Phramongkutklao Hospital, by using purposive technique to study the prevalence of women with osteoporosis diagnosed with khon koen osteoporosis study for prediction of osteoporosis were 48.6% and 68.1%, respectively. Prevalence of osteoporosis using khon koen osteoporosis study was 23%. Conclusion: khon koen osteoporosis study had low sensitivity and specificity for diagnosed osteoporosis in Thai women at Gynecologic Clinic of Phramongkutklao Hospital[27].

A qualitative study was conducted at Korea in the year 2012 on the prevalence of osteoporosis in Korean adults aged 50 years or older and the higher diagnosis rates in women who were beneficiaries of a national screening program by using convenience technique to estimate the nationwide prevalence, physician diagnosis rate, and treatment rate of osteoporosis in adults aged 50 years and older. The prevalence of osteoporosis in adults aged 50 years or older was 35.5% in women and 7.5% in men. The national screening program for osteoporosis may have contributed to an increased diagnosis rate in older Korean women. However, it was evident that treatment following a diagnosis of osteoporosis was still inadequate[28].

An experimental study was conducted at Primorsko-goranska County in the year 2011 on Implementation of program of prevention and early detection of osteoporosis among women of Primorsko-goranska County for the sample 688 women who are aged between 45 to 69 years by using convenience technique to present preliminary data of Program of prevention and early detection of osteoporosis among women in Primorsko-goranska County. Measurement of bone density was done by ultrasound densitometry of the calcaneus. The women with the osteoporosis (T-score < or = 2.5) were 141; osteopenia (T-score from -2.5 to -1) were found in 400 women, and those with normal range of T-score were 147. Average T-scores of all five groups of women show that osteopenia occurs also in the youngest ones[29].

A Co-relational quantitative study was conducted at Japan in the year 2012 on biochemical markers for early Diagnosis of osteoporosis for the sample 302 Women were enrolled from the elderly clinic by using Non-randomization technique with an aim to measure Bone Mineral Density in women by DEXA and biochemical markers of bone turn over namely osteocalcin, bone specific alkaline phosphate, C- terminal telo-peptide and deoxy pyridinoline were estimated in the serum and urine samples by enzyme-linked immune sorbent assay. The result leveled that bone resorption markers correlate well with fall in Bone Mineral Density and Electro cardiogram levels. A Significant correlation coefficient was observed between the bone turn over markers and Bone Mineral Density [30].

A Cross-sectional study was conducted at United States in the year 2012 on bone mineral density in women above 40 years for the sample 105 women, aged 40 years and above who attended the outpatient clinic by using Non-probability sampling technique with an aim to assess bone mineral density in women above 40 years of age and to study the prevalence of osteopenia and osteoporosis in pre and post menopausal women. The results of this study is out of 105 subjects studied, osteopenia was found in 31.4% subjects and osteoporosis in 14.3% subjects. In this study, findings suggest a significant positive correlation between age and time since menopause and bone mineral density [31].

The evaluative study was conducted at Philadelphia in the year 2007 on hospital-based prevalence of vertebral fractures in postmenopausal women for the sample 785 (above 50 years) women by using Non-randomized convenient technique. The results shows that 159 (20.3%) patients had vertebral fractures. 70 (35.4%) of the fractures were in the age group 61–70 years. Only 21 patients (13.2%) were on anti resorptive therapy for osteoporosis, which means that 138 (86.8%) patients had an osteoporosis-related fracture and were not on treatment for osteoporosis. Thus the study concluded that measures to be improved for diagnosing the osteoporosis and hence the education on signs and symptoms and treatment of osteoporosis is very important[32].

A Study was conducted at India in the year 2012 on prevalence and related risk factors of osteoporosis in pre and post menopausal Indian women for the sample 200 by using non-randomization technique with a aim to determine the prevalence of osteoporosis, and in turn to increase the awareness, education, prevention, and treatment of osteoporosis. The results are the prevalence of low bone mass density was found in more than half of this population (53%). The mean age in group 1 (normal bone mass density) was found to be 50.56 +/-5.74 years as compared to 52.50+/-5.94 in group 2 with low bone mass density (P=0.02). It shows that age, exercise, menopause, and low calcium diet acted as significant predictors of low bone density[33].

A comparative study was conducted at India in the year 2011 on Prevalence and related risk factors of osteoporosis in peri- and postmenopausal Indian women involving 200 peri and postmenopausal Women by using convenience technique to determine the prevalence of osteoporosis, and in turn increase the awareness, education, prevention, and treatment of osteoporosis. The prevalence of low body mass index was found in more than half of this population (53%). The mean age in group I (normal body mass index) was found to be 50.56 ± 5.74 years as compared to 52.50 ± 5.94 in group II with low body mass index (P=0.02). Multiple logistic regression analysis showed that age, exercise, menopause, and low calcium diet acted as significant predictors of low bone density[34].

A Quantitative study was conducted at India in the year 2012 on prevalence of Osteoporosis in adult population of India among the sample of 500 volunteers (250 males and 250 females) by using random selection of household with a aim to

establish peak bone mineral density reference values. The result showed that osteoporosis at the hip was more in females as compared to males (8% vs 3%).Similar findings were seen at the spine. However, at the forearm, men had a slightly higher incidence of osteoporosis as compared to females. Most of the males and females had a mild to moderate degree of physical activity ranging from 77-92% [30].

3.Studies related to the Prevention and management of complications related to Osteoporosis

A quantitative study was conducted at Washington in the year 2013 on impact of Impact of denosumab on the peripheral skeleton of postmenopausal women with osteoporosis: bone density, mass, and strength of the radius, and wrist fracture for the sample of Fracture reduction evaluation of Denosumab in Osteoporosis every 6 Months study by using convenience technique to report the effects of denosumab on radius cortical and trabecular bone density, mass, and strength, and wrist fracture. Denosumab significantly increased areal bone mass density (assessed by dual-energy x-ray absorptiometry) and volumetric (all bone mass density $P < 0.05$). Denosumab significantly improves radius bone density, mass, and strength compared with placebo. In higher-risk women, denosumab significantly reduces wrist fracture risk[35].

A quasi experimental study was conducted at Australia in the year 2012 on Osteo-cise: strong bones for life: protocol for a community-based randomized controlled trial of a multi-modal exercise and osteoporosis education program for older adults at risk of falls and fractures for the sample of men and women ≥60 years by using random sampling technique to develop evidence-based, safe and acceptable prevention strategies at the population level The findings from the Osteo-cise: Strong Bones for Life study will provide new information on the efficacy of a targeted multi-modal community-based exercise program incorporating high velocity resistance training, together with an osteoporosis education and behavioural change program for improving multiple risk factors for falls and fracture in older adults at risk of fragility fracture[36].

A comparative study was conducted at United states of America in the year 2011 on Nutrition and osteoporosis in elderly for the sample of adult women by using convenience technique to know the energizing and protein malnutrition is high as for

institutional elderly people. Study suggest that increase in protein intake in daily caloric needs could have a positive effect on bone mineral density and functional performances (in primary prevention as in secondary prevention). So, primary and secondary preventive measures must comprise an increase in protein intake and a sufficient physical activity[37].

A survey was conducted at Canada in the year 2011 on Bone health: osteoporosis, calcium and vitamin D for the sample 28,406 respondents aged 50 or older by using convenience technique to estimate the prevalence of diagnosed osteoporosis, dietary intake of calcium and vitamin D, the use of supplements, and total calcium and vitamin D intake. 19.2% of women and 3.4% of men aged 50 or older reported having been diagnosed with osteoporosis. A large percentage of people aged 50 or older, particularly women, have osteoporosis. The prevalence of inadequate intake of calcium and vitamin D is relatively high[38].

A quantitative study was conducted at Japan in the year 2011 on effect of distributing an evidence-based guideline for prevention of osteoporosis on health education programs in municipal health centers: a randomized controlled trial for the sample 100 municipal health centers by using randomized technique to assess whether distribution of an evidence-based guideline improved such programs at municipal health centers. Before the intervention, there was no significant difference in the evidence-based status of health education between the groups. The post-intervention assessment showed that the implementation rates of health education on dietary calcium intake for postmenopausal women and exercise for elderly persons were higher in the intervention group. The findings suggest that the guideline helped healthcare professionals to improve health education programs by making them more evidence-based[39].

A quantitative study was conducted at Australia in the year 2012 on Osteoporosis - pharmacological prevention and management in older people for the sample aged 70 years or over by using convenience technique to overview the pharmacological management of osteoporosis in older people in the general practice setting. Pharmacological treatments are recommended for patients with a minimal trauma fracture, for those aged 70 years or over with a T-score of -3.0 or lower, or for

those who are currently taking prolonged high dose corticosteroids and who have a T-score of -1.5 or lower. Bisphosphonates are recommended as first line therapy for established postmenopausal osteoporosis[40].

An experimental study was conducted at United states of America in the year 2012 on Alternative therapies for the prevention and treatment of osteoporosis for the sample men and women by using purposive technique to minimize financial burden. One promising approach is the development of alternative (non pharmaceutical) strategies for bone maintenance, as well as for the prevention and treatment of osteoporosis. This review examines the currently available non pharmaceutical alternatives that have been evaluated in in vitro and in vivo studies[41].

A coherent study was conducted at United kingdom in the year 2012 on Effect of co-morbidities on fracture risk: findings from the Global Longitudinal Study of Osteoporosis in Women for the sample 52,960 women by using convenience technique to investigate the effect of co-morbidities on fracture risk. The strongest association was seen with Parkinson's disease (age-adjusted hazard ratio: 2.2; 95% CI: 1.6-3.1; P<0.001). Co-morbidities, as captured in a co-morbidity index, contributed significantly to fracture risk in this study population[42].

A prospective study was conducted at Paris in the year 2012 on Burden of non-hip, non-vertebral fractures on quality of life in postmenopausal women: the Global Longitudinal study of Osteoporosis in Women for the sample of 50,461 postmenopausal women by using convenience technique to assess the effect of these Non-hip, Non-vertebral fractures on quality of life. 1,822 fractures (57% minor Non-hip, Non-vertebral, 26% major Non-hip, Non-vertebral, 10% spine, 7% hip) over 1 year. This prospective study shows that Non-hip, Non-vertebral fractures have a detrimental effect. Efforts to optimize the care of osteoporosis patients should include the prevention of Non-hip, Non-vertebral fractures[43].

A Compared study was conducted at united states in the year 2008 among 57 women aged 25-75 years to evaluate the effectiveness of a multi disciplinary primary osteoporosis prevention program for community dwelling to determine if osteoporosis prevention program participants (treatment group) increased their knowledge of

osteoporosis, calcium intake and exercise compared with control group. The result reveals that subjects in the treatment group versus control subjects increase their knowledge of osteoporosis over time. At post test, treatment group were more likely to be planning to change calcium intake. No other group differences were found between the two groups. Thus the study concludes that a multi disciplinary education program may have an impact on knowledge and behaviors that may help to delay the development of osteoporosis[44].

A cross sectional study was conducted at Canada in the year 2010 on knowledge regarding osteoporosis and impact of locally available calcium rich foods on it by using non-random technique for the sample 1151 urban women with a aim to know the cross sectional association of knowledge was found with selected socio-demographic variables like age, educational background and family income status. The results shows that 80.3% of the women had heard about osteoporosis but only 24% were aware about the locally available calcium rich foods. Thus, the study concluded that more emphasis should be placed on information regarding locally available calcium rich foods as part of nutritional education for adult women[45].

A Survey was conducted in the year 2010 at six regions of the world – Asia, Europe, Middle east and Africa, Latin America, North America, and Oceania- through a survey of published literature on "Global vitamin D status and determinants of hypo vitamin sis D" by using survey technique with an aim to provide a global perspective of vitamin D status across different regions of the world and to identify the common and significant determination of hypo vitamin sis –D. The result show that vitamin D insufficiency and deficiency, as well as assay methodology for 25-hydroxyvitamin-D or 25(OH)D, vary between studies. However, serum 25(OH)D levels below 75 mmol/L are prevalent in every region with levels below 25 mmol/L are most common in regions such as south Asia and the Middle east. Thus the study concluded that hypovitaminosis – D is widespread and is re-emerging as a major health problem globally[46].

A qualitative study was conducted at Japan in the year 2003 to evaluate the impact of postural deformities and spinal mobility on quality of life in patients with spinal osteoporosis for the sample 157 postmenopausal women aged over 60 years. The subjects were divided into five groups according to their postural deformities.

Quality of life was evaluated by using the Japanese osteoporosis quality of life questionnaire. The questionnaire contains six domains, with higher scores indicating higher level of quality of life. The number of vertebral fractures, thoracic kyphosis and lumbar lordosis angles, and spinal range of motion during maximum flexion and extension were also measured with radiographs. All the groups, except the normal posture group, showed significant positive correlations between total quality of life score and spinal range of motion. It has shown that there were 107 women who reported at least one new fracture with different postural deformities and it reveals that quality of life in patients with osteoporosis was impaired by postural deformity[47].

A prospective observational study was conducted in the year 2011 on effect of co morbidities and postoperative complications on mortality after hip fracture in elderly people for the sample 2448 patients below 60 year age group by using observational technique with an aim to evaluate post operative complications. The results are the Mortality was 9.6% at 30 days and 33% at one year. The most common postoperative complications were chest infection (9%) and heart failure (5%). Thus, the study was concluded that, in elderly people with hip fracture, the presence of three or more co morbidities is the strongest preoperative risk factor. Chest infection and heart failure are the most common postoperative complications and lead to increased mortality.[48]

SUMMARY

Review of literature has enabled the investigator to establish the need for study, develop the conceptual framework, develop the tool and select the data collection technique. The review of literature for the present study includes, Effectiveness of Structured Teaching Programme, Prevalence of osteoporosis and Prevention and complications of osteoporosis and its management.

4. RESEARCH METHODOLOGY

This chapter deals with the methodology selected for the study. It includes Research Approach, Research Design, Variables, Setting of the study, Population, Sample, Sample size, Sampling technique, Sampling criteria, Selection and Development of the tool, Pilot study, Procedure for data collection.

Methodology of the research indicates the general pattern of organizing the procedure for empirical study together with the method of obtaining valid and reliable data for problem under investigation. Research methodology is the framework for conducting the study[49].

RESEARCH APPROACH

The Research approach adopted for this study is Evaluative Research. Evaluative Research is "an applied form of research that involves finding out how well a programme, practice, procedure or policy is working, the main goal is to assess or evaluate the success of a programme [32].

The selection of research approach is the basic procedure for conducting a research enquiry. The present study is aimed to assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges of Kolar, Karnataka. Therefore, an evaluative approach was considered suitable for attaining the objectives.

RESEARCH DESIGN

The research design is the conceptual structure. It constitutes the blue print for the collection, measurement and analysis of data. It includes an outline of what the researcher will do from writing the hypothesis and its operational implications to final analysis of data.

In the present study 'one group pre-test and post -test design' was selected to assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges of Kolar, Karnataka.

The schematic representation of the study research design is given in Fig - 2.

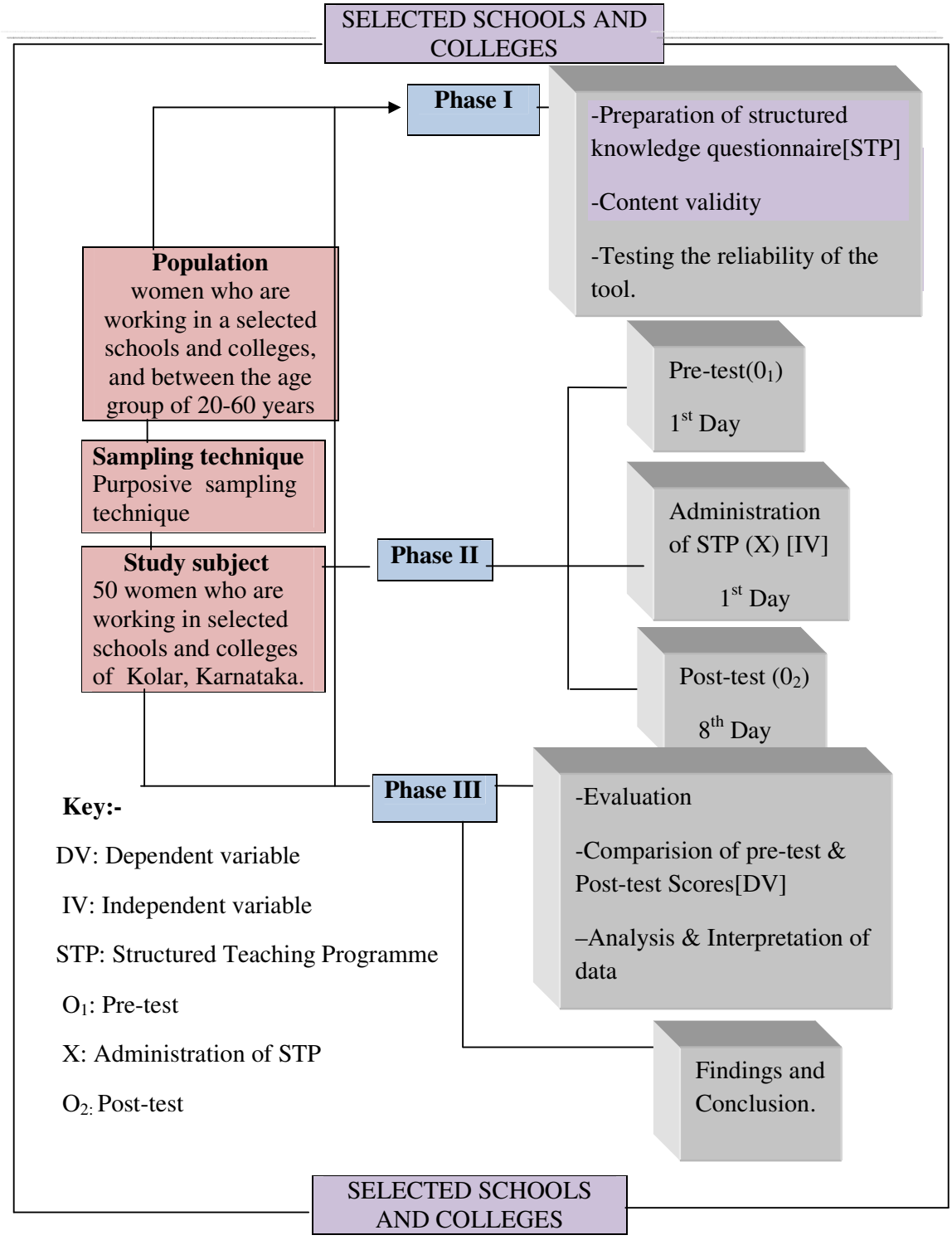


FIG-2

SCHEMATIC REPRESENTATION OF STUDY RESEARCH DESIGN

VARIABLES

Independent variable

The independent variable in this study is structured teaching programme on prevention of osteoporosis and its related complications.

Dependent variable

The dependent variable in this study is knowledge scores of women working in selected schools and colleges.

Extraneous variables

Extraneous variables are those which are present in the research environment that may interfere with research finding.

In this study it refers to the selected variables like age, education, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

SETTING OF THE STUDY

Setting is the specific place where data collection occurs[50]. The present study was conducted at various selected schools of Kolar i.e. Sri.R.L Jalappa central high school, Girls Government P.U College and Boys Government P.U College, Kolar, Karnataka, because of the availability, feasibility, geographical proximity and ethical clearance.

POPULATION

Population is referred as the target population which represents the entire group of all the elements like individuals or objects that need certain criteria for included in the study[50]. In the present study, the population for the study comprises of women who are working in a selected schools and colleges, and between the age group of 20-60 years.

SAMPLE AND SAMPLE SIZE

Sample refers to a portion of the population which represents the entire population[51]. In this study the sample size consists of 50 women working in selected schools and colleges among them 16 women working in Girls Government P.U College, 22 women working in Sri.R.L Jalappa central high school and 12 women working in Boys Government P.U College, Kolar, Karnataka.

SAMPLING TECHNIQUE

Sampling technique defines the process of selecting a group of people or other elements with which to conduct a study[51].

Purposive sampling is the most basic probability sampling design. In this study, purposive sampling technique was adopted.

CRITERIA FOR SELECTION OF SAMPLE

Inclusion criteria; women who are

1. Between the age group of 20-60 years.
2. Working in selected schools and colleges of Kolar.
3. Can understand Kanada or English.
4. Willing to participate in the study.

Exclusion criteria; women, who have;

1. Already developed complications related to osteoporosis.

SELECTION AND DEVELOPMENT OF TOOL

An instrument is a device or technique that a researcher used to collect data based on the research problem and the objectives of the study[51]. The following steps were undertaken for selection and development of the tool.

Selection of the tool

It was decided to select the Structured Knowledge Questionnaire to assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges.

Development of the tool

The adopted tool consists of the following sections.

Section A:

Socio-demographic data:

It includes age, qualification, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

Section B:

Consists of Structured Knowledge Questionnaire on prevention of osteoporosis and its related complications. Which were divided into 5 areas namely, questionnaire on

1. General information of osteoporosis
2. Etiology and risk factors of osteoporosis
3. Types and signs and symptoms of osteoporosis
4. Diagnostic tests and Preventive measures of osteoporosis
5. Management techniques along with its related complications and its management

Preparation of blueprint

A blue print on structured knowledge questionnaire on prevention of osteoporosis and its related complications among women working in selected schools and colleges was prepared, which consisted of five sub-areas. It depicted the distribution of items according to the content areas based on three domains, namely knowledge, comprehension and application. Knowledge domain had 20 items (50%), comprehensive domain had 15 items (37.5%) and application domain had 5 items (12.5%) covering all the aspects of prevention of osteoporosis and its related complications among women working in selected schools and colleges

SCORING

A Total of 40 questions were included in Structured Knowledge Questionnaire. Each item had four options, the score for correct response to each item was one, thus for 40 items maximum obtainable score was 40 and minimum 0 grading score was done. Grading of score was done as:

Knowledge score grade:

Adequate knowledge (above 30 score) - 75 % and above
Moderate knowledge (20-29score) - 50-74%
Inadequate knowledge (below 19 score) - below 49%

DESCRIPTION ABOUT THE VALIDITY

Validity refers to the extent to which an instrument measures on what it actually wanted to measure[51]. Content validity refers to which a measuring instrument provides adequate coverage of the topic under study.

The following methods were used to test the content validity of the tool.

The prepared tool along with the statement of the problem, objectives and criteria rating scale (Annexure – F & G), were sent to 8 experts from the field of Medical Surgical Nursing specialty (5), Orthopedic doctors – 2, Dietician -1.

The first draft of the tool consisted of 40 items in which 20 questions were related to knowledge, 15 questions were related to comprehension and 5 questions were related to practice and 9 questions were related to socio-demographic variables. The experts were requested to give their opinion and suggestions regarding the relevance, adequacy and appropriateness of the tool and Structured Teaching Programme. The suggestions and recommendations given by the experts were accepted and necessary corrections were incorporated in the tool for modification.

Pre-testing of the tool

Pre-testing of the tool was done among ten women who were working in S.Ramayya P.U college, Tamaka, Kolar. During the pre-testing it was found that there was no difficulty in understanding the items in the questionnaire by the subjects.

Item Analysis

Questions with difficult index between 30% to 70% are acceptable and with a discrimination value more than 0.25 to 0.35 was considered as good questions.

For the present study, the tool was analyzed for item difficulty and discriminating value. The items having difficulty index between 30% to 70% and the discriminating value above 0.25 to 0.35 were retained. Totally 40 items were used for the final study.

RELIABILITY

The reliability is defined as the degree of consistency or dependency with which an instrument measures the attribute it is designed to measure[51].

The tool was administered to 10 women who were working in S.Ramayya P.U college, Tamaka, Kolar. In order to establish reliability of the tool, the test-retest method and split half method was used. The obtained values for stability **r = 0.91** and for consistency **r=0.96** by using Spearman's Brown Prophecy formula. So, the Structured Knowledge Questionnaire found to be reliable.

ETHICAL CLEARANCE

1. Permission from the ethical committee of Sri Devaraj Urs College of Nursing was obtained.
2. Permission from Concerned authorities of selected schools and colleges was obtained.
3. Informed consent was obtained from the subjects.

PILOT STUDY

Pilot study is a small scale version or trial run of the major study[51]. Pilot study was conducted in Suguna school, Kolar from 12/9/13 to 19/9/2013, to find out the reliability of the tool. The investigator used Purposive Sampling technique to select the samples. Five samples of women working in Suguna school, Kolar, were selected for the study and administered Structured Knowledge Questionnaire for them on 12/9/13.

Structured Teaching Programme was administered on the same day after pre- test. On 8th day post-test was conducted. Data analysis was done using descriptive and inferential statistics. The mean Knowledge score of women working in Suguna school regarding prevention of osteoporosis and its related complications in pre-test was (24.20) and in post-test was (33.80). Thus the study findings indicated that in pre-test the women working in suguna school had moderate knowledge score and in post-test subjects have adequate knowledge score. Tool and STP were found effective. The pilot study confirmed that the final study is feasible.

DATA COLLECTION PROCEDURE

The data was collected on 07/10 /2013 to 21/10/2013 over a period of fifteen days. The Data was collected under the following phases:

1. Pre-preparatory phase:

A formal written permission as obtained from the concerned authorities (Annexure- $C_{1,2,3}$). Further, the investigator obtained consent from subjects (Annexure –M_1 and M_2). Confidentiality was maintained during data collection. Using purposive sampling technique 50 women working in selected schools and colleges are selected who fulfilled the inclusion criteria.

2. Data collection phase:

a. The data was collected using the Structured Knowledge Questionnaire which was developed by the investigator.

b. The data was collected between **07-10-13** to **09-10-13** and approximately 30 minutes required to complete Structured Knowledge Questionnaire. On the same day, an STP was conducted which took about 45-50 minutes.

c. After an interval of thirteen days between **19-10-13** to **21-10-13**, a post-test was conducted for the sample using same Structured Knowledge Questionnaire for evaluating the effectiveness of STP.

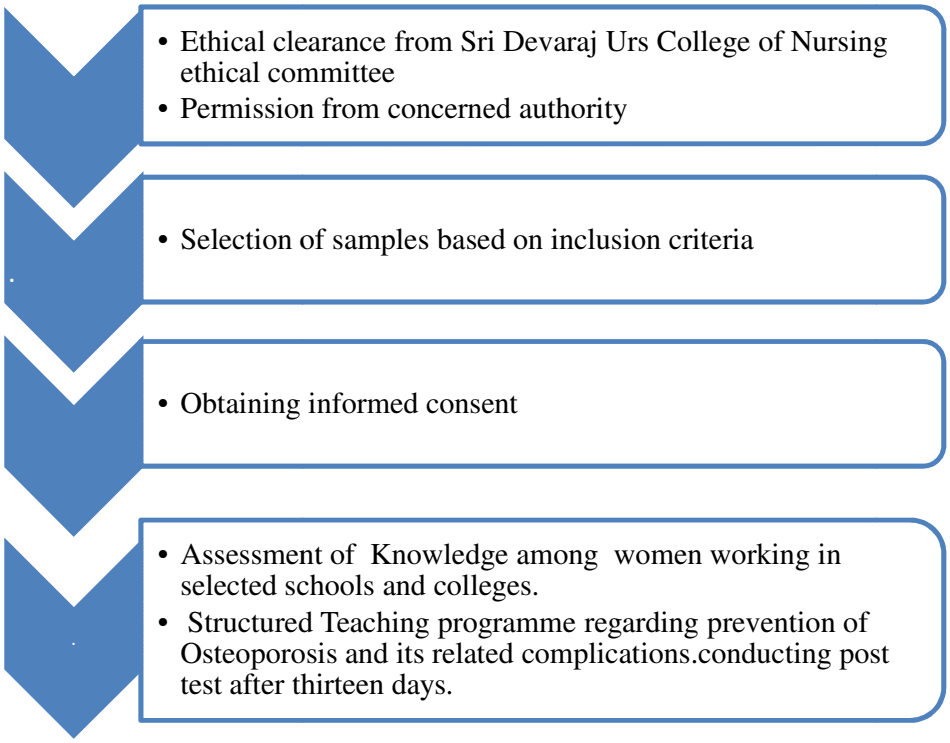


Fig- 3 Schematic Representation of Method of Data Collection

PLAN FOR DATA ANALYSIS

The analysis of data requires a number of closely operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inference.[51]

The data obtained was analyzed by descriptive and inferential statistics in achieving the objectives of the study.

The data analysis was done by the following steps.

1. Organization of data in master sheet.
2. Socio-demographic data were analyzed in terms of frequency and mean percentages.
3. Range, mean, standard deviation and mean% were used to analyze the pre and post-test knowledge scores.
4. Paired 't' test was used to find out the difference between the mean pre and post-test knowledge scores.
5. Chi-Square (χ^2) test was used to find the association between socio-demographic variables with knowledge scores of women working in selected schools and colleges of Kolar, Karnataka.

SUMMARY

This chapter of methodology has dealt on research approach, research design, setting, population, sample, sample size, sampling technique, development and description of the tool and plan for data analysis.

5. DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data gathered to assess the knowledge regarding osteoporosis among women working in selected schools and colleges.

The data obtained from 50 subjects of selected schools and colleges of Kolar. Karnataka. The data was processed and analyzed using descriptive and inferential statistics on the basis of the objectives and hypotheses formulated for the present study.

Data analysis is defined as the systematic organization and synthesis of research data and the testing of research hypothesis using that data.[51]

OBJECTIVES OF THE STUDY

1) To assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges by using Structured Knowledge Questionnaire.

2) To assess the effectiveness of Structured Teaching Programme regarding knowledge on prevention of osteoporosis and its related complications among women working in selected schools and colleges by comparing pre test and post test knowledge scores.

3) To find out the association between post test knowledge scores with selected socio-demographic variables like age, qualification, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

HYPOTHESES

H_1 : The mean post test knowledge score of women will be significantly higher than the mean pre-test knowledge score.

H_2: There will be significant association between post-test knowledge score of women on prevention of osteoporosis and its related complications with

selected socio-demographic variables like age, qualification, income, marital status, religion, residency (rural and urban), family history of osteoporosis , body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

ORGANIZATION OF STUDY FINDINGS

The analyzed data is organized and presented under the following sections.

Section-I

Distribution of subjects according to their socio-demographic variables.

Section II

Distribution of subjects according to the level of knowledge regarding Osteoporosis.

1. Distribution of subjects according to the overall level of pre and post-test knowledge scores.

2. Distribution of subjects according to the area wise pre and post-test knowledge scores.

Section-III

Comparison of pre and post-test mean scores on knowledge among subjects.

Section-1V

Association between the socio-demographic variables of subjects with post-test knowledge level.

SECTION-I

This section deals with the data pertaining to socio demographic variables of subjects

Table -1:Distribution of Socio-demographic variables of the subjects

N=50

S.No.	Variables	Frequency	%
1	**Age (In Years)**		
	a) 20-30yrs	17	34
	b) 30-40yrs	**24**	**48**
	c) 40-50yrs	9	18
	d) 50-60yrs	-	-
2	**Qualification**		
	a) Primary education	-	-
	b) Secondary education	-	-
	c) Higher education	-	-
	d) Degree	**50**	**100**
3	**Monthly income in Rs/month;**		
	a) Less than 5000	-	-
	b) 5001-10,000	16	32
	c) 10,001-15,000	**32**	**64**
	d) 15,001 and above	2	4
4.	**Marital status;**		
	a) Single	8	16
	b) Married	**41**	**82**
	c) Widow	1	2
	d) Divorcee/ Separated	-	-
5.	**Religion;**		
	a) Hindu	**27**	**54**
	b) Christian	14	28
	c) Muslim	9	18
	d) Others	-	-
6.	**Residential areas;**		
	a) Rural	13	26
	b) Urban	**37**	**74**
7.	**Family history of osteoporosis;**		
	a) Yes	6	12
	b) No	**44**	**88**
8.	**Body mass index;**		
	a) Below 18 kg/m^2	-	-
	b) Between 18.5 to 24.9 kg/m^2	23	46
	c) Between 25 to 29.9 kg/m^2	**25**	**50**
	d) Above 30 kg/m^2	2	4
9.	**Exposure to mass media within six months, on osteoporosis and its related Complications;**		
	a) Yes	13	26
	b) No	**37**	**74**

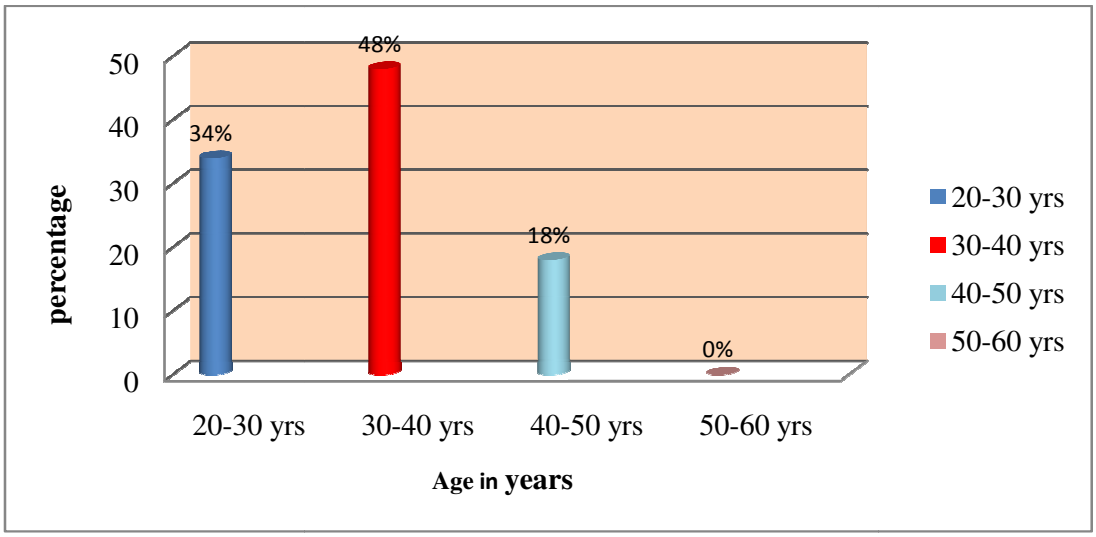


Fig- 4 : Distribution of subjects according to the Age in Years

The data presented in the Table No: 1 and Fig-4, shows that most (48%) of the subjects were found to be between the age group of 30-40 years and only (18%) of them were between 40-50 years of age.

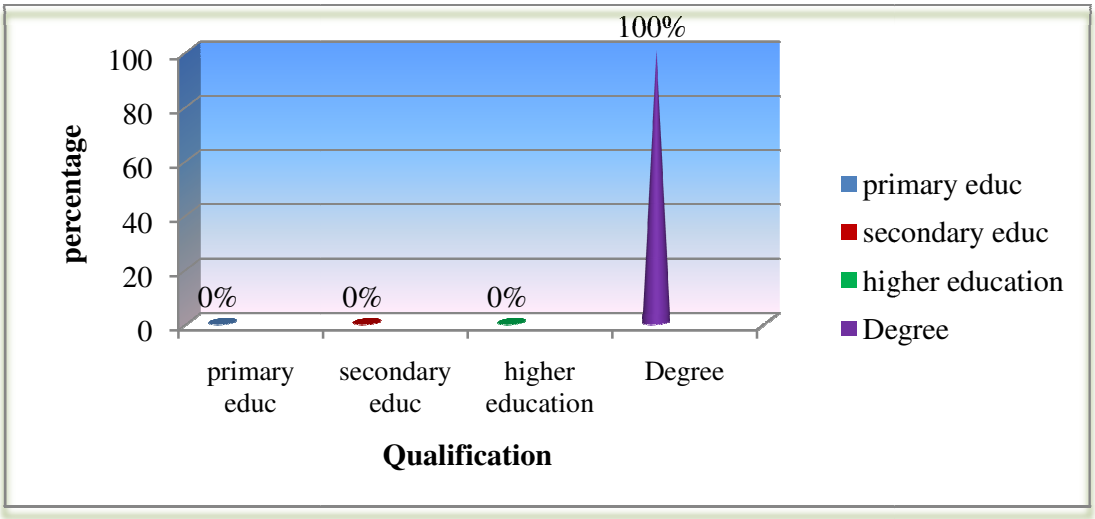


Fig-5 : Distribution of subjects according to Qualification

The data presented in the Table No: 1 and Fig- 5, shows that most (100%) of the subjects were Degree holders.

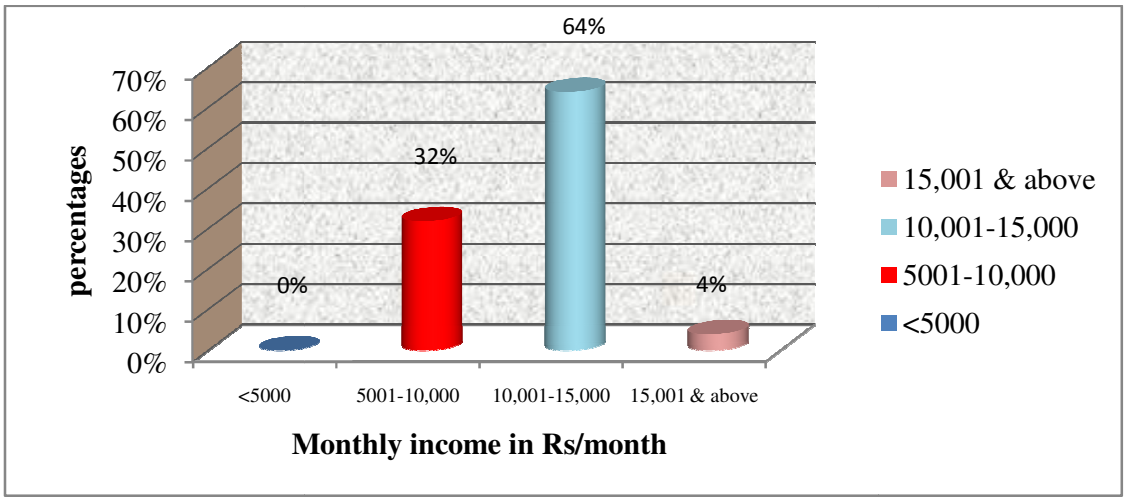


Fig-6 : Distribution of subjects according to Monthly income in Rs/month

The data presented in the Table No: 1 and Fig-6 shows that most (64%) of the subjects had family income of Rs.10, 001-15,000, whereas only (4%) had a range of Rs. 15,001 and above income per month.

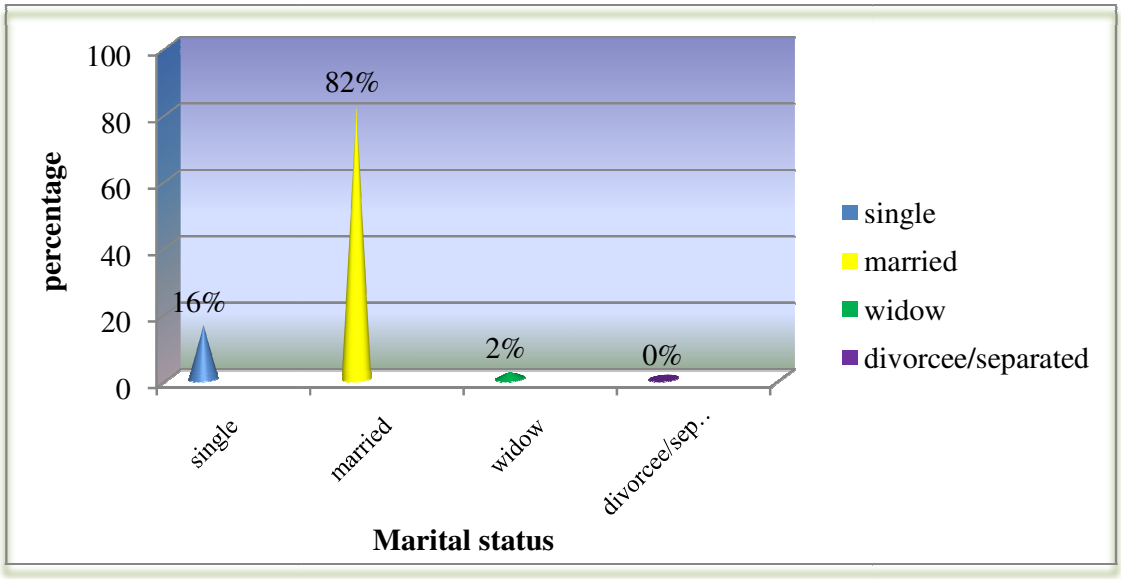


Fig-7: Distribution of subjects according to Marital status

The data presented in the Table No: 1 and Fig-7 shows that most (82%) of the subjects were married and only (2%) of them belonged to widow group.

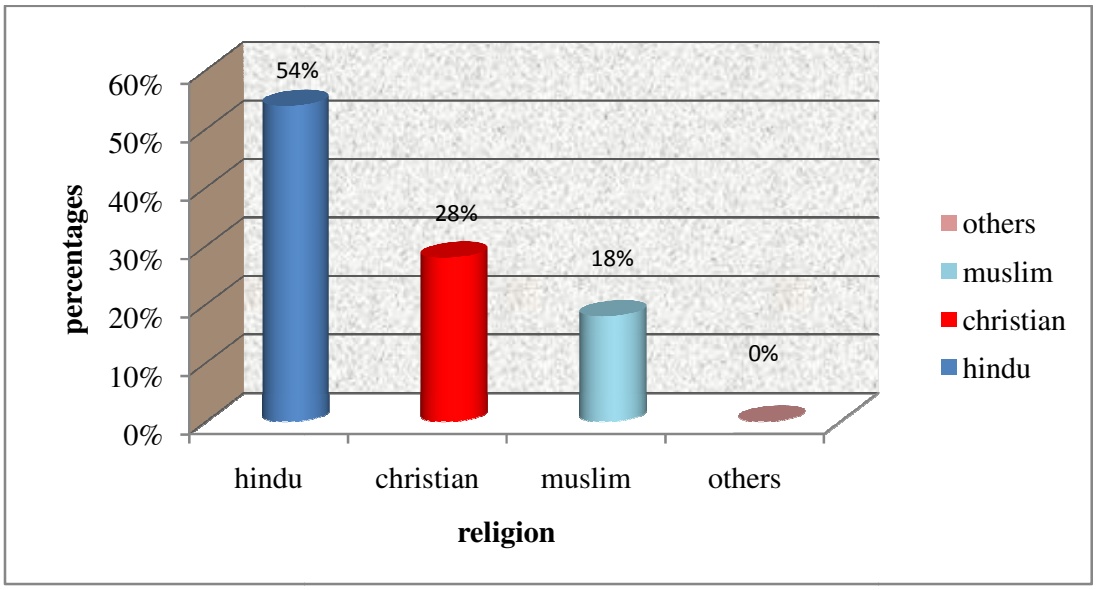


Fig-8: Distribution of subjects according to Religion

The data presented in the Table No: 1 and Fig-8, shows that most (54%) of the subjects were Hindus and only (18%) of them were Muslims.

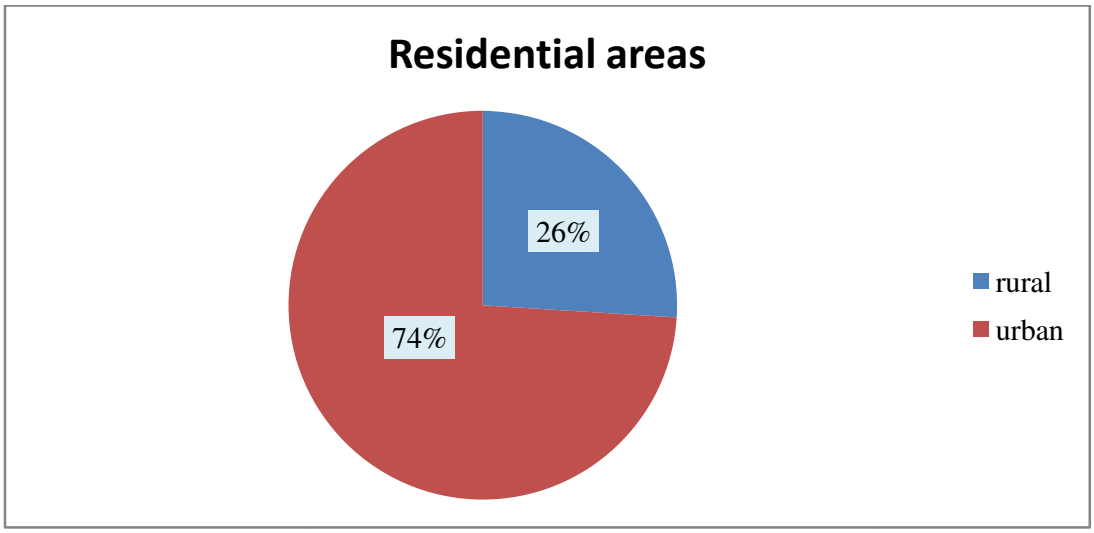


Fig- 9: Distribution of subjects according to Residential areas

The data presented in the Table No: 1 and Fig- 9, shows that most (74%) of the subjects were lived in rural area and only (26%) of them were lived in urban area.

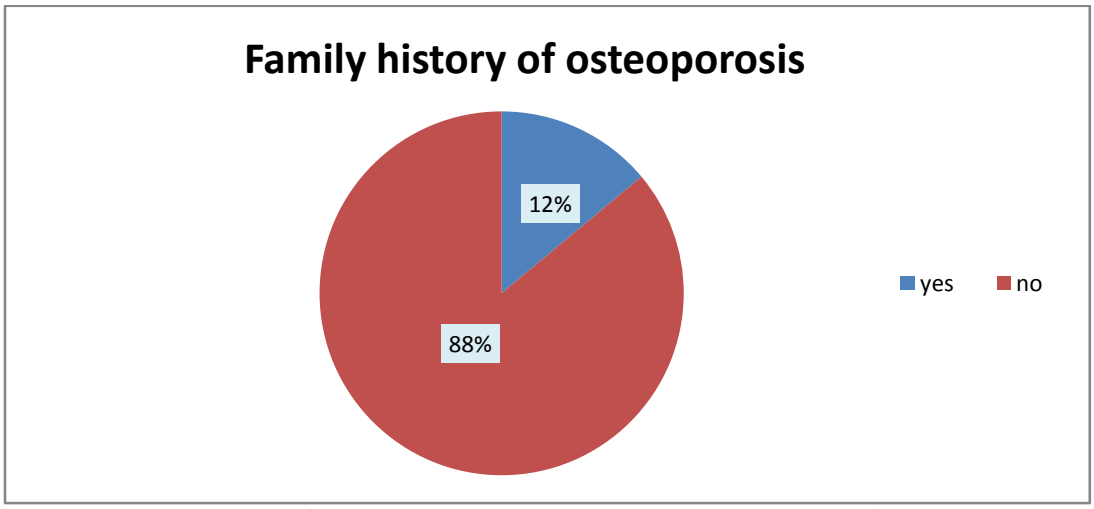


Fig-10: Distribution of subjects according to Family history of Osteoporosis

The data presented in the Table No: 1 and Fig-10, shows that most (88%) of the subjects were not having family history of osteoporosis and only (12%) were having family history of osteoporosis.

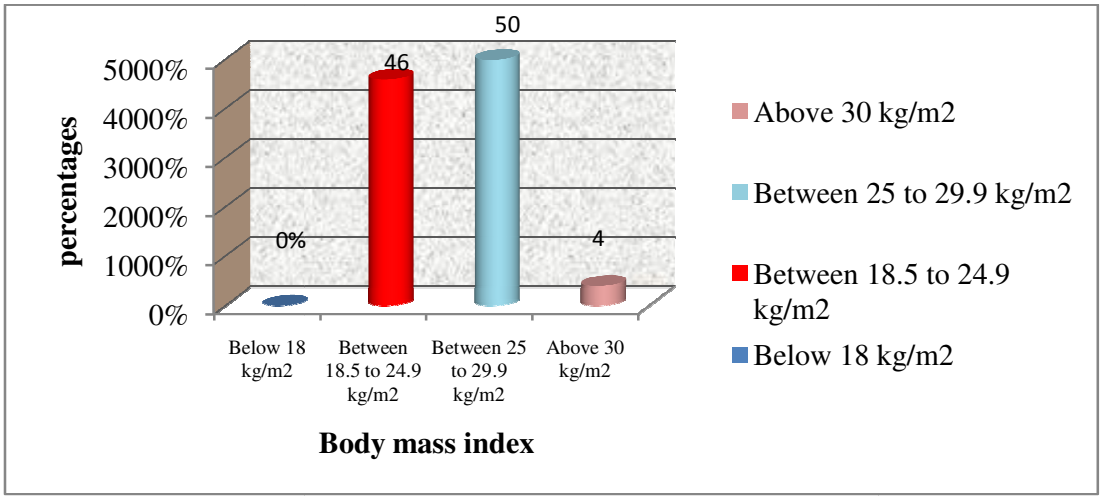


Fig-11: Distribution of subjects according to the Body mass index

The data presented in the Table No: 1 and Fig-11, shows that most (50%) of the subjects were having the BMI between 25 to 29.9 kg/m^2 and only (4%) were above 30 kg/m^2.

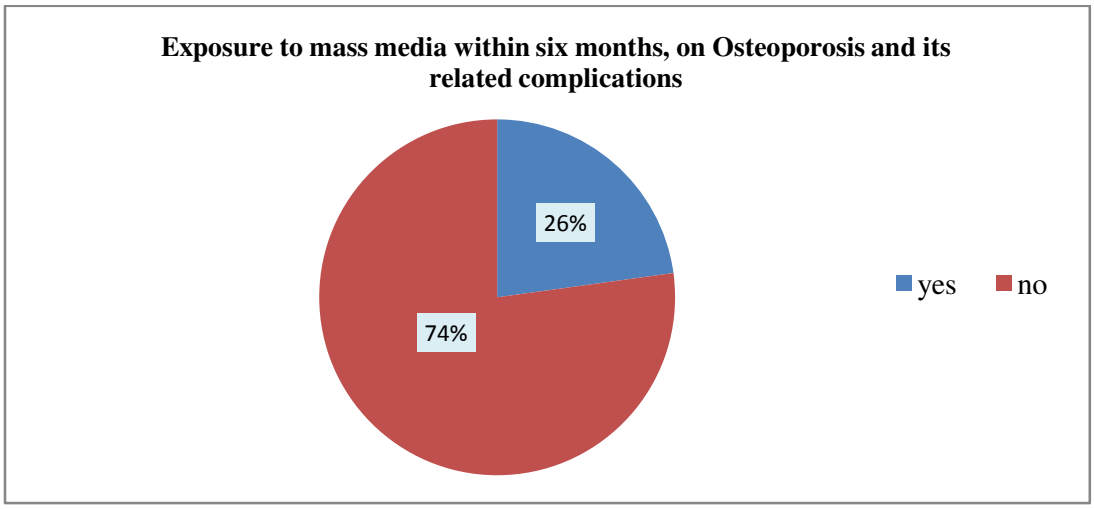


Fig-12: Distribution of subjects according to Exposure to mass media within six months, on Osteoporosis and its related Complications

The data presented in the Table No: 1 and Fig-12, shows that most (74%) of the subjects were not exposed to mass media within six months, on osteoporosis and its related Complications and only (26%) of them were exposed.

SECTION-II

This section deals with the analysis pertaining to the first objective of the study i.e. level of knowledge among women working in selected schools and colleges regarding osteoporosis.

1. Distribution of subjects according to the overall level of pre and post-test knowledge scores.

2. Distribution of subjects according to the area wise pre and post-test knowledge scores.

Table-2: Distribution of subjects according to the overall level of pre and post-test knowledge scores

N =50

Aspect	Grade	Respondents			
		Before intervention		After intervention	
		Frequency	%	Frequency	%
Knowledge score	Inadequate (< 49%)	**42**	**84**	0	0
	Moderate (50-74%)	5	10	20	40
	Adequate (> 75%)	3	6	**30**	**60**

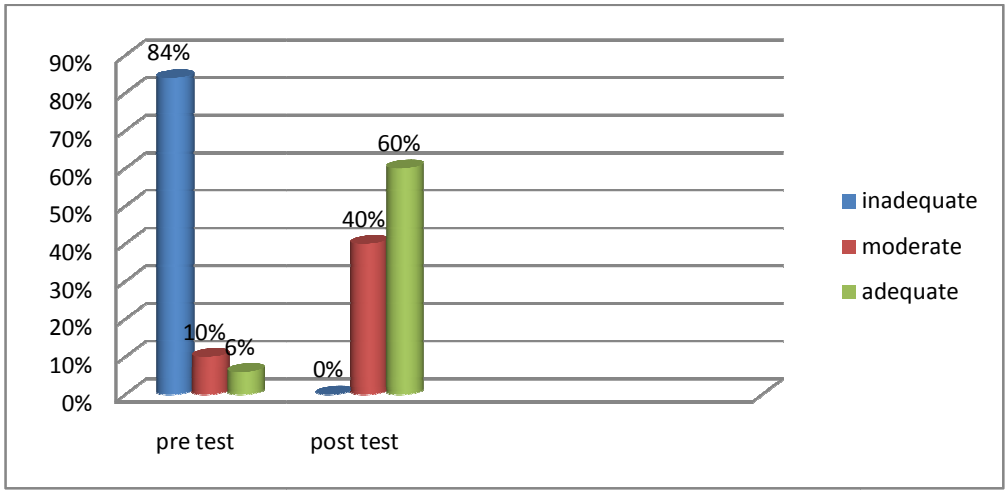


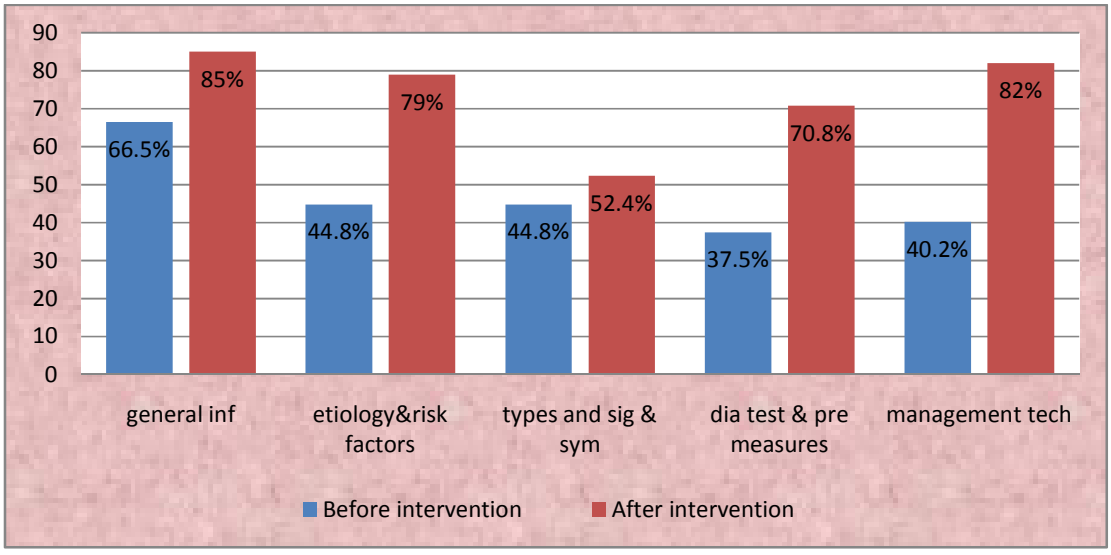
Fig-13: Distribution of subjects according to the overall level of pre and post-test knowledge scores

As per the first objective, Table: 2 and Fig-13, presents that most (84%) of subjects were having inadequate knowledge, (10%) were having moderate knowledge and (6%) were having adequate knowledge in pre-test.

Whereas after implementing Structured Teaching Programme in post-test most (60%) of the subjects had adequate knowledge, (40%) had moderate knowledge and none of the subjects belonged to inadequate knowledge level.

Table-3: Distribution of subjects according to the area wise pre and post-test knowledge scores. N=50

				Before intervention				After intervention			
Si no	**Area wise knowledge**	**No of items**	**Max score**	**Range**	**Mean**	**Mean %**	**SD**	**Range**	**Mean**	**Mean %**	**SD**
1	General information	4	4	2-4	2.6	66.5	0.6	2-4	3.40	85	0.6
2	Etiology and risk factors	10	10	1-9	4.4	44.8	1.7	4-10	7.90	79	1.3
3	Types and signs and symptoms	5	5	1-5	2.2	44.8	1.2	1-5	2.62	52.4	0.8
4	Diagnostic tests and Preventive measures	12	12	1-10	4.5	37.5	2.0	5-11	8.50	70.8	1.5
5.	Management techniques along with its related complications and its management	9	9	1-7	3.6	40.2	1.8	3-9	7.38	82	1.4



Fig–14: Distribution of subjects according to the area wise pre and post-test knowledge scores

The data presented in the Table-3 and Fig-14, shows that the subjects were having adequate knowledge of mean percentage in the area of General information (66.5%) and low knowledge of mean percentage in the area of Diagnostic tests and Preventive measures (37.5%) where as in before intervention.

After Structured Teaching Programme in post-test the subjects were having adequate knowledge of mean percentage in the area of General information (85%) and low knowledge of mean percentage in the area of Types and signs and symptoms (52.4%). These findings shows that Structured Teaching Programme was effective in increasing the knowledge level of study participants regarding prevention of Osteoporosis and its related complications.

SECTION-III

Comparison of pre and post-test mean scores on knowledge among subjects

This section deals with the second objective of the study that is to assess the effectiveness of Structured Teaching Programme regarding knowledge on prevention of osteoporosis and its related complications among women working in selected schools and colleges by comparing pre and post-test knowledge scores and is presented by the Table-4.

Table-4 : Comparison of pre and post-test mean scores on knowledge among subjects

N=50

Si no	Knowledge assessment	Max score	Range score	Knowledge scores			't' value	df	Inference
				Mean	Mean%	SD%			
1	**Before intervention**	40	10-33	17.50	43.75	4.912	18.156	49	SS *
2	**After intervention**	40	21-36	29.80	74.5	4.170			

SS* - Statistically significant

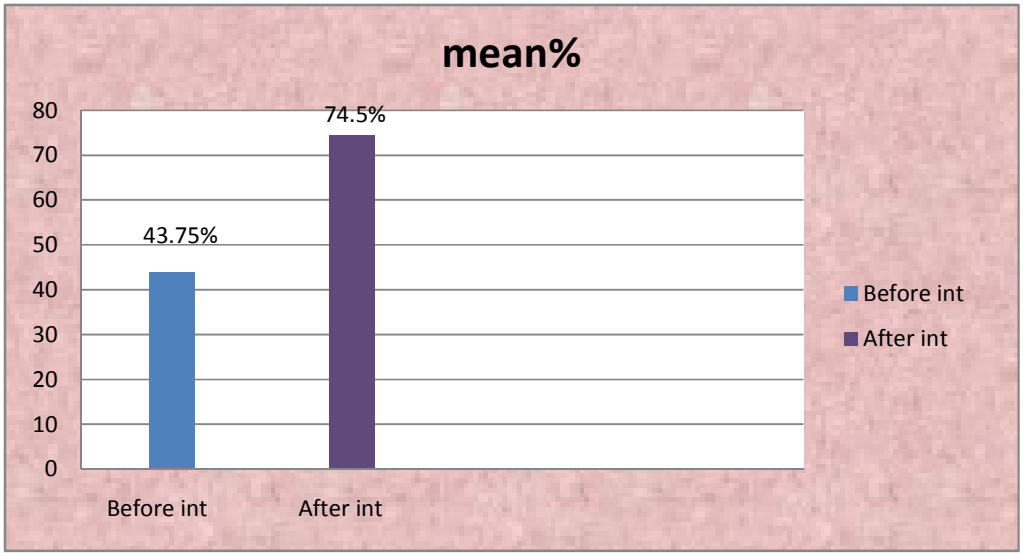


Fig – 15: Comparison of pre and post-test mean scores on knowledge among subjects

As per the second objective, Table-4 and Fig-15, presents the comparison of mean knowledge scores of pre and post-test knowledge on prevention of Osteoporosis and its related complications. It shows that the mean post-tests knowledge score was 74.5% which is significantly higher than the pre-test knowledge score 43.75%.

Paired 't' value of pre-test and post-test of the subjects were found to be significant at 0.05 level (t = 18.156). Thus, the first research Hypothesis (H_1) was **accepted.** Therefore the findings revealed that the Structured Teaching Programme on prevention of osteoporosis and its related complications was found to be an effective teaching strategy.

SECTION IV

Association between the socio-demographic variables of subjects with post-test knowledge level

This section deals with the findings related to third objective of the study that were to determine the association between post-test knowledge with selected socio-demographic variables of women working in selected schools and colleges of Kolar, Karnataka by the table 5.

Table-5

Association between the socio-demographic variables of subjects with post-test knowledge

N =50

Si no	Demographic variables	Knowledge level		χ^2 calculated value	df	Inference
		Below median < 31	Above median ≥31			
1	**Age (In years)**					
	a. 20-40	20	21	0.090	1	**NS**
	b. 40-60	3	6			
2	**Monthly income**					
	a.<5000-10,000	10	6	2.589	1	**NS**
	b.10,001and above	14	20			
3	**Marital status**					
	a. Single	5	3	0.025	1	**NS**
	b. Married and others	18	24			
4	**Religion**					
	a. Hindu	14	13	1.624	1	**NS**
	b.Others	10	13			
5	**Residential areas**					
	a.Rural	8	5	0.277	1	**NS**
	b.Urban	17	20			
6	**Family history of osteoporosis**					
	a.Yes	4	2	2.020	1	**NS**
	b.No	20	24			
7	**Body mass index**					
	a.Below 18 and 24.9 kg/m^2	10	12	3.435	1	**NS**
	b.Between 25 kg/m^2 and above	15	13			
8	**Exposure to mass media with in six months, on osteoporosis and its related complications.**					
	a.Yes	5	8	0.62	1	**NS**
	b.No	19	18			

NS - Not Significant **χ^2 table value at 1 df = 3.84**

Association of knowledge with demographic variables.

- **Age (In years) -** The obtained χ^2 value (0.090) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the age (In years) and knowledge score, thus research hypothesis **(H_2)** is rejected.

- **Monthly income** - The obtained χ^2 value (2.589) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the monthly income and knowledge score, thus research hypothesis **(H_2)** is rejected.

- **Marital status** - The obtained χ^2 value (0.025) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the marital status and knowledge score, thus research hypothesis **(H_2)** is rejected.

- **Religion -** The obtained χ^2 value (1.624) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the religion and knowledge score, thus research hypothesis **(H_2)** is rejected.

- **Residential areas** - The obtained χ^2 value (0.277) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the residential areas and knowledge score, thus research hypothesis **(H_2)** is rejected.

- **Family history of osteoporosis** - The obtained χ^2 value (2.020) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the family history of osteoporosis and knowledge score, thus research hypothesis **(H_2)** is rejected.

- **Body mass index** - The obtained χ^2 value (3.435) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the body mass index and knowledge score, thus research hypothesis **(H_2)** is rejected.

- **Exposure to mass media with in six months, on osteoporosis and its related complications** - The obtained χ^2 value (0.62) which is less than the table value (3.84) at 0.05 level of significance. Hence there is no significant association between the exposure to mass media and knowledge score, thus research hypothesis **(H_2)** is rejected.

Based on the above description, the second hypothesis was rejected as there was no association between knowledge and selected socio graphic variables.

CONCLUSION

This chapter dealt with the analysis and interpretation of the findings of the study. The data gathered was summarized in master sheet and descriptive and inferential statistics were used for analysis. Frequencies and percentage were used to analyze the sample characteristics. Mean, median, percentage and 't' test were used to analyze the effectiveness of the Structured Teaching programme. Chi square method was used to analyze the association between the posttest knowledge score and demographic variables like age, qualification, income, marital status, religion, residency (rural and urban), family history of osteoporosis , body mass index and exposure to mass media with in six months, on osteoporosis and its related complications..

The findings shows that there was a significant increase in the post-test knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka. This shows that the Structured Teaching Programme was an effective method of increasing the knowledge among women working in Selected Schools and Colleges of Kolar, Karnataka.

6. DISCUSSION

This section attempts to discuss the findings of the study. The study was focused on assessing the effectiveness of Structured Teaching Programme on Osteoporosis among women working in selected schools and colleges of Kolar. Karnataka. Here the findings of the present study are compared and contrasted with other similar studies conducted in western and Indian settings.

This study was pre experimental in nature and was conducted in Selected schools and colleges Kolar. Karnataka. It was designed to assess the knowledge of working women regarding Osteoporosis. The data was collected from 50 women who are working in a selected schools and colleges. The study was conducted over a period of 30 days. The Tool used for this study consisted of two sections.

1. Socio-demographic data
2. Questionnaire to assess the knowledge of the women working in selected schools and colleges regarding Osteoporosis.

The findings of the study are discussed under the following headings.

1. Socio-demographic variables
2. Assessment of knowledge regarding different areas of Osteoporosis.
3. Effectiveness of structured teaching programme on Osteoporosis.
4. Association of post–test knowledge scores and selected demographic variables.

I. Findings related to demographic variables

1.Age in Years

Most 24 (48%) of the subjects were found to be between the age group of 30-40 years and only 9 (18%) of them were 40-50 years of age.

The findings of the present study is supported by a qualitative study with Korean adults aged 50 years or older in Korea, it revealed the prevalence of Osteoporosis in adults aged 50 years or older was 35.5% in women and 7.5% in men[28].

2. Qualification

Most 50 (100%) of the subjects were Degree holders. The findings of the present study is supported by a qualitative study with Korean adults aged 50 years or older in Korea, it revealed that 60% of the subjects are the educated people[28].

3.Monthly income in Rs/month

Most 32 (64%) of the subjects had family income of Rs.10, 001-15,000, whereas only 2 (4%) had a range of Rs. 15,001 and above income per month.

The findings of the present study is found as similar to that of an experimental study conducted for the sample 688 women who are aged between 45 to 69 years by using convenience technique that revealed that 67% of the women belongs to middle class[30].

4.Marital status

Most 41 (82%) of the subjects were married and only 1 (2%) of them belonged to widow group.

5. Religion

Most 27 (54%) of the subjects were Hindus and only 9 (18%) of them were Muslims.

The findings of the present study is found as similar to that of a quantitative study conducted in New Delhi for the sample of 500 volunteers by using random selection that revealed that, the religion is not a cause for Osteoporosis development it may be a contributory factor[29].

6.Residential areas

Most 37 (74%) of the subjects were lived in rural area and only 13 (26%) of them lived in urban area.

The findings of the present study is found as similar to that of a quantitative study conducted in New Delhi for the sample of 500 volunteers by using random selection that revealed that, most of the subjects are living in rural areas[29].

7. Family history of Osteoporosis

Most 44 (88%) of the subjects were not having family history of osteoporosis and only 6 (12%) were having family history of osteoporosis.

The findings of the present study is found as similar to that of an experimental study conducted for the sample 688 women who are aged between 45 to 69 years by using convenience technique that revealed that, 72% of the subjects were not have family history of Osteoporosis[30].

8. Body mass index

Most 25 (50%) of the subjects had body mass index were between 25 to 29.9 kg/m^2 and only 2 (4%) had body mass index above 30 kg/m^2.

9. Exposure to mass media within six months, on Osteoporosis and its related Complications

Most 37 (74%) of the subjects were not exposed to mass media within six months, on osteoporosis and its related Complications and only 13 (26%) were exposed. The findings of the present study is found as similar to that of a quantitative study conducted in New Delhi for the sample of 500 volunteers by using random selection that revealed that, 62% of the subjects were not exposed to mass media[29].

II. Knowledge of subjects regarding prevention of osteoporosis and its related complications

The first objective was to assess the knowledge of subjects regarding prevention of osteoporosis and its related complications. The level of knowledge regarding this was assessed and tabulated in table- 2. Majorities 84% of study participants were having inadequate knowledge, 10% were having moderate knowledge and only 6% were having adequate knowledge in pre-test.

Where as after implementing Structured Teaching Programme in post-test 60% of study were having adequate knowledge, 40% were having moderate knowledge and 0% were having inadequate knowledge. Therefore findings showed that most of the subjects had adequate knowledge after structured teaching programme.

III. Effectiveness of Structured Teaching Programme on prevention of osteoporosis and its related complications

The second objective were to find out the effectiveness of Structured Teaching Programme on prevention of osteoporosis and its related complications. The overall mean post-test score is 74.5% which is significantly higher than the pre-test score 43.75%.

Paired 't' value of pre-test and post-test of the study sample was found to be significant at 0.05 level (t = 18.156). Thus, the first research Hypothesis (H_1) was **accepted** at 0.05 levels. Therefore the findings reveal that the Structured Teaching Programme on prevention of osteoporosis and its related complications was an effective teaching strategy.

IV. Association between the socio-demographic variables of subjects with post-test knowledge score

The third objective were to find out the association between the socio demographic variables of subjects with post-test knowledge score. The findings revealed that there was not significant association between the post- test knowledge scores with socio-demographic variables like age, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications at 0.05 level through 'χ^2' test . Hence H_2 was rejected.

Conclusion

This discussion chapter is presented the detailed discussion about the statistical findings regarding demographic variables and association between the knowledge on prevention of Osteoporosis and its related complications with selected socio demographic variables.

7. CONCLUSION

This chapter presents the conclusions drawn, implications, limitations, suggestions and recommendations. This study aimed to know the knowledge of women working in selected schools and colleges regarding prevention of Osteoporosis and its related complications.

The percentage of knowledge scores was 3 (6%) had adequate knowledge, 5(10%) had moderate knowledge and 42 (84%) of them had inadequate knowledge in pre-test and in post-test the percentage of knowledge scores was 30 (60%) of them had adequate knowledge, 20 (40%) had moderate knowledge, and 0% of them had inadequate knowledge.

The conceptual framework selected for the study was health promotion model by Pender in 1987- The focus of this theory is the health promotion behaviour – because to develop resources that maintain or enhance an individual's wellbeing.

The major findings of the study revealed that the socio-demographic variables in terms of age (in years), most (48%) were between the age of 30-40 years. In terms of qualification, all the subjects (100%) were Degree holders. In terms of monthly income in Rupees/month, most (64%) were had family income of Rs. 10,001-15,000. In terms of marital status, most (82%) were married. In terms of religion, most (54%) were Hindus. In terms of residential areas, most (74%) were living in Urban areas. In terms of Family history of Osteoporosis, most (88%) of the subjects were not having the family history of Osteoporosis. In terms of Body mass index, most (50%) were having the BMI between 25 to 29.9 kg/m^2. In terms of Exposure to mass media within six months, on osteoporosis and its related Complications, most (74%) were not having any exposure to mass media.

The association is analyzed between the knowledge scores and the related socio-demographic variables like age, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications. The chi square

values of socio demographic variables such as age, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications were not having significant association with post-test knowledge scores at 0.05 level. Hence H_2 was rejected.

IMPLICATIONS

The findings of the present study have several implications in nursing administration, nursing practice, nursing education and nursing research.

NURSING PRACTICE

1. Nursing professionals working in the hospital as well as in the community setting play a key role in enhancing the client's knowledge on prevention of Osteoporosis and its related complications.
2. Nurses have ample opportunities to educate the patients regarding Osteoporosis, encourage them to assess their risk and help them to develop prevention strategies, particularly giving more emphasis to primary and secondary prevention.
3. For these activities nurses need to update their knowledge regular in service education.

NURSING EDUCATION

1. Nursing education helps the students with adequate knowledge, skills and attitude to fulfill their duties and responsibilities in the nursing field.
2. Findings of the study can be used by nurse educators to educate students, which help them to manage a patient with osteoporosis as well as initiating osteoporosis programmes.

NURSING ADMINISTRATION

1. Nursing administrators may use the study to improve the quality of nurses and clients.
2. The need for nursing administrators to make protocol & guidelines regarding osteoporosis.

3. Nursing administrators should make public awareness on osteoporosis and its preventive measures.
4. In service education and continuing nursing education programmes to be initiated for nurses to update the knowledge on osteoporosis.

NURSING RESEARCH

The investigators found scarcity in research works conducted by Indian Nurses on Osteoporosis, therefore the findings in the study can be utilized by nursing researchers for further studies regarding osteoporosis.

LIMITATIONS

1. The knowledge of clients was assessed only through the structured knowledge questionnaire.
2. The study was limited to 50 women who are working in Selected schools and colleges Kolar. Karnataka.
3. The study did not use any control group.

RECOMMENDATIONS

1. A similar study can be replicated by using a large sample.
2. It would be of immense value to conduct a study in different settings like, community areas, women's work places, pensioners offices, etc.
3. A follow up study need to be conducted to find the effectiveness in terms of retention of knowledge and to reinforce health promotion behavior.
4. It is vital to conduct a comparative knowledge assessment study among men and women , as osteoporosis can affect men also.
5. Teaching and demonstration materials can be video recorded and can be encouraged in outpatient departments and wards of the hospitals.
6. A special clinic for osteoporosis has to be established in each hospital.
7. Health information regarding osteoporosis can be given to the public by

a. Talks

i. Women Organizations

ii. Voluntary Organizations

iii. Public Talks

iv. Radio Talks

b. Articles in

i. Magazines

ii. News Papers

c. Pamplets to

i. Patients

ii. Public

d. Television Programmes

CONCLUSION:

Every client had the eagerness to have the clear explanation about their disease. Nurses are primary care givers and educators. Adequate information, motivation and counseling are essential to impart knowledge, to practice disseminate that knowledge to needed ones. The present study mainly emphasis on the assessment of level of knowledge of women working in selected schools and colleges regarding osteoporosis.

8. SUMMARY

This chapter presents the summary of the study.

Osteoporosis or 'porous bone' is a disease characterized by low bone mass and structural deterioration of bone tissue leading to bone fragility and an increased susceptibility to fractures[5].It is largely preventable for most people, and it is accomplished through medical, nutritional and lifestyle interventions. Prevention of this disease is very important because while there are treatments for osteoporosis, there is currently no cure[14]. Prognosis of osteoporosis is poor because there is no cure for the disease.[15] So, there is a need of effective effort from health team to educate the women regarding prevention of osteoporosis and its related complications.

The aim of the study was to increase the knowledge on prevention of osteoporosis and its related complications among women working in selected schools and colleges of Kolar, Karnataka.

The present study was conducted to **"A Study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."** with the following objectives:

1. To assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges by using Structured Knowledge Questionnaire.
2. To assess the effectiveness of Structured Teaching Programme regarding knowledge on prevention of osteoporosis and its related complications among women working in selected schools and colleges by comparing pre test and post test knowledge scores.
3. To find out the association between post test knowledge scores with selected socio-demographic variables like age, education, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

HYPOTHESES

H_1 : The mean post test knowledge score of women will be significantly higher than the mean pre-test knowledge score.

H_2: There will be significant association between post test knowledge score of women on prevention of osteoporosis and its related complications with selected socio-demographic variables like age, education, income, marital status, religion, residency (rural and urban), family history of osteoporosis , body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

CONCEPTUAL FRAMEWORK

The conceptual framework selected for the study was Pender's Health Promotion Model (1987)- The focus of this model was the health promotion behaviour – to develop resources that maintain or enhance an individual's wellbeing. The theory identifies that two phases, a decision-making phase and an action phase. In the decision making phase, the model explains seven cognitive perceptual factors and five modifying factors that indirectly influence pattern of health behavior. In action phase the people participate in health promoting behavior.

METHODOLOGY:

The study made use of a pre experimental study approach. The population in this study was women working in selected schools and colleges. A purposive sampling technique was adopted to select 50 subjects based on certain predetermined criteria. The data were generated using Structured Knowledge Questionnaire. The questionnaire consisted of two parts,

Section-A: Socio-demographic variables

Section B: knowledge questionnaire

The tool was validated by 8 experts for content validity, reliability and feasibility. In order to establish reliability of the tool, the test-retest method and

split half method was used. The reliability of the tool was established by spearman's brown prophecy formula (reliability r= 0.91 and r=96).

The Structured Teaching Programme on Osteoporosis was developed for subjects, based on review of literature and the opinion of experts. It was prepared with a view to enhance the knowledge of women working in a selected schools and colleges.

Pilot study was conducted in Suguna school, Kolar from 12/9/13 to 19/9/2013,to find out the reliability of the tool and effectiveness of Structured Teaching Programme in terms of enhancement of knowledge regarding Osteoporosis so as to decide their suitability for the final study. The investigator used purposive sampling technique to select the samples from the total population.

The pre-test was administered by using Structured Knowledge Questionnaire followed by Structured Teaching Programme. After 8 days, the post-test was administered by using the same questionnaire on knowledge for evaluating the effectiveness of Structured Teaching Programme on knowledge towards prevention of Osteoporosis and its related complications. The data gathered were analysed and interpreted according to objectives.

MAJOR FINDINGS OF THE STUDY

Findings related to demographic variables

I. Age in Years

Most 24 (48%) of the subjects were found to be between the age group of 30-40 years and only 9 (18%) of them were between 40-50 years of age.

II. Qualification

Most 50 (100%) of the subjects were Degree holders.

III. Monthly income in Rs/month

Most of 32 (64%) of the subjects had family income of Rs.10, 001-15,000, whereas only 2 (4%) had a range of Rs. 15,001 and above income per month.

IV. Marital status

Most 41 (82%) of the subjects were married and only 1 (2%) of them belonged to widow group.

V. Religion

Most 27 (54%) of the subjects were Hindus and only 9 (18%) of them were Muslims.

VI. Residential areas

Most 37 (74%) of the subjects were lived in rural area and only 13 (26%) of them lived in urban area.

VII. Family history of Osteoporosis

Most 44 (88%) of the subjects were not having family history of osteoporosis and only 6 (12%) were having family history of osteoporosis.

VIII. Body mass index

Most 25 (50%) of the subjects had body mass index Between 25 to 29.9 kg/m^2 and only 2 (4%) had body mass index above 30 kg/m^2.

IX. Exposure to mass media within six months, on Osteoporosis and its related Complications

Most 37 (74%) of the subjects were not exposed to mass media within six months, on osteoporosis and its related complications and only 13 (26%) of them were exposed.

II. Knowledge of subjects regarding prevention of osteoporosis and its related complications

The first objective was to assess the knowledge of subjects regarding prevention of osteoporosis and its related complications. The level of knowledge regarding this was assessed and tabulated in table- 2. Majorities 84% of subjects were having inadequate knowledge, 10% were having moderate knowledge and only 6% were having adequate knowledge in pre-test.

Where as after implementing Structured Teaching Programme in post-test 60% of subjects were having adequate knowledge, 40% were having moderate knowledge and 0% were having inadequate knowledge. Therefore findings showed that most of the subjects had adequate knowledge after Structured Teaching Programme.

III. Effectiveness of Structured Teaching Programme on prevention of Osteoporosis and its related complications

The second objective was to find out the effectiveness of Structured Teaching Programme on prevention of osteoporosis and its related complications. The overall mean post-test score is 74.5% which is significantly higher than the pre-test score 43.75%.

Paired 't' value of pre-test and post-test of the subjects was found to be significant at 0.05 level (t = 18.156). Thus, the first research Hypothesis (H_1) was **accepted** at 0.05 levels. Therefore the findings reveal that the Structured Teaching Programme on prevention of osteoporosis and its related complications was an effective teaching strategy.

IV. Association between the socio-demographic variables of subjects with post-test knowledge score

The third objective was to find out the association between the socio-demographic variables post-test knowledge score. The findings revealed that there was no significant association between the post-test knowledge scores with socio-demographic variables like age, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications at 0.05 level through 'χ^2' test . Hence H_2 was rejected.

9. BIBLIOGRAPHY

1. *SM Lewis Collier, IC Heithkemper., M. Medical Surgical Nursing Assessment of Clinical problems. 4th edition. mosby company. 2000. page no, 2-1867.*

2. http://www.info2india.com/occasions/womens-day/index.html

3. **http://seniorhealth.about.com/od/womenshealth/a/Aging_Women.htm**

4. International Osteoporosis Foundation (IOF): Breaking Spines. IOF. Key Statistics for Osteoporosis in Asia. Switzerland. Tuesday. Sept 29. 2009 .

5. http://www.nof .org/osteoporosis/stats.html.

6. WHO. Osteoporosis : Bone Health Organizations and Individuals must act now to avoid an impending epidemic . Geneva : WHO Press Release ; 1999. Available From : http://Who.inf-pr-1999/en.html.

7. Albright F. Osteoporosis. Annals of Internal Medicine 1957; 27:861-82.

8. Alffran P. An Epidemiologic study of cervical and Trochanteric Fracture of the femur in an urban population . Acta Orthopaedica Scandinavica (Suppl) 1964;65:1-109.

9. http://www.aaos.org/about/papers/position/1113.asp

10. http://pharmapeek.com/arthritis/world-osteoporosis-statistics/

11. http://www.indiaprwire.com/pressrelease/health-care/20111126104698.htm.2012

12. Janet et al. Risk factors for Osteoporosis, a review, Medscape General Medicine. 2000: 2 (4).

13. US Food and drug Administration . Washington: FDA Consumer 2011. Available From : http://www.fda.gov/fdac.html.

14. National Osteoporosis Foundation . Prevention of osteoporosis .Washington : NOF;2011. Available from : http://www.nof.org.

15. Joan Luckmann. Saunders Manual of Nursing Care . 1st edition . philadelphia: WB Saunders Company;1997.

16. Jane Flemming . Osteoporosis Learning Together . Nursing Times 1998 Feb 18 ;94(7):38-40.

17. Dr. Rohini . Awareness on Osteoporosis Needs to be raised . The Hindu 2005 Feb 17 ; Sec A:4(Col 5)

18. Linda CC, Mildred OH . Osteoporosis Education and awareness can make difference . AJN 2008 Jan ;102(1):26-32.
19. Eisman Allan John. International scientific journal. 2002
20. National news paper, online edition. Vitamin supplements no cure for. osteoporosis Friday. April 29.2005.Available from: http//www.hindu.com
21. The Milk Imperative. A book for women. Available from: WWW.milkimperative.com.
22. Violeta riberio, Judith Blakeky, Maureen Laryea. Women's knowledge and practices regarding the prevention and treatment of osteoporosis. American jouranal. Vol 3, issue 7th. June 2000. Page no. 347-353.
23. Philip A Corfman MD (Washington DC) viewed the documentary . The Osteoporosis Story and wrote: and deals intelligently with a wide variety of medical, economic, and political issues. Available from: www.theosteoporosisstory.com
24. Sedlak CA, Doheny MO, Jones SL. Osteoporosis Prevention in young women. Orthopaedic nurses.; 17(3) :53-60, May 1998.
25. Chan MF, Kocy day MC. the effectiveness of an osteoporosis prevention education programme for women in Hongkong a randomized controlled trail .journal of clinical nurse:14(9):1112-23.
26. Hudec SM, Camacho PM. Division of Endocrinology and Metabolism, Loyola University Medical Center, Maywood, IL 60153, USA. Endocr Pract. 2013 Jan-Feb;19(1):120-8. doi: 10.4158/EP12059.RA.
27. Leeangkoonsathian E, Boonyanuruk P. Validate of clinical risk index for osteoporosis in Thai women at Phramongkutklao Hospital.J Med Assoc Thai. 2012 Apr;95(4):487-92.
28. Choi YJ, Oh HJ, Kim DJ, Lee Y, Chung YS. The prevalence of osteoporosis in Korean adults aged 50 years or older. J Bone Miner Res. 2012. Sep;27(9):1879-86. doi: 10.1002/jbmr.1635.
29. Janković S, Kresina HG. Implementation of program of prevention and early detection of osteoporosis among women of Primorsko-goranska County. Coll Antropol. 2011. Sep;35 Suppl 2:217-20.
30. www.icmr.nic.in.
31. www.ncbi.nlm.nih.gov.

32. M. Sadat-Ali, A.H.Gullenpet, F.Al-Mulhim Osteoporosis-related vertebral fractures in postmenopausal women. La Revue de Santé de la Méditerranée orientale, 2007.59(4):295-301.
33. www.ncbi.nlm.gov/pmc/articles.
34. Aggarwal N, Raveendran A, Khandelwal N. Prevalence and related risk factors of osteoporosis in peri- and postmenopausalIndian women. Midlife Health. 2011. Jul;2(2):81-5. doi: 10.4103/0976-7800.92537.
35. Simon JA, Recknor C. Impact of denosumab on the peripheral skeleton of postmenopausal women with osteoporosis. Menopause. 2013. Feb;20(2):130-7. doi: 10.1097/gme.0b013e318267f909.
36. Gianoudis J, Bailey CA. Osteo-cise: strong bones for life. BMC Musculoskelet Disord. 2012 May 28;13:78. doi: 10.1186/1471-2474-13-78.
37. Riaudel T, Guillot P. Nutrition and osteoporosis in elderly. Geriatr Psychol Neuropsychiatr Vieil. 2011. Dec 1;9(4):399-408.
38. Garriguet D. Bone health: osteoporosis, calcium and vitamin D. Health Rep. 2011. Sep;22(3):7-14.
39. Nakatani Y, Tamaki J. Effect of distributing an evidence-based guideline for prevention of osteoporosis on health education programs in municipal health centers. J Epidemiol. 2012; 22(2):103-12. Epub 2011 Dec 31.
40. Bell JS, Blacker N. Osteoporosis - pharmacological prevention and management in older people. Aust Fam Physician. 2012. Mar;41(3):110-8.
41. Varela E, Fernandes G. Alternative therapies for the prevention and treatment of osteoporosis. Nutr Rev. 2012 Jan;70(1):22-40. doi: 10.1111/j.1753-4887.2011.00451.x.
42. Dennison EM, Compston JE. Effect of co-morbidities on fracture risk: findings from the Global Longitudinal Study of Osteoporosis in Women (GLOW). Bone. 2012. Jun;50(6):1288-93. doi: 10.1016/j.bone.2012.02.639. Epub 2012 Mar 9
43. Roux C, Wyman A. Burden of non-hip, non-vertebral fractures on quality of life in postmenopausal Women. Osteoporos Int. 2012 Dec;23(12):2863-71. doi: 10.1007/s00198-012-1935-8. Epub 2012. Mar 8.
44. K Bohaty, H Rocole, K Wehling, N Waltman. Testing the effectiveness of an educational intervention to increase dietary intake of calcium and vitamin D in young adult women. J Am Acad Nurse Pract. 2008 Feb: 20 (2):93-9.

45. Burke D Forster, L Ritter, S Zimmer. Collaboration of a model osteoporosis prevention and management program in a faith community. J Obstet Gynecol Neonatal Nurs. 2010 Mar: 39 (2): 212-9.
46. Mithal.D, Dawson-Hughes. J.Morals – Torres . Global vitamin D status and determinants of hypovitaminosis D. International Osteoporosis Foundation and National osteoporosis foundation. 2009. April. Available from: (www.osteos.org.lb/publication).
47. St. Evenson JC. Osteoporois intenational, vol. 14. (14) 2003. 1007-1012
48. http://www.bmj.com/content/331/7529/1374
49. Koul L. Methodology of educational research. New Delhi: Vikas Publications Pvt. Ltd; 1984.
50. Ewen MM, Wills ME. Theoretical basis for nursing. Philadelphia: Lippincott and Williams and Wilkins; 2002.
51. Polit DF, Beck CT. Nursing research: Principles and Methods. 7th ed. Philadelphia: Lippincott and Williams and Wilkins;2007.

ANNEXURE – A

ETHICAL COMMITTEE CLEARANCE CERTIFICATE

Phone : 08152-243048 / 243400
Fax : 08152-243048 / 243006
e-mail : sducon_son@yahoo.in
website : www.sduson-con.in

Sri Devaraj Urs College of Nursing
(A unit of Sri Devaraj Urs Educational Trust)
Post Box No.7, Tamaka, KOLAR-563101, Karnataka.
(Affiliated to RGUHS, Bangalore and Recognised by KNC, Bangalore & INC, New Delhi)
ISO : 9001-2008 Certified

Ref:No.SDUCON/EC-CER/070/2031-14 Date: 03-04-2013

ETHICAL CLEARANCE CERTIFICATE

This is to certify that the Ethical Committee of Sri Devaraj Urs College of Nursing, Tamaka, Kolar, has examined and unanimously approved and granted **Ethical Clearance** to Ms. Prasanna M., II M.Sc.(N) Medical Surgical Nursing speciality student of this institution for the Research Topic –'***A Study to Assess The Effectiveness Of Structured Teaching Programme Regarding Knowledge On Prevention of Osteoporosis And Its Related Complication Among Women Working In Selected Schools And Colleges of Kolar Karnataka***'

SSridhar
Chairperson

Secretary 03/04/13

03/04/13
Principal
PRINCIPAL
Sri Devaraj Urs College of Nursing
Tamaka, KOLAR-563101.

ANNEXURE - B

LETTER REQUESTING PERMISSION FOR CONDUCTING PILOT STUDY

From,

Ms. M.Prasanna

II year M .Sc Nursing

SDUCON, Tamaka.

Through,

The principal

SDUCON, Kolar

To,

The principal,

S. Ramayya P.U college (Suguna)

Tamaka.

Sub: Request to conduct a research study at S. Ramayya P.U college, Kolar

Respected sir,

With due respect I Ms. M . Prasanna second year M.Sc (N) of Sri Devaraj Urs College Of Nursing Tamaka, Kolar, has to conduct a research dissertation as mentioned below for the partial fulfillment of Rajiv Gandhi University of health sciences, Karnataka for the award of M.Sc nursing.

TOPIC: **"A Study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."**

Hence I request you to grant permission to conduct reliability study among women working in the S. Ramayya P.U college, Kolar. I request you to kindly consider and do the needful.

Thanking you,

Date; 3/9/13.

Place Tamaka.

Yours faithfully,

Ms. M.Prasanna

M.Prasanna 3/9/13.

Forwarded for the needful.
to principal
04/09/2013.

Forwarded to Principal, S.R.P.U College with request to permit her to do the study

Principal
Suguna International School
Tamaka, KOLAR-563 101

04/09/13

ANNEXURE – C_1

LETTER REQUESTING PERMISSION FOR CONDUCTING RESEARCH STUDY

From,

Ms. M.Prasanna

II year M .Sc Nursing

SDUCON, Tamaka.

Through,

The principal

SDUCON, Kolar

To,

The Principal,
R.L. Jalappa central High school,
Tamaka.

Sub: Request to conduct a research study at selected schools and colleges of Kolar, Karnataka.

Respected sir,

With due respect I Ms. M. Prasanna second year M.Sc nursing of Sri Devaraj Urs College Of Nursing Tamaka, Kolar, has to conduct a research dissertation as mentioned below for the partial fulfillment of Rajiv Gandhi University of health sciences, Karnataka for the award of M.Sc nursing.

Topic: "A Study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

Hence I request you to grant permission to conduct research study among women working in the selected schools and colleges of Kolar, Karnataka. I request you to kindly consider and do the needful.

Thanking you,

Date; 1/10/13

Place Tamaka.

Yours faithfully,
Prasanna M
Ms. M.Prasanna

Forwarded to Principal, R.L. Jalappa School for the needful

PRINCIPAL
Sri Devaraj Urs College of Nursing
Tamaka, KOLAR-563101

forwarded to Mr. Lalitha Pradeep for further assistance and arrangement

ANNEXURE – C_2

LETTER REQUESTING PERMISSION FOR CONDUCTING RESEARCH STUDY

From,

Ms. M.Prasanna

II year M .Sc Nursing

SDUCON, Tamaka.

Through,

The principal

SDUCON, Kolar

To,

The principal,

Boys Government P.U. College,

Kolar.

Sub: Request to conduct a research study at selected schools and colleges of Kolar, Karnataka.

Respected sir,

With due respect I Ms. M. Prasanna second year M.Sc nursing of Sri Devaraj Urs College Of Nursing Tamaka, Kolar, has to conduct a research dissertation as mentioned below for the partial fulfillment of Rajiv Gandhi University of health sciences, Karnataka for the award of M.Sc nursing.

Topic: "A Study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

Hence I request you to grant permission to conduct research study among women working in the selected schools and colleges of Kolar, Karnataka. I request you to kindly consider and do the needful.

Thanking you,

Date; 1/10/13.

Place Tamaka.

Yours faithfully,

Prasanna M

Ms. M.Prasanna

Forwarded to Principal, Govt Boys P.U. College for the needful

1/10/13

PRINCIPAL

Sri Devaraj Urs College of Nursing

Tamaka, KOLAR-563101.

Principal 3/10/13.

Govt. College for Boys

Kolar-563 101.

ANNEXURE – C_3

LETTER REQUESTING PERMISSION FOR CONDUCTING RESEARCH STUDY

From,

Ms. M.Prasanna

II year M .Sc Nursing

SDUCON, Tamaka.

Through,

The principal

SDUCON, Kolar

To,

The principal,

Girls Government P.U College,

Kolar.

Sub: Request to conduct a research study at selected schools and colleges of Kolar, Karnataka.

Respected sir,

With due respect I Ms. M. Prasanna second year M.Sc nursing of Sri Devaraj Urs College Of Nursing Tamaka, Kolar, has to conduct a research dissertation as mentioned below for the partial fulfillment of Rajiv Gandhi University of health sciences, Karnataka for the award of M.Sc nursing.

Topic: "A Study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

Hence I request you to grant permission to conduct research study among women working in the selected schools and colleges of Kolar, Karnataka. I request you to kindly consider and do the needful.

Thanking you,

Date; 1/10/13.

Place Tamaka.

Yours faithfully,

Ms. M.Prasanna

Forwarded to Principal, Govt. Girls P.U. College for the needful

PRINCIPAL
Sri Devaraj Urs College of Nursing
Tamaka, KOLAR-563101

Forwarded to all women professors to assist and help Miss Prasanna.

3/10/13

PRINCIPAL
GOVT COLLEGE FOR WOME
KOLAR 563101

ANNEXURE – D

LETTER SEEKING EXPERTS OPINION FOR CONTENT VALIDITY AND TOOL

From

Ms.Prasanna.M
M. Sc Nursing student
Sri Devaraj Urs College of Nursing
Tamaka, Kolar-563101

To

Forwarded through:

The Research Guide
Sri Devaraj Urs College of Nursing
Kolar

Respected Sir/Madam,

Sub: Request to validate the research tool

I Ms. Prasanna.M, M.Sc Nursing student of Sri Devaraj Urs College of Nursing at Kolar has selected below mentioned topic for research project, as a partial requirement for awarding Master of Science in Nursing, to be submitted to SDUCON.

Title of the topic:

"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

With regards to the above, may, I kindly request you to validate the tool for its appropriateness and relevance. Here with, I have enclosed the following for your kind references.

Enclosures:

- Objectives of the study
- Structured Knowledge Questionnaire
- Criteria rating scale for tool validating
- Criteria rating scale for Lesson plan
- Content validity certificate

Thanking you,

Yours sincerely

(Ms.M.Prasanna)

SRI DEVARAJ URS COLLEGE OF NURSING,TAMAKA, KOLAR

STATEMENT OF THE PROBLEM:

"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."

OBJECTIVES OF THE STUDY:

1. To assess the knowledge regarding prevention of osteoporosis and its related complications among women working in selected schools and colleges by using structured knowledge questionnaire.

2. To assess the effectiveness of structured teaching programme regarding knowledge on prevention of osteoporosis and its related complications among women working in selected schools and colleges by comparing pre test and post test knowledge scores.

3. To find out the association between post test knowledge scores with selected socio-demographic variables like age, qualification, income, marital status, religion, residency (rural and urban), family history of osteoporosis, body mass index and exposure to mass media with in six months, on osteoporosis and its related complications.

ANNEXURE – E

BLUE PRINT

Blue Print of Structured Knowledge Questionnaire to Assess the Knowledge regarding osteoporosis

Osteoporosis	Knowledge		Comprehension		Problem solving		Total number of questions	Total percentage(%)
	Item No:	No of questions	Item No:	No of questions	Item No:	No of questions		
1.Questionnaire on general information	1, 2	2	3, 4	2	-	-	4	10%
2.Questionnaire on etiology and risk factors	8, 9,11	3	5,6,12,13, 14	5	7,10	2	10	25%
3.Questionnaire on types and signs and symptoms	16, 17,18	3	15,19	2	-	-	5	12.5%
4.Questionnaire on diagnostic tests and preventive measures	20,22,23, 26,29	5	21,24, 25,27, 28	5	30,31	2	12	30%
5.Questionnaire on management techniques along with its related complications and its management	33,34,35, 36,37,39, 40	7	38	1	32	1	9	22.5%
Total number of questions	20		15		5		40	
Total percentage	50%		37.5%		12.5%			100%

Any suggestions : ----------

Signature of the Expert

ANNEXURE – F

Criteria Rating Scale For Validating The Lesson Plan Conent

Respected Madam/Sir,

Kindly go through the content and rate the content in the appropriate column and give your expert opinion and suggestions in the remarks column if found not relevant or needs modification.

SI NO:	Content	Relevant	Not relevant	Needs modification	Remarks
1.	**Objectives:** -Comprehensive at the level of study participants knowledge -Realistic to achieve				
2.	**Content selection:** -Reflects the objective. -Comprehensive to the learning need for study participants. -Content provides adequate and accurate information on the selected topic.				
3.	**Organization of content:** -Logical sequence -Continuity -Integration				
4.	**Language:** -Simple -Clear and understandable				
5.	**Visual images used:** -Simple -Clear and understandable -Represents adequately the concept of the content				
6.	**Feasibility and practicability of the lesson plan:** -Permits learning -Useful to study participants				

Suggestions: _____

_____

Signature of the Expert:

ANNEXURE – G

CRITERIA RATING SCALE FOR VALIDATING THE STRUCTURED KNOWLEDGE QUESTIONNAIRE TO ASSESS THE KNOWLEDGE OF WOMEN WORKING IN SELECTED SCHOOLS AND COLLEGES REGARDING OSTEOPOROSIS.

Si No:	Item	Very Relevant	Relevant	Needs Modification	Not Relevant
1.	SECTION-A Socio demographic data:				
1.1					
1.2					
1.3					
1.4					
1.5					
1.6					
1.7					
1.8					
1.9					
2. I.	SECTION-B General information regarding osteoporosis				
2.1					
2.2					
2.3					
2.4					
II.	Etiology and risk factors of osteoporosis				
2.5					
2.6					
2.7					
2.8					
2.9					
2.10					
2.11					
2.12					
2.13					
2.14					

III.	Types and signs and symptoms of osteoporosis				
2.15					
2.16					
2.17					
2.18					
2.19					
IV.	Diagnostic tests and Preventive measures of osteoporosis				
2.20					
2.21					
2.22					
2.23					
2.24					
2.25					
2.26					
2.27					
2.28					
2.29					
2.30					
2.31					
V.	Management techniques along with its related complications and its management				
2.32					
2.33					
2.34					
2.35					
2.36					
2.37					
2.38					
2.39					
2.40					

Suggestions: _____

_____

Place: **Signature of the expert:**

Date:

ANNEXURE – H

CONTENT VALIDITY CERTIFICATE

I hereby certify that, I have validated the tool of Ms.M.Prasanna, II year M.sc(N) Medical Surgical Nursing Speciality student of Sri Devaraj Urs College of Nursing, Tamaka, Kolar, who is undertaking Research Study on ***"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."****as a partial fulfillment of Master of Science in Nursing Degree.*

Signature of the Expert

Name and Designation

Date:

Place:

ANNEXURE – I

LIST OF EXPERTS

1. DR.MRS. VIJAYALAKSHMI
   Principal
   Sri Devaraj Urs College of Nursing
   Kolar -563101

2. PROF.MILDREDRANI.
   P.G coordinator
   Sri Devaraj Urs College of Nursing
   Kolar -563101

3. MS. SUMATHI.
   Assistant professor
   Sri Devaraj Urs College of Nursing
   Kolar -563101

4. MRS.NAGARATHANAM.
   HOD of Medical Surgical Nursing
   SVIMS College of Nursing
   Tirupati-517502

5. MRS.NAGA NANDINI
   Assistant professor
   SVIMS College of Nursing
   Tirupati-517502

6. DR. MANOHAR
   HOD of Orthopaedics
   R.L.Jalappa Hospital
   Kolar -563101

7. DR. GUDI Professor
   R.L.Jalappa Hospital
   Kolar -563101

8. DR. MADHAVI REDDY
   Nutritionist
   R.L.Jalappa Hospital
   Kolar -563101

ANNEXURE – J

CERTIFICATE FROM STATISTICIAN

I hereby certify that I have provided statistical guidance in analysis to Ms. Prasanna, II Year M.Sc nursing student, for her research study titled as ***"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka."*** at Sri Devaraj Urs College of nursing, Tamaka, Kolar.

Signature of expert

S. RAVISHANKAR
Lect./Assit. Professor,
Dept. of Community Medicine,
Sri Devaraj Urs Medical College,
Tamaka, Kolar-563101

Name and Designation

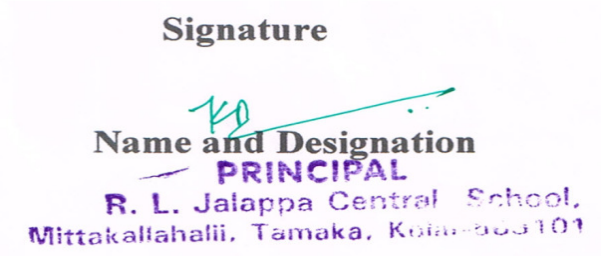
Place: 4/2/2014

Date: Kolar.

ANNEXURE – K

ENGLISH EDITING CERTIFICATE

I hereby certify that I have edited the content of dissertation titled as **"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka"** of **Ms. M. Prasanna**, II nd M.Sc. Nursing student, Sri Devaraj Urs College of Nursing, Tamaka, Kolar.



Date:

Place: Kolar

ANNEXURE –L

KANNADA TRANSLATION CERTIFICATE

I hereby certify that I have translated the content on Prevention of Osteoporosis and its related Complications knowledge questionnaire and lesson plan from English to kannada and retranslated to English, of **Ms. M. Prasanna**, II Year M.Sc Nursing, who is conducted a study titled **"A Study to Assess the Effectiveness of Structured Teaching Programme regarding Knowledge on Prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka"** at Sri Devaraj Urs College of Nursing.

A. Anthony Das.

Signature of the Translator

Name and Designation

A. ANTHONY DAS.
Assistant Master
St. Anne's High School,
Kolar.

St. Anne's High School
M. B. Road,
KOLAR-563101

Date:

Place: Kolar.

ANNEXURE- M_1

CONSENT LETTER

Dear participants

I Ms.Prasanna.M, II year Msc Nursing student of Sri Devaraj Urs College of Nursing Tamaka, Kolar, conducting a research study to assess the Effectiveness of Structured Teaching Programme regarding Knowledge on prevention of Osteoporosis and its related Complications among Women Working in Selected Schools and Colleges of Kolar, Karnataka.

The study will help you to gain comprehensive knowledge on prevention of Osteoporosis and its related Complications. You will be asked about your demographic information and a questionnaire will be asked to assess the knowledge regarding prevention of Osteoporosis and its related Complications . I would like you to be as a participant in my study. The study will not cause any harm to you. The information given by you will be kept confidential and only used for the study purpose. Hope you will co-operate with me for the fulfillment of the research project.

Thank you in advance for your cooperation. Kindly sign the consent form given below.

Signature of the investigator

I have read the procedure described above and I voluntarily agree to participate in the research study.

Signature of the participant

ANNEXURE - M_2

ಸಮ್ಮತಿ ಪತ್ರ

ಪ್ರೀತಿಯ ಭಾಗಿಗಳೇ,

ಶ್ರೀ ದೇವರಾಜಅರಸು ನರ್ಸಿಂಗ್ ಕಾಲೇಜು, ಟಮಕ, ಕೋಲಾರ, ಇಲ್ಲಿಎರಡನೇ ವರ್ಷದ ಬಿ.ಎಸ್.ಸಿ., ನರ್ಸಿಂಗ್ ಓದುತ್ತಿರುವ ಪ್ರಸನ್ನ.ಎಂ. ಆದ ನಾನು ಕೋಲಾರದಆಯ್ದ ಶಾಲಾ – ಕಾಲೇಜುಗಳಲ್ಲಿ ದುಡಿಯುತ್ತಿರುವ ಹೆಂಗಸರಲ್ಲಿಕಂಡುಬರುವ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಮತ್ತುಅದಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟ ತೊಂದರೆಗಳ ಬಗ್ಗೆ ರಚನಾತ್ಮಕತರಬೇತಿಕಾರ್ಯಕ್ರಮದ ಪರಿಣಾಮಗಳನ್ನು ಅಂದಾಜು ಮಾಡಲು ನಡೆಸುತ್ತಿರುವ ಸಂಶೋಧನಾಅಭ್ಯಾಸ.

ಈ ಅಭ್ಯಾಸವು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಮತ್ತುಅದಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟ ತೊಂದರೆಗಳನ್ನು ತಡೆಗಟ್ಟುವಲ್ಲಿ ವಿಸ್ತಾರವಾದಜ್ಞಾನವನ್ನು ಪಡೆದುಕೊಳ್ಳುವಲ್ಲಿ ಸಹಾಯಕವಾಗುವುದು.ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಮತ್ತುಅದಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟ ತೊಂದರೆಗಳನ್ನು ತಡೆಗಟ್ಟುವಲ್ಲಿ ನಿಮಗಿರುವಜನಸಂಖ್ಯಾ ಮಾಹಿತಿ ಮತ್ತುಒಂದು ಪ್ರಶ್ನಾವಳಿಯನ್ನು ಕೊಡುವುದರ ಮೂಲಕ ಸಿದ್ಧಪಡಿಸಲಾಗಿದೆ.ಈ ನನ್ನಅಭ್ಯಾಸದಲ್ಲಿ ನೀವು ಭಾಗಿಯಾಗಲುಇಚ್ಛಿಸುತ್ತೇನೆ. ಈ ಅಭ್ಯಾಸದಿಂದ ನಿಮಗೆ ಯಾವುದೇ ರೀತಿಯ ತೊಂದರೆಉಂಟಾಗದು.ನೀವು ಕೊಡುವ ಮಾಹಿತಿಗಳನ್ನು ಗೌಪ್ಯವಾಗಿಡಲಾಗುವುದು ಹಾಗೂ ನಮ್ಮಅಭ್ಯಾಸಕ್ಕಾಗಿ ಮಾತ್ರಇದನ್ನುಉಪಯೋಗಿಸಲಾಗುವುದು.ನೀವು ಈ ನನ್ನ ಸಂಶೋಧನಾಅಭ್ಯಾಸದಲ್ಲಿ ನನ್ನಜೊತೆ ಸಹಕರಿಸುವಿರೆಂದು ನಂಬುತ್ತೇನೆ.

ಈ ನಿಮ್ಮ ಸಹಕಾರಕ್ಕೆ ನನ್ನ ಪೂರ್ವ ಕೃತಜ್ಞತೆಗಳು.ದಯವಿಟ್ಟು ಈ ನಿಮ್ಮಒಪ್ಪಿಗೆಗೆ ಕೆಳಗೆ ಸಹಿ ಮಾಡಿರಿ.

ಸಂಶೋಧಕರ ಸಹಿ

ನಾನು ಈ ಮೇಲೆ ತಿಳಿಸಿದ ಕ್ರಮಗಳನ್ನು ಓದಿ ಸಂಶೋಧನಾಕಲಿಕೆಯಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸ್ವಇಚ್ಛೆಯಿಂದ ಪೂರ್ಣವಾಗಿ ಸಮ್ಮತಿಸಿರುತ್ತೇನೆ.

ಭಾಗವಹಿಸುವವರ ಸಹಿ

ANNEXURE – N_1

STRUCTURED KNOWLEDGE QUESTIONNAIRE TO ASSESS THE KNOWLEDGE OF WOMEN WORKING IN SELECTED SCHOOLS AND COLLEGES REGARDING OSTEOPOROSIS

The knowledge questionnaire consists of two sections

Section: A-consists of socio demographic data

Section: B-consists of structured knowledge questionnaire

Dear participant,

I request you to answer the following questions regarding Osteoporosis with the most appropriate responses. Each correct answer carries one mark. Your answer will be kept confidential.

SECTION-A

SOCIO-DEMOGRAPHIC DATA

Code no: ……....

1. Age in years;
   a. 20-30 years [ ]
   b. 31-40 years [ ]
   c. 41-50 years [ ]
   d. 50-60 years [ ]
2. Qualification;
   a. Primary education [ ]
   b. Secondary education [ ]
   c. Higher secondary education [ ]
   d. Professional education [ ]
3. Monthly income in Rs/month;
   a. Less than 5000 [ ]
   b. 5001-10,000 [ ]
   c. 10,001-15,000 [ ]
   d. 15,001 and above [ ]

4. Marital status;

a. Single [ ]

b. Married [ ]

c. Widow [ ]

d. Divorcee/ Separated [ ]

5. Religion;

a. Hindu [ ]

b. Christian [ ]

c. Muslim [ ]

d. Others [ ]

6. Residential areas

a. Rural [ ]

b. Urban [ ]

7. Family history of osteoporosis;

a. Yes [ ]

b. No [ ]

8. Body mass index;

a. Below 18 kg/m^2 [ ]

b. Between 18.5 to 24.9 kg/m^2 [ ]

c. Between 25 to 29.9 kg/m^2 [ ]

d. Above 30 kg/m^2 [ ]

9. Exposure to mass media within six months, on osteoporosis and its related Complications;

a. Yes [ ]

b. No [ ]

Questionnaire are organized under the following sections:-

I. General information regarding osteoporosis

II. Etiology and risk factors of osteoporosis

III. Types and Signs and symptoms of osteoporosis

IV. Diagnostic tests and Preventive measures of osteoporosis

V. Management techniques along with its related complications and its management

1. Questionnaire on general information regarding osteoporosis:

1. Osteoporosis is a disease affecting;

a. Bones [ ]
b. Nerves [ ]
c. Teeth [ ]
d. Skin [ ]

2. Osteoporosis is more common in;

a. Men [ ]
b. Women [ ]
c. Children [ ]
d. Don't know [ ]

3. Osteoporosis is best described as;

a. High bone mass [ ]
b. Low bone mass [ ]
c. Inflammation of joints [ ]
d. Growth of tumor inside bones [ ]

4. Osteoporosis and porous bone are;

a. Different names for same disease [ ]
b. Differ only in parts of body affected [ ]
c. Different conditions with few similarities [ ]
d. Same diseases affecting nerves [ ]

II. Questionnaire on etiology and risk factors of osteoporosis

5. A women begins to lose bone mass;

a. During monthly menstruation [ ]
b. After child birth [ ]
c. After menopause [ ]
d. During pregnancy [ ]

6. Early menopause is a risk factor for osteoporosis because of;

a. Lack of sex hormones [ ]
b. Psychological stress [ ]
c. Lack of sexual activity [ ]
d. Lack of monthly menstruation [ ]

7. A women with a family history of osteoporosis;

a. Will not develop osteoporosis [ ]
b. Sometimes will be affected with osteoporosis [ ]
c. Will surely develop osteoporosis [ ]
d. Don't know [ ]

8. The dietary deficiency of which of the following nutrients can lead to osteoporosis;

a. Iron [ ]
b. Zinc [ ]
c. Protein [ ]
d. Calcium [ ]

9. An excessive intake of which of the following is most likely to cause osteoporosis;

a. Multivitamins [ ]
b. Green leafy vegetables [ ]
c. Alcohol [ ]
d. Milk [ ]

10. Osteoporosis is most likely to develop in people who;

a. Do not exercise at all [ ]
b. Exercise occasionally [ ]
c. Exercise regularly [ ]
d. Don't know [ ]

11. Osteoporosis is most likely to develop in people who consume drugs like;

a. Antacid [ ]
b. Seizure medications [ ]
c. Corticosteroids [ ]
d. All of the above [ ]

12. Exercise dieting and low calcium diet;

a. Can cause osteoporosis [ ]
b. Is good for bones [ ]
c. Has no effect on bones [ ]
d. Cannot cause osteoporosis [ ]

13. Which of the following can contribute to the development of osteoporosis;

a. Small thin women [ ]
b. Small obese women [ ]
c. Big thin women [ ]
d. Big obese women [ ]

14. Which of the **least** likely cause of osteoporosis;

a. Genetic factors [ ]
b. Nutritional factors [ ]
c. Lifestyle factors [ ]
d. Environmental factors [ ]

III. Types and Signs and symptoms of osteoporosis

15. The most common type of osteoporosis;

a. Primary osteoporosis [ ]
b. Secondary osteoporosis [ ]
c. Primary and secondary osteoporosis [ ]
d. None of the above [ ]

16. The most common age of onset of osteoporosis;

a. 35-45 years [ ]
b. 45-55 years [ ]
c. 55-65 years [ ]
d. 60-70 years [ ]

17. Which of the following complaint is a most common feature of osteoporosis;

a. Headache [ ]
b. Low back pain [ ]
c. Vomiting [ ]
d. Chest pain [ ]

18. A frequent complication resulting from osteoporosis;

a. Fracture [ ]
b. Mental deterioration [ ]
c. Hypoglycemia [ ]
d. Anemia [ ]

19. Which of the following is **not** a common complaint with osteoporosis;

a. Loss of weight [ ]
b. Back pain [ ]
c. Abdominal pain [ ]
d. Swelling of feet [ ]

IV. Diagnostic tests and Preventive measures of osteoporosis

20. Which of the following test is more reliable for detection of osteoporosis;

a. Blood test [ ]
b. Bone density test [ ]
c. Urine test [ ]
d. Sputum test [ ]

21. Which of the following groups should definitely undergo a diagnostic test for detecting osteoporosis;

a. Persons suffering from severe headache [ ]
b. Persons suffering from severe heart diseases [ ]
c. Persons suffering from diabetes [ ]
d. Women around the age of menopause [ ]

22. Osteoporosis is;

a. Preventable [ ]
b. Not preventable [ ]
c. To some extent can be prevented [ ]
d. Communicable [ ]

23. Which of the following food item is highly rich in calcium;

a. Fried foods [ ]
b. Milk and milk products [ ]
c. Fruits [ ]
d. Meat [ ]

24. Which of the following food item is highly rich in vitamin –D rich food;

a. Egg yolk [ ]
b. Salt water fish [ ]
c. Liver [ ]
d. All of the above [ ]

25. High caffeine intake should be advised to avoid;

a. Completely [ ]
b. In the morning time [ ]
c. In the afternoon time [ ]
d. In the evening time [ ]

26. A diet which has to be avoided to prevent osteoporosis;

a. Carbohydrate diet [ ]
b. Protein diet [ ]
c. Fat diet [ ]
d. Calcium diet [ ]

27. Which of the following exercise is to be encouraged for prevention of osteoporosis;

a. Walking [ ]
b. Jumping [ ]
c. Running [ ]
d. Skipping [ ]

28. Weight bearing exercises help to;

a. Build bone mass [ ]
b. Maintain bone mass [ ]
c. Build and maintain bone mass [ ]
d. Build and decrease bone mass [ ]

29. Exercise should be done;

a. Once in 2 weeks [ ]
b. Once in a week [ ]
c. Once in 2 days [ ]
d. Every day [ ]

30. “Post menopausal women with history of fracture and loss of height” is the sign for early detection of;

a. Anemia [ ]
b. Hypertension [ ]
c. Osteoporosis [ ]
d. Diabetes mellitus [ ]

31.Which of the following measures help elderly persons to prevent the risk of Falls;

a. Wearing a loose fitting slipper [ ]
b. Providing adequate lighting in bedroom, bathroom and corridor [ ]
c. Keeping kitchen items at a place which is not easily accessible by anyone [ ]
d. Using a high raised bed [ ]

V. Management techniques along with its related complications and its management

32. Which of the following can contribute in managing the osteoporosis;

a. Calcium supplements and diet high in calcium [ ]
b. Vitamin-D supplements and exercise program [ ]
c. Lifestyle modification and estrogen replacement therapy [ ]
d. All of the above [ ]

33. A balanced diet including adequate calories and nutrients help to maintain adequate;

a. Calcium [ ]
b. Potassium [ ]
c. Magnesium [ ]
d. Sodium [ ]

34. The recommended daily intake of calcium for women aged 20-50;

a. 100mg/day [ ]
b. 250mg/day [ ]
c. 500mg/day [ ]
d. 1000mg/day [ ]

35. Natural supplements of vitamin-D include;

a. Diet [ ]
b. Sunshine [ ]
c. Skin synthesis [ ]
d. All of the above [ ]

36. Which of the following diet will give high calcium amount;

a. Sardine fish [ ]

b. Egg [ ]

c. Cheese [ ]

d. Yogurt [ ]

37. The recommended daily intake of vitamin-D supplements for older adults is;

a. 400-800 IU [ ]

b. 300-700 IU [ ]

c. 200-600 IU [ ]

d. 100-500 IU [ ]

38. The exercise program will help to increase;

a. Muscle strength [ ]

b. Co-ordination and balance [ ]

c. Muscle strength and Co-ordination and balance [ ]

d. None of the above [ ]

39. Which of the following medications are used for the treatment of osteoporosis;

a. Insulin [ ]

b. Steroids [ ]

c. Estrogen [ ]

d. Pain killers [ ]

40. The common complication of osteoporosis is “Fracture of hip” that should be managed surgically by using;

a. Injection of bone cement into fractured hip [ ]

b. Fixed with bone cement [ ]

c. Fixed with screws [ ]

d. Removal of hip [ ]

ANSWER KEY

SECTION – B

SI.NO	ANSWER	SI.NO	ANSWER
1	a	21	d
2	b	22	a
3	b	23	b
4	a	24	d
5	c	25	a
6	a	26	b
7	c	27	a
8	d	28	c
9	c	29	d
10	a	30	c
11	d	31	b
12	a	32	d
13	a	33	a
14	d	34	d
15	a	35	d
16	c	36	d
17	b	37	a
18	a	38	c
19	c	39	c
20	b	40	c

ANNEXURE – N_2

ಆಯ್ದ ಶಾಲೆಗಳಲ್ಲಿ ಹಾಗೂ ಕಾಲೇಜುಗಳಲ್ಲಿ ಕೆಲಸ ಮಾಡುತ್ತಿರುವ ಮಹಿಳೆಯರ ಆಸ್ಟಿಯೋಪೊರೋಸಿಸ್‌ನ ಬಗೆಗಿನ ಜ್ಞಾನವನ್ನು ಪರೀಕ್ಷಿಸಲು ಸಿದ್ಧಪಡಿಸಿರುವ ರಚನಾತ್ಮಕ ತಿಳುವಳಿಕೆಯ ಪ್ರಶ್ನೆಮಾಲಿಕೆ.

ಈ ತಿಳುವಳಿಕೆಯ ಪ್ರಶ್ನಾವಳಿಯು ಎರಡು ಭಾಗಗಳನ್ನು ಒಳಗೊಂಡಿರುತ್ತದೆ.

ಎ. ಮೊದಲನೆಯ ಭಾಗ:– ಸಾಮಾಜಿಕಜನಸಂಖ್ಯಾಶಾಸ್ತ್ರದ ಮಾಹಿತಿ.

ಬಿ. ಎರಡನೆಯ ಭಾಗ:– ರಚನಾತ್ಮಕ ತಿಳುವಳಿಕೆಯ ಪ್ರಶ್ನೆಮಾಲಿಕೆ.

ಪ್ರಿಯ – ಭಾಗವಹಿಸುವವರೇ,

ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗೆಗಿನ ಈ ಕೆಳಗಿನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಅತೀ ಸಂಭವನೀಯ ಉತ್ತರಗಳನ್ನು ಆಯ್ಕೆ ಮಾಡುವಂತೆ ಕೇಳಿಕೊಳ್ಳುತ್ತೇನೆ. ಪ್ರತೀ ಸರಿಯಾದ ಉತ್ತರಕ್ಕೆ ಒಂದು ಅಂಕ.ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಗೌಪ್ಯವಾಗಿಡಲಾಗುತ್ತದೆ.

<u>ಎ ವಿಭಾಗ</u>

ಸಂಕೇತದ ಸಂಖ್ಯೆ ----------

1. ವಯಸ್ಸು ಈ ವರ್ಷಗಳಲ್ಲಿ ;
   a. 20 – 30 ವರ್ಷಗಳು [ ]
   b. 31 – 40 ವರ್ಷಗಳು [ ]
   c. 41 – 50 ವರ್ಷಗಳು [ ]
   d. 50 – 60 ವರ್ಷಗಳು [ ]
2. ವಿದ್ಯಾಭ್ಯಾಸ ;
   a. ಪ್ರಾಥಮಿಕ ಶಿಕ್ಷಣ [ ]
   b. ಮಾಧ್ಯಮಿಕ ಶಿಕ್ಷಣ [ ]
   c. ಪ್ರೌಢಶಿಕ್ಷಣ [ ]
   d. ಉದ್ಯೋಗಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟ ವಿದ್ಯಾಭ್ಯಾಸ [ ]
3. ತಿಂಗಳ ವರಮಾನರೂ/ತಿಂಗಳಿಗೆ
   a. 5000ಕ್ಕಿಂತ ಕಡಿಮೆ [ ]
   b. 5001 ರಿಂದ 10,000 [ ]
   c. 10001 ರಿಂದ 15,000 [ ]
   d. 15001 ಮತ್ತುಅದಕ್ಕೆ ಮೇಲ್ಪಟ್ಟು [ ]
4. ದಾಂಪತ್ಯದ ಸ್ಥಿತಿ
   a. ಅವಿವಾಹಿತ [ ]
   b. ವಿವಾಹಿತ [ ]
   c. ವಿಧವೆ [ ]
   d. ವಿವಾಹವಿಚ್ಛೇದಿತ/ಬೇರ್ಪಟ್ಟಿದೆ [ ]

೫. ಧರ್ಮ

a. ಹಿಂದು [ ]

b. ಕ್ರೈಸ್ತ [ ]

c. ಮುಸಲ್ಮಾನ [ ]

d. ಇತರೆ [ ]

೬. ವಾಸಿಸುತ್ತಿರುವ ಸ್ಥಳ

a. ಪಟ್ಟಣ [ ]

b. ಹಳ್ಳಿ [ ]

7. ಆಸ್ಟಿಯೊಪೋರೋಸಿಸ್ ಕುಟುಂಬದ ಹಿನ್ನಲೆ

a. ಇದೆ [ ]

b. ಇಲ್ಲ [ ]

೮. ದೇಹದ ಸಾಂದ್ರತೆಯ ಸೂಚಿಕೆ

a. 18ಕ್ಕಿಂತ ಕೆಳಗೆ [ ]

b. 18.5 ರಿಂದ 24.9 kg/m^2ಮಧ್ಯೆ [ ]

c. 25 ರಿಂದ 29.9 kg/m^2ಮಧ್ಯೆ [ ]

d. 30 kg/m^2ಮೇಲ್ಪಟ್ಟು [ ]

೯. ಆಸ್ಟಿಯೋಪೊರೋಸಿಸ್ ಮತ್ತುಅದಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಗೊಂದಲದ ಬಗ್ಗೆ ಮಾಧ್ಯಮಕ್ಕೆಆರು ತಿಂಗಳ ಒಳಗೆ ಬಯಲು ಮಾಡಿರುವ ಬಗ್ಗೆ.

a. ಹೌದು [ ]

b. ಇಲ್ಲ [ ]

ಪ್ರಶ್ನಾವಳಿ:

1. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಕಾಯಿಲೆ ಬರುವುದು

a. ಮೂಳೆಗಳಿಗೆ [ ]

b. ನರಗಳಿಗೆ [ ]

c. ಹಲ್ಲುಗಳಿಗೆ [ ]

d. ಚರ್ಮಕ್ಕೆ [ ]

2. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಸಾಮಾನ್ಯವಾಗಿಕಂಡುಬರುವುದು

a. ಗಂಡಸರಲ್ಲಿ [ ]

b. ಹೆಂಗಸರಲ್ಲಿ [ ]

c. ಮಕ್ಕಳಲ್ಲಿ [ ]

d. ಗೊತ್ತಿಲ್ಲ [ ]

೩. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಅನ್ನು ಅತ್ಯುತ್ತಮವಾಗಿ ಹೀಗೆ ವಿವರಿಸಬಹುದು.

a. ಮೂಳೆಯ ಹೆಚ್ಚಿನ ಸಾಂದ್ರತೆ [ ]

b. ಮೂಳೆಯ ಕಡಿಮೆ ಸಾಂದ್ರತೆ [ ]

c. ಕೀಲುಗಳಲ್ಲಿ ಊತ [ ]

d. ಮೂಳೆಗಳಲ್ಲಿ ಗಡ್ಡೆ ಬೆಳೆಯುವುದು [ ]

4. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಮತ್ತುರಂಧ್ರಯುಕ್ತವಾದ ಮೂಳೆ. ಇವು

a. ಒಂದೇಕಾಯಿಲೆಯ ವಿವಿಧ ಹೆಸರುಗಳು [ ]

b. ದೇಹದ ಅಂಗಗಳ ಸೋಂಕಿನ ವ್ಯತ್ಯಾಸ ಮಾತ್ರ [ ]

c. ವಿವಿಧ ಪರಿಸ್ಥಿತಿ ಜೊತೆಗೆ ಕೆಲವು ಹೋಲಿಕೆ [ ]

d. ನರಗಳಿಗೆ ಬರುವಒಂದೇ ರೀತಿಯ ಕಾಯಿಲೆಗಳು [ ]

5. ಒಂದು ಹೆಂಗಸು ತನ್ನ ಮೂಳೆಯ ಸಾಂದ್ರತೆಯನ್ನು ಕಳೆದುಕೊಳ್ಳುವುದು.

a. ತಿಂಗಳ ಮುಟ್ಟಿನ ಸಮಯದಲ್ಲಿ [ ]

b. ಮಗುವಿಗೆ ಜನ್ಮ ನೀಡಿದಾಗ [ ]

c. ಮುಟ್ಟುಕೊನೆಗೊಂಡಾಗ [ ]

d. ಗರ್ಭ ಧರಿಸಿದಾಗ [ ]

6. ಶೀಘ್ರವಾಗಿ ಮುಟ್ಟು ಕೊನೆಗೊಳ್ಳುವುದು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಗುರಿ ಮಾಡುವುದುಏಕೆಂದರೆ

a. ಲಿಂಗ ಕಿಣ್ವಗಳ ಕೊರತೆ [ ]

b. ಮನೋವೈಜ್ಞಾನಿಕಒತ್ತಡ [ ]

c. ಲೈಂಗಿಕ ಕ್ರಿಯೆಯಲ್ಲಿಕೊರತೆ [ ]

d. ತಿಂಗಳ ಮುಟ್ಟಿನಲ್ಲಿಕೊರತೆ [ ]

7. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ಕುಟುಂಬ ಹಿನ್ನಲೆಇರುವ ಹೆಂಗಸು

a. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಗುರಿಯಾಗುವುದಿಲ್ಲ [ ]

b. ಹಲವು ಸಂದರ್ಭಗಳಲ್ಲಿ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ಗೆ ಗುರಿಯಾಗಬಹುದು [ ]

c. ಖಂಡಿತ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಗುರಿಯಾಗುತ್ತಾಳೆ [ ]

d. ಗೊತ್ತಿಲ್ಲ [ ]

8. ಈ ಕೆಳಗಿನ ಯಾವ ಪೋಷಕಾಂಶದಕೊರತೆ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ದಾರಿಯಾಗುತ್ತದೆ.

a. ಕಬ್ಬಿಣ [ ]

b. ಸತು [ ]

c. ಪ್ರೋಟೀನ್ [ ]

d. ಕ್ಯಾಲ್ಸಿಯಂ [ ]

9. ಈ ಕೆಳಗಿನ ಯಾವುದರಅತಿ ಹೆಚ್ಚಿನ ಸೇವನೆಯು ಮುಖ್ಯವಾಗಿ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ದಾರಿಯಾಗುತ್ತದೆ.

a. ಬಹು ವಿಟಮಿನ್‌ಗಳು [ ]

b. ಹಸಿರು ತರಕಾರಿಗಳು [ ]

c. ಆಲ್ಕೋಹಾಲ್ [ ]

d. ಹಾಲು [ ]

10. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಹುವಾಗಿ ಕಂಡುಬರುವುದು ಈ ಕೆಳಗಿನವರಲ್ಲಿ

a. ವ್ಯಾಯಾಮವನ್ನೇ ಮಾಡದಿರುವವರಲ್ಲಿ [ ]

b. ಅನಿಯಮಿತವಾಗಿ ವ್ಯಾಯಾಮ ಮಾಡುವವರಲ್ಲಿ [ ]

c. ಸತತವಾಗಿ ವ್ಯಾಯಾಮ ಮಾಡುವವರಲ್ಲಿ [ ]

d. ಗೊತ್ತಿಲ್ಲ [ ]

11. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಹು ಸಾಮಾನ್ಯವಾಗಿಕಂಡುಬರುವುದು ಈ ಕೆಳಗಿನ ಮಾದಕ ವಸ್ತುಗಳನ್ನು ಸೇವಿಸುವವರಲ್ಲಿ

a. ಪ್ರತ್ಯಾಮ್ಲ [ ]

b. ಸ್ವಾಧೀನಪಡಿಸಿಕೊಂಡ ಔಷಧದಿಂದ [ ]

c. ಕಾರ್ಟಿಕೋಸ್ಟೀರಾಯ್ಡ್ [ ]

d. ಮೇಲಿನವುಗಳೆಲ್ಲ [ ]

12. ವ್ಯಾಯಾಮ ಮತ್ತುಕಡಿಮೆಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆ

a. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ್ನು ಉಂಟು ಮಾಡಬಹುದು [ ]

b. ಮೂಳೆಗಳಿಗೆ ಒಳ್ಳೆಯದು [ ]

c. ಮೂಳೆಗಳ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರದು [ ]

d. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಅನ್ನು ಉಂಟುಮಾಡದು [ ]

13. ಈ ಕೆಳಗಿನ ಯಾವುದು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ವೃದ್ಧಿಗೆ ಕೊಡುಗೆಯಾಗಬಹುದು

a. ಗಿಡ್ಡ ತೆಳುವಾದ ಹೆಂಗಸು [ ]

b. ಗಿಡ್ಡದಢೂತಿ ಹೆಂಗಸು [ ]

c. ಎತ್ತರ ತೆಳುವಾದ ಹೆಂಗಸು [ ]

d. ಎತ್ತರದಢೂತಿ ಹೆಂಗಸು [ ]

14. ಈ ಕೆಳಗಿನ ಯಾವುದು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಅತೀ ಕನಿಷ್ಠ ಕಾರಣವಾಗಬಹುದು

a. ಅನುವಂಶಿಕ ಸಂಗತಿ [ ]

b. ಪೋಷಕಾಂಗಗಳ ಸಂಗತಿ [ ]

c. ಜೀವನ ಶೈಲಿಯ ಸಂಗತಿ [ ]

d. ಪರಿಸರದ ಸಂಗತಿ [ ]

15. ಬಹು ಸಾಮಾನ್ಯವಾದ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ವಿಧ

a. ಪ್ರಾಥಮಿಕ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ [ ]

b. ಮಾಧ್ಯಮಿಕ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ [ ]

c. ಪ್ರಾಥಮಿಕ ಮತ್ತು ಮಾಧ್ಯಮಿಕ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ [ ]

d. ಮೇಲಿನ ಯಾವುದೂಅಲ್ಲ [ ]

16. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಪ್ರಾರಂಭಕ್ಕೆ ಸಾಮಾನ್ಯವಾದಆಯಸ್ಸು

a. 35 – 45 ವರ್ಷಗಳು [ ]

b. 45 – 55 ವರ್ಷಗಳು [ ]

c. 55 – 65 ವರ್ಷಗಳು [ ]

d. 60 – 70 ವರ್ಷಗಳು [ ]

17. ಈ ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಯಾವುದು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಅತೀ ಸಾಮಾನ್ಯರೋಗ ಲಕ್ಷಣ

a. ತಲೆನೋವು [ ]

b. ಕಡಿಮೆ ಬೆನ್ನು ನೋವು [ ]

c. ವಾಂತಿಯಾಗುವುದು [ ]

d. ಎದೆನೋವು [ ]

18. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನಿಂದ ಪದೇ ಪದೇ ಬರುವರೋಗ ಲಕ್ಷಣ

a. ಮೂಳೆಮುರಿತ [ ]

b. ಮಾನಸಿಕ ದೌರ್ಬಲ್ಯ [ ]

c. ಹೈಪೊಗ್ಲೈಸೀಮಿಯ [ ]

d. ರಕ್ತ ಹೀನತೆ [ ]

19. ಈ ಕೆಳಗಿನ ಯಾವುದು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಸಾಮಾನ್ಯ ಲಕ್ಷಣವಲ್ಲ

a. ತೂಕ ಕಳೆದುಕೊಳ್ಳುವುದು [ ]

b. ಬೆನ್ನು ನೋವು [ ]

c. ಹೊಟ್ಟೆ ನೋವು [ ]

d. ಪಾದಗಳಲ್ಲಿನ ಊತ [ ]

20. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಈ ಕೆಳಗಿನ ಯಾವ ಪರೀಕ್ಷೆ ಬಹಳ ನಂಬಲರ್ಹವಾದ ಪರೀಕ್ಷೆ

a. ರಕ್ತ ಪರೀಕ್ಷೆ [ ]

b. ಮೂಳೆಯ ಸಾಂದ್ರತೆಯ ಪರೀಕ್ಷೆ [ ]

c. ಮೂತ್ರ ಪರೀಕ್ಷೆ [ ]

d. ಎಂಜಲು ಪರೀಕ್ಷೆ [ ]

21. ಈ ಕೆಳಗಿನ ಯಾವ ಗುಂಪಿನ ಜನರುಖಂಡಿತವಾಗಿ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಪತ್ತೆ ಹಚ್ಚುವ ಪರೀಕ್ಷೆ ಮಾಡಿಸಿಕೊಳ್ಳಬೇಕು.

a. ಅತಿಯಾದತಲೆನೋವುಹೊಂದಿರುವವರು [ ]

b. ಅತಿಯಾದ ಹೃದಯದರೋಗದತೊಂದರೆಇರುವವರು [ ]

c. ಸಕ್ಕರೆಕಾಯಿಲೆಯನ್ನು ಹೊಂದಿರುವವರು [ ]

d. ಮುಟ್ಟು ನಿಲ್ಲುವ ಸಮಯದಲ್ಲಿರುವ ಹೆಂಗಸರು [ ]

22. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್

a. ತಡೆಯಬಹುದಾದದ್ದು [ ]

b. ತಡೆಯಲಾಗದ್ದು [ ]

c. ಸ್ವಲ್ಪ ಮಟ್ಟಗೆತಡೆಯಬಹುದಾದದ್ದು [ ]

d. ಪಸರಿಸುವಂತದ್ದು [ ]

23. ಈ ಕೆಳಗಿನ ಯಾವಆಹಾರದಲ್ಲಿಕ್ಯಾಲ್ಸಿಯಂ ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿದೆ

a. ಕರಿದಆಹಾರ ಪದಾರ್ಥಗಳು [ ]

b. ಹಾಲು ಮತ್ತು ಹಾಲಿನ ಉತ್ಪನ್ನಗಳು [ ]

c. ಹಲ್ಲುಗಳು [ ]

d. ಮಾಂಸ [ ]

24. ಈ ಕೆಳಗಿನ ಯಾವಆಹಾರ ಪದಾರ್ಥವು ಅತೀ ಹೆಚ್ಚಿನ ವಿಟಮಿನ್ 'ಡಿ' ಯನ್ನು ಹೊಂದಿದೆ.

a. ಮೊಟ್ಟೆಯ ಹಳದಿ ಭಾಗ [ ]

b. ಉಪ್ಪು ನೀರಿನ ಮೀನು [ ]

c. ಪಿತ್ತಜನಕಾಂಗ [ ]

d. ಮೇಲಿನವುಗಳೆಲ್ಲ [ ]

25. ಅತಿಯಾದಕೆಫೀನ್ ಸೇವನೆಯನ್ನು ಸಲಹೆ ಮಾಡುವುದು

a. ಪೂರ್ತಿಯಾಗಿ [ ]

b. ಬೆಳಗಿನ ಸಮಯದಲ್ಲಿ [ ]

c. ಮಧ್ಯಾಹ್ನದ ಸಮಯದಲ್ಲಿ [ ]

d. ಸಂಜೆಯ ಸಮಯದಲ್ಲಿ [ ]

26. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ತಡೆಯಲುಈ ಆಹಾರ ಸೇವನೆ ತಡೆಯಬೇಕು.

a. ಪಿಷ್ಟದ ಸೇವನೆ [ ]

b. ಪ್ರೊಟೀನ್ ಸೇವನೆ [ ]

c. ಕೊಬ್ಬಿನ ಸೇವನೆ [ ]

d. ಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆ [ ]

27. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಅನ್ನುತಡೆಯಲು ಈ ಕೆಳಗಿನ ವ್ಯಾಯಾಮವನ್ನು ಪ್ರೋತ್ಸಾಹಿಸಬಹುದು

a. ನಡೆಯುವುದು [ ]

b. ನೆಗೆಯುವುದು [ ]

c. ಓಡುವುದು [ ]

d. ಹಗ್ಗದೊಂದಿಗೆ ಹಾಕುವುದು [ ]

28. ತೂಕ ಸ್ಥಾಪಿಸುವ ವ್ಯಾಯಾಮ

a. ಮೂಳೆಯ ಸಾಂದ್ರತೆಯನ್ನುಂಟು ಮಾಡುತ್ತದೆ. [ ]

b. ಮೂಳೆಯ ಸಾಂದ್ರತೆಯನ್ನುಕಾಪಾಡುತ್ತದೆ. [ ]

c. ಮೂಳೆಯ ಸಾಂದ್ರತೆಯನ್ನುಉಂಟು ಮಾಡಿಕಾಪಾಡುತ್ತದೆ. [ ]

d. ಮೂಳೆಯ ಸಾಂದ್ರತೆಯನ್ನುಂಟುಮಾಡಿಕಡಿಮೆ ಮಾಡುತ್ತದೆ. [ ]

29. ವ್ಯಾಯಾಮವನ್ನು ಮಾಡಬೇಕಾದದ್ದು

a. ವಾರಕ್ಕೆಒಂದು ಸಲ [ ]

b. ವಾರಕ್ಕೆಎರಡು ಸಲ [ ]

c. ಎರಡು ದಿನಗಳಗೊಮ್ಮೆ [ ]

d. ಪ್ರತಿ ದಿನ [ ]

30. ಮೂಳೆ ಮುರಿತ ಮತ್ತುತೂಕ ಕಳೆದುಕೊಳ್ಳುವ ಚಾರಿತ್ರಿಕ ಹಿನ್ನಲೆಯುಳ್ಳ ಮುಂದಿನ ಮುಟ್ಟು ನಿಲ್ಲುವ ಹೆಂಗಸರಲ್ಲಿಚಿಹ್ನೆಯು

a. ರಕ್ತಹೀನತೆ [ ]

b. ರಕ್ತದೊತ್ತಡ [ ]

c. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ [ ]

d. ಸಕ್ಕರೆ ಕಾಯಿಲೆ [ ]

31. ಈ ಕೆಳಗಿನ ಯಾವ ಪರಿಣಾಮ ವಯಸ್ಸಾದವರಲ್ಲಿತೊಂದರೆತಡೆಯುವ ಪರಿಮಾಣಕಡಿಮೆಯಾಗುತ್ತದೆ

a. ಬಿಗಿಯಿಲ್ಲದಚಪ್ಪಲಿ ಧರಿಸುವಿಕೆ [ ]

b. ಮಲಗುವ ಕೋಣೆ ಮತ್ತು ಸ್ನಾನಗೃಹ ಮತ್ತು ಮೊಗಸಾಲೆಯಲ್ಲಿ ಸಾಕಷ್ಟು ದೀಪ ವ್ಯವಸ್ಥೆ [ ]

c. ಸುಲಭವಾಗಿಕಂಡುಹಿಡಿಯಲಾಗದ ವಸ್ತುಗಳು [ ]

d. ಅತಿಎತ್ತರವಾದ ಹಾಸಿಗೆ [ ]

32. ಈ ಕೆಳಗಿನ ಯಾವುದು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ್ನು ಕಾಪಾಡುವುದರಲ್ಲಿಕೊಡುಗೆಯಾಗಿದೆ

a. ಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆ ಮತ್ತುಆಹಾರ ಪದ್ಧತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಕ್ಯಾಲ್ಸಿಯಂ [ ]

b. ವಿಟಮಿನ್ ಡಿ ಸೇವನೆ ಮತ್ತು ವ್ಯಾಯಾಮ [ ]

c. ಜೀವನ ಶೈಲಿಯ ಬದಲಾವಣೆ ಮತ್ತುಎಸ್ಟ್ರೋಜನ್ ಭರ್ತಿ ಮಾಡುವಚಿಕಿತ್ಸೆ [ ]

d. ಮೇಲಿನವುಗಳೆಲ್ಲ [ ]

33. ನಮ್ಮ ಸಮತೋಲನ ಆಹಾರ ಪದ್ಧತಿಯಲ್ಲಿ ಸಾಕಷ್ಟು ಕ್ಯಾಲೋರಿ ಮತ್ತು ಪೋಷಕಾಂಶಗಳ ಸೇವನೆಯಿಂದ ಈ ಕೆಳಗಿನ ಪೋಷಕಾಂಶ ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ಸಂರಕ್ಷಣೆಯಾಗುವುದು

a. ಕ್ಯಾಲ್ಸಿಯಂ [ ]

b. ಪೊಟ್ಯಾಸಿಯಂ [ ]

c. ಮೆಗ್ನೀಶಿಯಂ [ ]

d. ಸೋಡಿಯಂ [ ]

34. 20 ರಿಂದ 50 ವರ್ಷ ವಯಸ್ಸುಳ್ಳ ಹೆಂಗಸರಲ್ಲಿ ಸಲಹೆ ಮಾಡಬಹುದಾದ ಪ್ರತಿದಿನ ಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆಯ ಪ್ರಮಾಣ

a. 100 ಮಿ.ಗ್ರಾಂ. ಪ್ರತಿದಿನ [ ]

b. 250 ಮಿ.ಗ್ರಾಂ. ಪ್ರತಿದಿನ [ ]

c. 500 ಮಿ.ಗ್ರಾಂ. ಪ್ರತಿದಿನ [ ]

d. 1000 ಮಿ.ಗ್ರಾಂ. ಪ್ರತಿದಿನ [ ]

35. ವಿಟಮಿನ್‌ಡಿ.ಯ ನೈಸರ್ಗಿಕ ಸೇವನೆಯು ಒಳಗೊಂಡಿರುವುದು

a. ಆಹಾರ ಪದ್ಧತಿ [ ]

b. ಸೂರ್ಯನಕಿರಣ [ ]

c. ಚರ್ಮದಉತ್ಪಾದನೆ [ ]

d. ಮೇಲಿನವುಗಳೆಲ್ಲ [ ]

36. ಈ ಕೆಳಗಿನ ಯಾವಆಹಾರ ಸೇವನೆ ಅತಿ ಹೆಚ್ಚು ಕ್ಯಾಲ್ಸಿಯಂಅನ್ನುಒದಗಿಸುತ್ತದೆ.

a. ಸಾರ್ಡಿನಿಯ ಮೀನು [ ]

b. ಮೊಟ್ಟೆ [ ]

c. ಗಿಣ್ಣು [ ]

d. ಮೊಸರು [ ]

37. ವಯಸ್ಸಾದವರಲ್ಲಿಪ್ರತಿದಿನ ತೆಗೆದುಕೊಳ್ಳಲು ಸಲಹೆ ಮಾಡಬಹುದಾದ ವಿಟಮಿನ್ ಡಿ ಯ ಸೇವನೆ ಪ್ರಮಾಣ

a. 400 – 800 I U [ ]

b. 300 – 700 I U [ ]

c. 200 – 600 I U [ ]

d. 100 – 500 I U [ ]

38. ವ್ಯಾಯಾಮವು ಹೆಚ್ಚಿಸುವುದು

a. ಮಾಂಸಖಂಡಗಳ ಬಲವನ್ನು [ ]

b. ಹೊಂದಾಣಿಕ ಮತ್ತು ಸಮತೋಲನ [ ]

c. ಮಾಂಸಖಂಡಗಳ ಬಲ, ಹೊಂದಾಣಿಕೆ ಮತ್ತು ಸಮತೋಲನ [ ]

d. ಮೇಲಿನವುದರಲ್ಲಿಯಾವುದೂಇಲ್ಲ [ ]

೩೯. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಚಿಕಿತ್ಸೆಯಲ್ಲಿಉಪಯೋಗಿಸಲ್ಪಡುವ ಔಷಧಿಗಳು

a. ಇನ್ಸುಲೀನ್ [ ]

b. ಸ್ಟಿರಾಯ್ಡ್‌ಗಳು [ ]

c. ಎಸ್ಟ್ರೋಜನ್‌ಗಳು [ ]

d. ನೋವು ನಿವಾರಕಗಳು [ ]

೪೦. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಸಾಮಾನ್ಯತೊಂದರೆಯು "ಸೊಂಟದ ಮೂಳೆಯಲ್ಲಿ ಮುರಿತ" ಇದಕ್ಕೆಈ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯು ಸಹಾಯವಾಗುತ್ತದೆ.

a. ಮುರಿದ ಸೊಂಟದಲ್ಲಿ ಎಲುಬಿನ ಸಿಮೆಂಟ್‌ಅನ್ನು ಸೇರಿಸುವುದು. [ ]

b. ಎಲುಬಿನ ಸಿಮೆಂಟ್‌ನ ಜೊತೆಗೆಅಂಟಿಸುವುದು [ ]

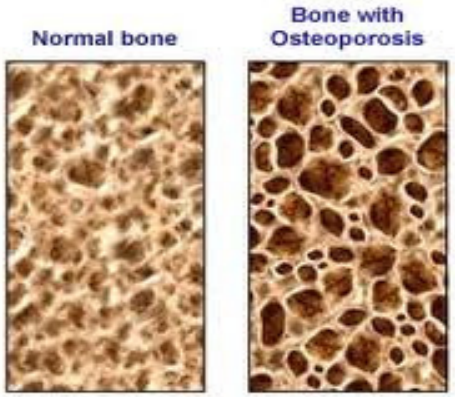
c. ತಿರುಪು ಮೊಳೆಯನ್ನು ಜೋಡಿಸುವುದು [ ]

d. ಸೊಂಟದ ಎಲುಬನ್ನುತೆಗೆಯುವುದು [ ]

ANNEXURE – O_1

LESSON PLAN

ON



Name of the teacher	::	MS.Prasanna.M
Topic	::	Osteoporosis
Group	::	Working Women
Place	::	Selected schools and colleges, Kolar, Karnataka
Duration	::	60 minutes
Method of teaching	::	Lecture cum Discussion
A.Visual aids	::	LCD projector/Charts/Models.
Previous knowledge	::	Subjects will have some knowledge on osteoporosis
General objectives	::	By the end of the teaching, the subjects will acquire in depth Knowledge, and appreciate its importance and practices based on enhanced knowledge related to osteoporosis

Specific objectives :: At the end of the teaching the subjects will be able to

1. States the meaning of osteoporosis
2. Defines the term Osteoporosis
3. Provides information about the incidence of osteoporosis
4. List down the causes of osteoporosis
5. Identify the types of osteoporosis
6. Explains the pathophysiology of osteoporosis
7. Identify the signs and symptoms of osteoporosis
8. Lists out the diagnostic tests of osteoporosis
9. Explains the preventive measures of osteoporosis
10. Explains the management techniques along with its related complications and its management

BIBLIOGRAPHY

1. Maheshwari J. Essential orthopedics. 3rd ed. Newdelhi: Mehta publishers; 2005. P.1-330
2. John Ebnezar. Textbook of orthopedics. 3rd ed. New delhi: Jaypee pulishers; 2006. P.1-636
3. Mantik Sharon Lewis, Margaret MC Lean, Heitkemper, Shannon Ruff Dirksen. Medical surgical nursing. 6th ed. St.Louis (Missouri): Mosby publications; 2004. P.1-1867
4. Smeltzer c. Suzanne, Brenda bare. Brunner and suddhaths text book of Medical and Surgical nursing. 10th ed. Philadelphia Lippincott Williams and wilkins; p. 5-2234.
5. http://www.aaos.org/about/papers/position/1113.asp
6. http://pharmapeek.com/arthritis/world-osteoporosis-statistics/
7. http://www.nof .org/osteoporosis/stats.html.

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
Introduces the topic	3min		After self introduction the investigator asks the subjects to come front and introduce themselves. After this investigator collects informed written consent from subjects after explaining the aims of the study, then administers pretest to the selected study participants. **INTRODUCTION OF OSTEOPOROSIS** Women is the essence of life and she has the innate capacity to take care. She is a friend, guide, nurturer and partner. Thus, women needs awareness to control the health problems for maintaining physical and mental health to fulfill her role. In India the health condition of women is often neglected. Women in the family often give more importance to health of family members than themselves. The common women health problems are obesity, diabetes, osteoporosis and heart diseases. But current statistics reveals that, in India the disease affects about 300 million people and 80% of those affected are women.	LCD	

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
States the meaning of osteoporosis	2min	**MEANING OF OSTEOPOROSIS** Osteoporosis or porous bone, is a chronic, progressive metabolic bone disease characterized by low bone mass and structural deterioration of bone tissue leading to increased bone fragility.	Teacher explains the meaning of osteoporosis Participants listens carefully	LCD 	What is osteoporosis?
Defines the term Osteoporosis	2min	**DEFINITION OF OSTEOPOROSIS** Osteoporosis is a commonest metabolic bone disease characterized by diffuse reduction in the bone mass. It occurs when the rate of bone resorption exceeds the rate of bone formation. (www. Osteos. Org. 2011)	Teacher Asks question about definition of osteoporosis and group answers	LCD 	Define Osteopoorosis?
Provides information about the incidence of osteoporosis	3min	**INCIDENCE OF OSTEOPOROSIS** **Global statistics** Osteoporosis is a global public health problem currently affecting more than 200 million people worldwide. In the United States alone, 10 million people have osteoporosis. *According to International Osteoporosis Foundation : 1 in 3 women over 50 will experience osteoporotic fractures, as with 1 in 5 men.* .	Teacher providing information about incidence Participants listens carefully	LCD 	Discuss about the incidence of osteoporosis?

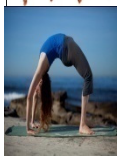
Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
List down the causes of osteoporosis	3min	**Indian statistics** About 300 million people in India suffer from osteoporosis. In India the prevalence of osteoporosis among women aged between 30-60 years is 30%. It is more frequently found in women than men at the ratio of 4:1. **Karnataka statistics** In Karnataka the prevalence of osteoporosis is 62%. Osteoporotic fractures are common cause of morbidity and mortality in adult men and women. **CAUSES OF OSTEOPOROSIS** The exact cause of osteoporosis is unknown. Risk factors are:- a. Genetic factors → Female; Asian or white; Small thin women; Family history of osteoporosis; Advanced age (55-60%)	Teacher lists out the causes of osteoporosis Participants listens carefully and participating in discussion	LCD 	What are the causes of osteoporosis?

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
		b. Nutritional factors → Low calcium diet; High sodium and protein diet; Strict vegetarian diet; Vitamin-D deficiency c. Lifestyle factors → Sedentary life; Tobacco use; Regular consumption of alcohol; High caffeine consumption d. Endocrine factors → Early menopause; Hyperthyroidism; Amenorrhoea; Cushing's syndrome; Bilateral ophorectomy			

<table>
<tr><th>Specific Objectives</th><th>Time</th><th>Content</th><th>Teachers & Learners Activity</th><th>Visual Aids</th><th>Evaluation</th></tr>
<tr>
<td>Identify the types of osteoporosis</td>
<td>3min</td>
<td>
e. Drugs → Antacid
Seizure medications
Vitamin-A
Corticosteroids

TYPES OF OSTEOPOROSIS: There are two major types
<table>
<tr><th>Primary osteoporosis</th><th>Secondary osteoporosis</th></tr>
<tr>
<td>-It is most common and is not associated with an underlying pathogenic condition.
-Primary osteoporosis can be divided into two sub-types.
<u>a. Type1 (post menopausal):</u>
-It occurs in women between the age of 55 to 65 years.
<u>b.Type-11(Senile):</u>
osteoporosis occurs in persons over 65 years of age and affect twice as men.</td>
<td>Secondary osteoporosis results from an associated medical condition such as hyper parathyroidism or long-term drug therapy such as with corticosteroids.</td>
</tr>
</table>
</td>
<td>Teacher asks questions about types of osteoporosis and group answers.</td>
<td> 
LCD
 
 
  </td>
<td>What are the different types of osteoporosis?</td>
</tr>
</table>

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
Explains the pathophysiology of osteoporosis	4min	**PATHOPHYSIOLOGICAL CHANGES OF OSTEOPOROSIS** Throughout life span, new bone is formed (osteoblastic activity) while old bone is resorbed (osteoclastic activity). Two major theories are proposed regarding development of osteoporosis. The most popular one is an increase in osteoclastic activities, which causes bone resorbtion or thinning. Second one is that osteoporosis may result from decreased osteoblastic activity. Bone mass peaks between 30 and 35 years of age. After the peak years, calcium stored in bone leaves the bone tissue and bone mass decrease with osteoporosis, supporting skeletal structure are weakened and even minimal stress can cause fractures.	Teacher Explains the pathophysiology of osteoporosis and group participating in discussion	LCD 	What are the pathophysiological changes of osteoporosis?
Identify the signs and symptoms of osteoporosis	3min	**SIGNS AND SYMPTOMS OF OSTEOPOROSIS** Osteoporosis is caused silent disease because bone loss occurs without symptoms. Back pain and fractures are the most characteristic presenting symptoms.	Teacher explains the signs and symptoms of osteoporosis	LCD	What are the signs and symptoms of osteoporosis?

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
Lists out the diagnostic tests of osteoporosis	4min	1. **Pain** may be sharp and acute in onset. Pain is worse with activity. 2. **Fracture** most typical sites of fractures related to osteoporosis are hip, spine and wrist fractures. **Other features:-** 1. Shortened stature or loss of height (2-3 inches) 2. Difficulty in bending over 3. Exaggerated curvature of back bone near neck 4. Stoopened posture 5. Impaired breathing as a result of deformities of spine **DIAGNOSTIC TESTS OF OSTEOPOROSIS** Osteoporosis often goes unnoticed because it cannot be easily detected by simple x-ray studies. Bone density test is the only tool helpful for detecting osteoporosis. **The following persons should undergo a bone mineral density test:-** 1. Women around the age of menopause. .	Participants listens carefully and takes down points Teacher lists out the diagnostic tests of osteoporosis	    LCD  	What are the diagnostic tests of osteoporosis?

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
Explains the preventive measures of osteoporosis	15 min	2. Persons with abnormalities of back bone 3. Patients receiving long-term steroid therapy (in conditions like asthma, osteoarthritis) 4. Persons known to be suffering from hyperparathyroidism 5. Rheumatoid arthritis 6. Post menopausal women with history of fracture/ loss of height over 1 inch/ lifelong low calcium diet **Laboratory Tests:** a. Urinary calcium may be elevated but serum calcium is normal b. Serum osteocalcin is elevated **PREVENTIVE MEASURES OF OSTEOPOROSIS** Osteoporosis is largely preventable for most people. Prevention is important because while there are treatments, there is currently no cure. **Preventive measures include** Diet · Exercise · Healthy life style · Early detection of osteoporosis · Safety measures	participants listens carefully and takes down points Teacher explains the preventive measures of osteoporosis	 LCD	What are the preventive measures of osteoporosis?

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
		a. **DIET:-** A diet which is rich in calcium helps to prevent osteoporosis. An adult women under the age 50 need 1000mg of calcium every day. **Examples of food containing calcium:-** 1. Milk, milk products like cheese, buttermilk, curd. 2. Fish: Small fishes eaten with bones like sardine 3. Eggs 4. Green leafy vegetables and fruits 5. Soyabean **Examples of vitamin-D rich foods:-** 1. Egg yolk 2. Salt water fish 3. Dairy products 4. Liver 5. Fish oils **Foods to be avoided:-** 1. Diet rich in proteins 2. High caffeine intake	Participants listens carefully and takes down		

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
		3. Alcohol **b. Exercise:-** Moderate amounts of exercise are important to build and maintain bone mass. Weight bearing exercises like → Walking, Climbing stairs, Swimming, Dancing, Jogging, Yoga Exercise should be done regularly for 30 minutes. **c. Healthy life style:-** → Avoid high alcohol intake → Avoid smoking **d. Early detected of osteoporosis:-** Bone density testing for women. 1. Around the age of menopause 2. Patient receiving long-term steroid therapy 3. Persons suffering from hyperthyroidism			

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
Explains the management techniques along with its related	15 min	4. Postmenopausal women with history of fracture, loss of height 5. Persons with abnormalities of back **e. Safety measures:-** Safety measures helps to prevent falls and development of fractures. 1. Get up slowly after lying down or sitting 2. Put a night-light in between bathroom and bedroom 3. Avoid wearing loose fitting slippers and high heels 4. Electrical chords and wires should be kept out of work ways 5. In kitchen, store frequently used items in accessible cupboards to avoid unnecessary reaching, bending or stooping **MANAGEMENT TECHNIQUES ALONG WITH ITS RELATED COMPLICATIONS AND ITS MANAGEMENT:-** 1. Medical management 2. Fracture management / Surgical management	Teacher explains the management techniques	    LCD	What are the management techniques along with its related

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
complications and its management		**1. MEDICAL MANAGEMENT:-** a. Calcium supplements b. Diet high in calcium c. Vitamin-D supplements d. Exercise program e. Lifestyle modification f. Estrogen replacement therapy **a. <u>Calcium supplements</u>** i. Calcium carbonate(500mg/tablet) ii. Calcium carbonate+5mg vit D_3-(250mg/tablet) iii. Calcium gluconate-(400mg/g) **b. <u>Diet high in calcium:-</u>** A balanced diet- including adequate calories and nutrients need to maintain bone calcium, and Vit-D must be consumed Vitamin-D is necessary for calcium absorption and for normal bone mineralization 1. The recommended adequate intake(A_1) of calcium for 9-19 years is 1300 mg/day	along with its related complications and its management Participants listens carefully and takes down		complications and its management

<table>
<tr><th>Specific Objectives</th><th>Time</th><th>Content</th><th>Teachers & Learners Activity</th><th>Visual Aids</th><th>Evaluation</th></tr>
<tr><td></td><td></td><td>
2. Adults from 20-50 years of age is 1000mg/day
3. Adults 51 years or older is 1200mg/day
4. Average intake minimum – 300-500mg
5. Adult average vitamin-Dintake-400 to 600IU
<u>Sources of calcium:-</u>
<table>
<tr><td>1. A cup of milk or calcium fortified orange juice</td><td>300mg calcium</td></tr>
<tr><td>2. Butter milk</td><td>284mg</td></tr>
<tr><td>3. Chocolate</td><td>291mg</td></tr>
<tr><td>4. Cheese</td><td>174mg</td></tr>
<tr><td>5. Yogurt</td><td>415mg</td></tr>
<tr><td>6. 1 cup ice cream</td><td>176mg</td></tr>
<tr><td>7. Sardine with bones</td><td>372mg</td></tr>
<tr><td>8. 1 cup cooked spinach</td><td>200mg</td></tr>
<tr><td>9. Egg</td><td>28mg</td></tr>
<tr><td>10. Apple, Banana</td><td>10mg</td></tr>
<tr><td>11. Cabbage-cup</td><td>44mg</td></tr>
</table>
</td><td></td><td>  </td><td></td></tr>
</table>

<table>
<tr><th>Specific Objectives</th><th>Time</th><th>Content</th><th>Teachers & Learners Activity</th><th>Visual Aids</th><th>Evaluation</th></tr>
<tr>
<td></td>
<td></td>
<td>
c. <u>Vitamin – D supplements:-</u>
<table>
<tr><th>Natural</th><th>Supplemental</th></tr>
<tr><td>From diet and skin synthesis Vit - D</td><td>400-800IU may be recommended for older adults and who get minimum sun exposure</td></tr>
</table>
d. <u>Exercise program:-</u> Bone formation is enhanced by the stress of weight and muscle activity. Resistance and impact exercises are most beneficial in developing and maintaining bone mass.
<table>
<tr>
<td>Exercise also increases muscle strength, co-ordination and balance</td>
<td>Weight bearing exercises
↓
That force the individual to work against gravity which includes
↓
Walking, hiking, weight training, stair climbing, tennis and dancing</td>
<td>Walking 30 min – 3 times a week is recommended</td>
</tr>
</table>
</td>
<td></td>
<td>  </td>
<td></td>
</tr>
</table>

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
		e. **Lifestyle modification:-** Advised to → Quit smoking → Alcohol intake → Not to take excessive smoking → Avoid sedentary lifestyle **f. Estrogen replacement therapy:-** • Estrogen replacement decreases bone resorption and increases bone mass reducing the incidence of osteoporosis fracture • Corticosteroids – patients who are taking corticosteroids – the lowest dosage showed be prescribed because it prevents osteoblast action **2. FRACTURE MANAGEMENT/ SURGICAL MANAGEMENT:-** a. Fracture o f hip are managed surgically by joint replacement or by closed or open reduction with internal fixation (hippinning)		   	

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
		b. Osteoporotic compression fractures of the vertebrae- new procedure like percutaneous vertebroplasty / kyphoplasty (injection of polymethyl) meta crylate bone cement into the fractured vertebrae) is reported to provide rapid pain relief and improved quality of life			

Specific Objectives	Time	Content	Teachers & Learners Activity	Visual Aids	Evaluation
	3min		**CONCLUSION:-** Osteoporosis is largely preventable in most people. It is managed through medical, nutritional and lifestyle interventions. It is the women's knowledge base to prevent osteoporosis and its related complications, encourage them to assess their risk and help them to develop prevention strategies, particularly giving more emphasis to primary and secondary prevention.		

ANNEXURE- O_2

ಪಾಠಯೋಜನೆ

ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ

ಶಿಕ್ಷಕರ ಹೆಸರು	:	ಎಂ.ಎಸ್.ಪ್ರಸನ್ನ. ಎಂ.
ಘಟಕ	:	ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್
ಗುಂಪು	:	ಉದ್ಯೋಗಸ್ಥ ಮಹಿಳೆಯರು
ಸ್ಥಳ	:	ಕೋಲಾರದಆಯ್ದ ಶಾಲೆ – ಕಾಲೇಜುಗಳಲ್ಲಿ
ಸಮಯ	:	೬೦ ನಿಮಿಷಗಳು
ಬೋಧನೆಯ ವಿಧ	:	ಉಪನ್ಯಾಸ – ಚರ್ಚೆ
ಪಾಠೋಪಕರಣ	:	**LCD Projector/**ಚಿತ್ತಿಪತ್ರಗಳು/ಮಾದರಿಗಳು
ಹಿಂದಿನ ಜ್ಞಾನ	:	ಭಾಗವಹಿಸುವವರು ಸ್ವಲ್ಪ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ತಿಳುವಳಿಕೆಯುಳ್ಳವರು
ಸಾಮಾನ್ಯ ಗುರಿಗಳು	:	ಪಾಠದ ಮುಕ್ತಾಯದಲ್ಲಿ ಭಾಗವಹಿಸುವವರು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ಜ್ಞಾನ ಬೆಳೆಸಿಕೊಳ್ಳುವರು

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು :: ಪಾಠದ ನಂತರ ಭಾಗವಹಿಸುವರು

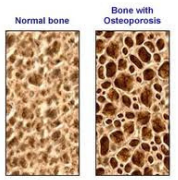
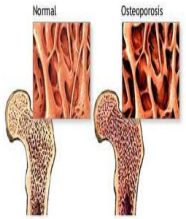
1. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ಅರ್ಥೈಸುವರು
2. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ವಿವರಿಸುವರು
3. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ಸಮಾಚಾರ ತಿಳಿಸುವರು
4. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ಕಾರಣಗಳನ್ನು ಪಟ್ಟಿ ಮಾಡುವರು
5. ವಿವಿಧ ಬಗೆಯ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಅನ್ನುಗುರುತಿಸುವರು
6. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಕಾರಣವಾಗುವರೋಗಾಣು ಶರೀರ ಶಾಸ್ತ್ರವನ್ನು ವಿವರಿಸುವರು
7. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಚಿಹ್ನೆಗಳು ಮತ್ತು ಲಕ್ಷಣಗಳನ್ನು ಗುರುತಿಸುವರು
8. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ರೋಗಕಂಡುಹಿಡಿಯುವ ಪರೀಕ್ಷೆಗಳನ್ನು ಪಟ್ಟಿ ಮಾಡುವರು
9. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಅನ್ನು ತಡೆಗಟ್ಟುವ ಬಗ್ಗೆ ವಿವರಿಸುವರು
10. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ನಿರ್ವಹಣಾ ತಂತ್ರಗಳು ಮತ್ತು ತೊಂದರೆಗಳನ್ನು ವಿವರಿಸುವರು

ಗ್ರಂಥಗಳ ವಿವರಣೆ–BIBLIOGRAPHY

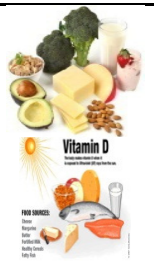
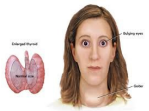
1.Maheshwari. J. Essential orthopedics. 3rd ed. Newdelhi :Nehta Publishers; 2005. P. 1 – 330

1. John Ebnezar. Textbook of orthopedics. 3rded. New delhi :Jaypee publishers: 2006. P. 1 – 636
2. Mantik Sharon Lewis, Margaret MC Lean, Heitkemper, Shannon Ruff Dirksen. Medical surgical nursing, 6th ed. St. Louis (Missouri): Mosby publications; 2004.P.1 – 1867
3. Smeltzer c. Suzanne, Brenda bare. Brunner and suddhaths text book of Medical and Surgical nursing. 10th ed. Philadelphia Lippincott Williams and wilkins; p. 5 – 2234.
4. http://www.aaos.org/about/papers/position/1113.asp
5. http://pharmapeek.com/arthritis/world-osteoporosis-statistics/

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ತಾತ್ವರ್ಯ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
ಘಟಕದ ಪರಿಚಯ	೩ ನಿಮಿಷ		ಶಿಕ್ಷಕರು ತಮ್ಮನ್ನು ಪರಿಚಯಿಸಿಕೊಳ್ಳುವರು. ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳ ಪರಿಚಯ ಮಾಡಿಸಿಕೊಳ್ಳುವರು. ಕಲಿಯುವವರಒಪ್ಪಿಗೆ ಪತ್ರಗಳನ್ನು ಪಡೆದ ನಂತರಕಲಿಕೆಯಗುರಿಯನ್ನು ತಿಳಿಸುವರು. **ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಪರಿಚಯ** ಹೆಂಗಸು ಜೀವನದಆಧಾರ. ಅವಳು ಇತರರಆರೈಕೆ ಮಾಡುವರು. ಅವಳು ಸ್ನೇಹಿತೆ, ಮಾರ್ಗದರ್ಶಿ, ಸಾಕುವವಳು, ಸಂಗಾತಿ. ಆದ್ದರಿಂದ ಹೆಂಗಸಿಗೆ ಶಾರೀರಿಕಆರೋಗ್ಯದ ಬಗ್ಗೆ ಕಾಳಜಿ ಹೆಚ್ಚು. ಆದ್ದರಿಂದಅದರ ಬಗ್ಗೆ ಅರಿವು ಮೂಡಿಸಿಕೊಳ್ಳುವುದು ಅವಶ್ಯಕ. ಭಾರತದಲ್ಲಿ ಹೆಂಗಸರಆರೋಗ್ಯದ ಬಗ್ಗೆ ನಿರ್ಲಕ್ಷ್ಯ ಹೆಚ್ಚು. ಹೆಂಗಸು ತನ್ನಕುಟುಂಬದ ಸದಸ್ಯರಆರೋಗ್ಯದ ಬಗ್ಗೆ ಹೆಚ್ಚು ಕಾಳಜಿ ಹೊಂದಿರುತ್ತಾಳೆ. ಹೆಂಗಸರಲ್ಲಿನ ಸಾಮಾನ್ಯಅನಾರೋಗ್ಯ ಸಮಸ್ಯೆಗಳು ಯಾವುವೆಂದರೆ – ಬೊಜ್ಜು, ಸಕ್ಕರೆ ಕಾಯಿಲೆ, ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್. ಹೃದಯ ಸಂಬಂಧಿ ಕಾಯಿಲೆಗಳು. ಪ್ರಚಲಿತ ಅಂಕಿ ಅಂಶಗಳ ಪ್ರಕಾರ ಭಾರತದಲ್ಲಿ ರೋಗಗಳಿಗೆ ತುತ್ತಾಗುವ ೩೦೦ ಮಿಲಿಯನ್‌ಜನರಲ್ಲಿ ಶೇಕಡ ೪೦ ಭಾಗ ಹೆಂಗಸರೇಆಗಿರುತ್ತಾರೆ.	ಎಲ್.ಸಿ.ಡಿ.	

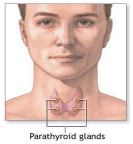
ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಅರ್ಥ	2 ನಿಮಿಷ	**ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಅರ್ಥ** ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಒಂದು ರಂಧ್ರಗಳ ಮೂಳೆ. ಇದುತೀವ್ರವಾದದ್ದು. ಇದು ಮೂಳೆಯ ಖಾಯಿಲೆಯಾಗಿದ್ದು, ಮೂಳೆಯ ಸಾಂದ್ರತೆಕಡಿಮೆಯಾಗಿ ಮೂಳೆಯನ್ನು ಮೃದುಗೊಳಿಸುತ್ತದೆ.	ಶಿಕ್ಷಕರು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಗ್ಗೆ ಅರ್ಥೈಸು ವರು. ಭಾಗವಹಿಸುವವರು ಆಲಿಸುವರು.	ಎಲ್.ಸಿ.ಡಿ. 	ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಎಂದರೇನು?
ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ವ್ಯಾಖ್ಯಾನ	2 ನಿಮಿಷ	**ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ವ್ಯಾಖ್ಯಾನ** ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಒಂದು ಎಲುಬುಗಳ ಖಾಯಿಲೆ. ಮೂಳೆಯ ಸಾಂದ್ರತೆಯನ್ನು ಕಡಿಮೆಗೊಳಿಸುತ್ತದೆ. ಇದು ಮೂಳೆಯನ್ನು ಹೀರಿಕೊಂಡುಅದರ ಸಾಂದ್ರತೆಕಡಿಮೆ ಮಾಡುತ್ತದೆ.	ಶಿಕ್ಷಕರು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವರು ಇತರರುಉತ್ತರಿಸು ವರು.	ಎಲ್.ಸಿ.ಡಿ. 	ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಅನ್ನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಅನ್ನು ವ್ಯಾಖ್ಯಾನಿಸುವರು	3 ನಿಮಿಷ	**ಜಾಗತಿಕ ಅಂಕಿ ಅಂಶಗಳು** ಇದು ಪ್ರಪಂಚದಾದ್ಯಂತ ಸುಮಾರು 200 ಮಿಲಿಯನ್‌ಜನರನ್ನು ಬಾಧಿಸುತ್ತಿರುವಒಂದುಜಾಗತಿಕರೋಗ. ಯುನೈಟೆಡ್‌ರಾಷ್ಟ್ರದಲ್ಲಿ ಸುಮಾರು 10 ಮಿಲಿಯನ್‌ಜನರು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನಿಂದ ಬಳಲುತ್ತಿದ್ದಾರೆ. ಅಂತರರಾಷ್ಟ್ರೀಯ ಆಸ್ಟಿಯೋ ಸಂಸ್ಥೆ ಪ್ರಕಾರ 50 ಜನರಲ್ಲಿ ಮೂರಕ್ಕೆಒಬ್ಬ ಹೆಂಗಸು ಹಾಗೂ 5ಕ್ಕೆ ಒಬ್ಬಗಂಡಸು ಈ ಕಾಯಿಲೆಯಿಂದ ಬಳಲುತ್ತಿದ್ದಾರೆ.	ಶಿಕ್ಷಕರು ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಜಾಗತಿಕ ಅಂಕಿ ಅಂಶಗಳು ಬಗ್ಗೆ ವ್ಯಾಖ್ಯಾನಿಸುವರು. ಭಾಗವಹಿಸುವವರು ಆಲಿಸುವರು.	ಎಲ್.ಸಿ.ಡಿ. 	ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಒಂದುಜಾಗತಿಕರೋಗ ಈ ಬಗ್ಗೆ ಚರ್ಚಿಸಿ.

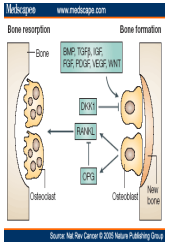
ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
ಇದಕ್ಕೆ ಕಾರಣಗಳ ಪಟ್ಟಿ	೩ ನಿಮಿಷ	**ಭಾರತದಲ್ಲಿನ ಅಂಕಿ ಅಂಶಗಳು** ಸುಮಾರು ೩೦೦ ಮಿಲಿಯನ್ ಭಾರತೀಯರು ಈ ಕಾಯಿಲೆಯಿಂದ ಬಳಸುತ್ತಿದ್ದಾರೆ. ೩೦ ರಿಂದ ೬೦ ವರ್ಷ ವಯಸ್ಸುಳ್ಳವರಲ್ಲಿ ಶೇಕಡ ೩೦ ಭಾಗ ಈ ಕಾಯಿಲೆ ಇದೆ. ಗಂಡಸರಿಗಿಂತ ಹೆಂಗಸರಲ್ಲಿ 4:1 ರಅನುಪಾತದಲ್ಲಿಇದು ಸತತವಾಗಿ ಕಾಣಿಸಿಕೊಳ್ಳುತ್ತಿದೆ. **ಕರ್ನಾಟಕದಲ್ಲಿನ ಅಂಕಿ ಅಂಶ** ಕರ್ನಾಟಕದಲ್ಲಿ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಪ್ರಮಾಣ ಶೇಕಡ 62. ರೋಗವ್ಯಾಪನೆ ಮತ್ತು ಸಾವಿನ ಸಂಖ್ಯೆ ವಯಸ್ಕ ಹೆಂಗಸು ಮತ್ತುಗಂಡಸರಲ್ಲಿ. **ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಕಾರಣಗಳು** ಇದಕ್ಕೆ ನಿರ್ದಿಷ್ಟ ಕಾರಣಗಳು ತಿಳಿಯದು ತೊಂದರೆಕೊಡುವ ಅಂಶಗಳು:– –ವಂಶಾವಳಿ ಅಂಶಗಳು → ಹೆಂಗಸರು ಏಶಿಯಾದವರುಅಥವಾ ಬಿಳಿಯರು ಚಿಕ್ಕ ಸಣಕಲು ಹೆಂಗಸು ಕುಟುಂಬ ಚರಿತ್ರೆ 55–60% ಮುಂದುವರಿದ ವಯಸ್ಸು	ಶಿಕ್ಷಕರು ಕಾರಣಗಳನ್ನು ತಿಳಿಸುವರು. ಭಾಗವಹಿಸುವವರು ಕೇಳಿಸಿಕೊಳ್ಳುವರು	ಎಲ್.ಸಿ.ಡಿ. 	ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಗೆ ಕಾರಣಗಳೇನು?

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
		b) **ಆಹಾರ ಪೋಷಕಾಂಶ ನ್ಯೂನತೆಗಳು** → ಕಡಿಮೆಕ್ಯಾಲ್ಸಿಯಂಆಹಾರ → ಹೆಚ್ಚು ಪ್ರೋಟೀನ್ – ಸೋಡಿಯಂಆಹಾರ → ಶುದ್ಧ ಸಸ್ಯಾಹಾರಿಆಹಾರ → ವಿಟಮಿನ್ ಡಿ ಕೊರತೆ **c) ಜೀವನ ಶೈಲಿ ಅಂಶಗಳು** → ಚಲಿಸದಜೀವನ → ತಂಬಾಕು ಸೇವನೆ → ಮಧ್ಯಪಾನ ನಿರಂತರ ಸೇವನೆ → ಕೆಫೀನ್ ಹೆಚ್ಚು ಸೇವನೆ **d) ನಿರ್ನಾಳ ಗ್ರಂಥಿಗಳ ಅಂಶಗಳು** → ಬೇಗ ಮುಟ್ಟಾಗುವುದು → ಹೈಪರ್‌ಥೈರಾಯ್ಡಿಸಂ → ಆಮ್ನೋರಿಯ → ಕುಶಿಂಗ್ಸ್ – ಲಕ್ಷಣ → ಉಭಯ ಪಕ್ಷದಆಪೋರೆಕ್ಟಮಿ **e) ಔಷಧ** → ಆಮ್ಲ ನಿವಾರಕ → ಆಕ್ರಮಣಚಿಕಿತ್ಸೆ → ವಿಟಮಿನ್ ಎ → ಕಾರ್ಬಿಕೊಸ್ಟೀರಾಯ್ಡ್		     	

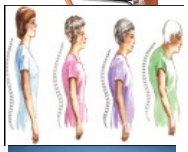
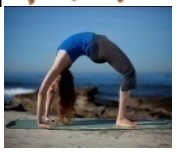
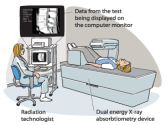
<table>
<tr><th>ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು</th><th>ಸಮಯ</th><th>ಸಾರಾಂಶ</th><th>ಕಲಿಸುವವರ–
ಕಲಿಯುವವರಚಟುವಟಿಕೆ</th><th>ಕಲಿಕಾ
ಸಾಮಗ್ರಿಗಳು</th><th>ಮೌಲ್ಯಮಾಪನ</th></tr>
<tr>
<td>ವಿವಿಧರೀತಿಯ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಅನ್ನು ಗುರುತಿಸುವರು

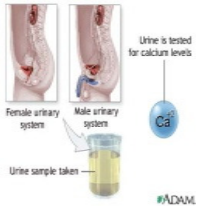
ವಿವರಿಸುವರು</td>
<td>3 ನಿಮಿಷ

4 ನಿಮಿಷ</td>
<td>ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ವಿಧಗಳು
ಎರಡು ಮುಖ್ಯ ವಿಧಗಳು
<u>ಪ್ರಾಥಮಿಕ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್</u>
ಸಾಮಾನ್ಯವಾದದ್ದು.
ಎ) 1ನೇ ವಿಧ ಮುಂದೂಡಿದ ಮುಟ್ಟು– 55 ರಿಂದ 65 ವರ್ಷ ವಯಸ್ಸಿನ ಹೆಂಗಸರಲ್ಲಿ ಕಾಣಿಸಿಕೊಳ್ಳುವುದು.
ಬಿ) ಎರಡನೇ ವಿಧ– 65 ವರ್ಷ ವಯಸ್ಸಿನ ಗಂಡಸರಲ್ಲಿಎರಡು ಸಾರಿ ಬರುವುದು.
<u>ಮಾಧ್ಯಮಿಕ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್</u>
ವೈದ್ಯಕೀಯ ಸಂದರ್ಭ ಗಳಲ್ಲಿ ಹೈಪರ್ ಪ್ಯಾರಾಥೈರಾಯ್ಡಿಸಂ ದೀರ್ಘಕಾಲದಔಷಧಿ ಸೇವನೆಯಿಂದ ಬರುವುದು.
ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನಿಂದ ದೇಹದ ಬದಲಾವಣೆ
ಜೀವನ ಪಯಣದಲ್ಲಿ ಹೊಸ ಎಲುಬು ಉಂಟಾಗುವುದು. ಹಳೇ ಎಲುಬು ಸವೆದು ಹೋಗುವುದು. ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಬಗ್ಗೆ ಎರಡು ಥಿಯರಿಗಳು. ಮೊದಲನೆಯದು ಆಸ್ಟಿಯೋಕ್ಲಾಸ್ಟಿಕ್ ಚಟುವಟಿಕೆಗಳು. ಇದರಿಂದ ಎಲುಬಿನ ಕೊರೆತ ಮತ್ತು ಮೃದುವಾಗುವುದು. ಎರಡನೆಯದುಕಡಿಮೆ ಆಸ್ಟಿಯೋಬ್ಲಾಸ್ಟಿಕ್ ಚಟುವಟಿಕೆಯಿಂದ ಮೂಳೆಯ ತೊಂದರೆ. ಎಲುಬಿನ ಸಾಂದ್ರತೆ 30 ರಿಂದ 35 ವರ್ಷಗಳ ಮಧ್ಯೆಗರಿಷ್ಠ ಮಟ್ಟದಲ್ಲಿರುವುದು. ಆದನಂತರ ಎಲುಬಿನಲ್ಲಿರುವಕ್ಯಾಲ್ಸಿಯಂನ ಸಾಂದ್ರತೆಕಡಿಮೆಯಾಗಿ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನಿಂದ ಅಸ್ಥಿಪಂಜರದ ಶಕ್ತಿ ಕಡಿಮೆಯಾಗಿ, ಚಿಕ್ಕಒತ್ತಡದಲ್ಲೂ ಎಲುಬು ಮುರಿದು ಹೋಗಬಹುದು.</td>
<td>ಶಿಕ್ಷಕರು ಇದರ ಬಗ್ಗೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವರು
ಶಿಕ್ಷಕರು ವಿವರಿಸುವರು</td>
<td>ಎಲ್‌ಸಿಡಿ
 
 
 

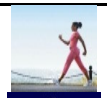
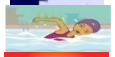
ಎಲ್‌ಸಿಡಿ
 
</td>
<td>ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ ಬಗೆಗಳನ್ನು ತಿಳಿಸಿ.

ದೇಹರಚನೆಯ ಬದಲಾವಣೆಗಳನ್ನು ತಿಳಿಸಿ</td>
</tr>
</table>

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
ಇದರಚಿಹ್ನೆ ಮತ್ತು ಲಕ್ಷಣಗಳನ್ನು ಗುರುತಿಸುವರು	೩ ನಿಮಿಷ	**ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಚಿಹ್ನೆ ಮತ್ತು ಲಕ್ಷಣಗಳು** ಇದು ಮೂಳೆಯ ಸಾಂದ್ರತೆಯಯಾವುದೇ ಮುನ್ಸೂಚನೆಇಲ್ಲದೆಕಡಿಮೆಯಾಗುತ್ತದೆ. ಬೆನ್ನು ನೋವು ಮತ್ತು ಮೂಳೆ ಮುರಿತಇದರ ಲಕ್ಷಣಗಳು. 1. ನೋವು :ಕಡಿಮೆಯಿಂದ ಪ್ರಾರಂಭವಾಗಿತದನಂತರ ಹೆಚ್ಚಾಗುವುದು. 2. ಎಲುಬು ಮುರಿತ: ಹಿಂಬದಿ, ಮಣಿಕಟ್ಟು ಸ್ಥಳಗಳಲ್ಲಿ ಸಾಮಾನ್ಯವಾಗಿ ಮೂಳೆ ಮುರಿತ. **ಇತರೆ ಲಕ್ಷಣಗಳು:** → ತೂಕ ಕಳೆದುಕೊಳ್ಳುವುದು → ದೇಹವನ್ನು ಬಾಗಿಸಲು ಕಷ್ಟ → ಕತ್ತಿನ ಭಾಗದ ಹಿಂಬದಿಯ ಎಲುಬು ಬಾಗುವುದು → ಅಂಗ ವಿನ್ಯಾಸದ ಬದಲಾವಣೆ ಉಸಿರಾಟದ ತೊಂದರೆ	ಶಿಕ್ಷಕರು ಇದರಚಿಹ್ನೆ ಮತ್ತು ಲಕ್ಷಣಗಳನ್ನು ವಿವರಿಸುವರು ಭಾಗಿಗಳು ಕೇಳಿಸಿಕೊಳ್ಳುವರು	    ಎಲ್‌ಸಿಡಿ	ಇದರಚಿಹ್ನೆ ಮತ್ತು ಲಕ್ಷಣಗಳನ್ನು ತಿಳಿಸಿ
ಇದರ ಪರೀಕ್ಷೆ	4 ನಿಮಿಷ	**ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಪರೀಕ್ಷೆ** ಇದನ್ನುಎಕ್ಸರೇ ಯಿಂದಕಂಡುಹಿಡಿಯಲು ಸಾಧ್ಯವಾಗದ ಮಟ್ಟಗೆಇರುವುದು ಎಲುಬಿನ ಸಾಂದ್ರತೆಯನ್ನುಕಂಡುಹಿಡಿಯುವುದೊಂದೇಇದರ ಮಾರ್ಗ. **ಈ ಕೆಳಗಿನ ವ್ಯಕ್ತಿಗಳು ಎಲುಬಿನ ಸಾಂದ್ರತೆಯ ಪರೀಕ್ಷೆ ಮಾಡಿಸಿಕೊಳ್ಳಬೇಕು**	ಶಿಕ್ಷಕರು ಈ ಚಿಕಿತ್ಸಾ ವಿಧಾನವನ್ನು ತಿಳಿಸುವರು	 	ಆಸ್ಟಿಯೋಪೋರೋಸಿ ಚಿಕಿತ್ಸಾ ವಿಧಾನವನು ತಿಳಿಸಿರಿ.

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
ತಡೆಗಟ್ಟುವ ವಿಧಾನಗಳು	15 ನಿಮಿಷ	1. ಮುಟ್ಟು ಕೊನೆಗೊಳ್ಳುವ ವಯಸ್ಸಿನ ಹೆಂಗಸರು. 2. ಬೆನ್ನು ಮೂಳೆಯ ಅಸಮತೋಲನಹೊಂದಿರುವವರು. 3. ದೀರ್ಘಕಾಲದಸ್ಟೀರಾಯ್ಡ್‌ತೆಗೆದುಕೊಳ್ಳುವರೋಗಿಗಳು 4. ಹೈಪರ್‌ಥೈರಾಯ್ಡಿಸಂತೊಂದರೆಇರುವವರು. 5. ಸಂದೀವಾತತೊಂದರೆಇರುವವರು. 6. ಮುಂದೂಡಿದಮುಟ್ಟುತೊಂದರೆ/ತೂಕಕಡಿಮೆಯಾಗಿರುವ/ಕಡಿಮೆಕ್ಯಾಲ್ಸಿಯಂಆಹಾರ ತೆಗೆದುಕೊಳ್ಳುವವರು. **ಪ್ರಯೋಗಾಲಯ ಪರೀಕ್ಷೆ:–** –ಮೂತ್ರ ಪಿಂಡದ ಕಲ್ಲುಗಳನ್ನು ತೆಗೆಯಬಹುದು. –ಆದರೆರಕ್ತದ ಕಲ್ಲುಗಳು ಸಾಮಾನ್ಯ. **ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ತಡೆಗಟ್ಟುವ ವಿಧಾನಗಳು** ಸಾಮಾನ್ಯವಾಗಿಜನರಲ್ಲಿಇದನ್ನುತಡೆಯಬಹುದು.ವಾಸಿಮಾಡುವುದು ಸಾಧ್ಯವಿಲ್ಲ. ಆದರೆಇದನ್ನುತಡೆಗಟ್ಟಬಹುದು. **ತಡೆಗಟ್ಟುವ ವಿಧಾನಗಳು** ಆಹಾರ ಕ್ರಮಗಳು ವ್ಯಾಯಾಮ ಜೀವನ ಶೈಲಿ ಆರೋಗ್ಯಕರ ಎಚ್ಚರಿಕೆಯ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಕಂಡುಹಿಡಿಯುವಿಕೆ a. **<u>ಆಹಾರಕ್ರಮ</u>**:–ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ಅನ್ನು ತಡೆಯುವಲ್ಲಿ ಹೆಚ್ಚಿನಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆ ಆಹಾರದಲ್ಲಿರಬೇಕು. 50 ವರ್ಷ ವಯಸ್ಸಿನ ಒಳಗಿನ ಹೆಂಗಸಿಗೆ ದಿನಕ್ಕೆ 100 ಮಿ.ಗ್ರಾಂ. ಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆ ಬೇಕು.	ಜಾಗರೂಕತೆಯಿಂದ ಕೇಳಿಸಿಕೊಳ್ಳುವರು ಶಿಕ್ಷಕರು ಇದನ್ನುತಡೆಗಟ್ಟುವ ವಿಧಾನಗಳನ್ನು ವಿವರಿಸುವರು ಜಾಗರೂಕತೆಯಿಂದ ಕೇಳಿಸಿಕೊಳ್ಳುವರು	 ಎಲ್‌ಸಿಡಿ	ಇದರಎಚ್ಚರಿಕೆಯ ಕ್ರಮಗಳನ್ನು ತಿಳಿಸಿ

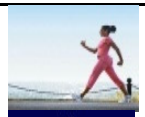
ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
		<u>ಕ್ಯಾಲ್ಸಿಯಂಯುಕ್ತಆಹಾರಕ್ಕೆ ಉದಾಹರಣೆಗಳು</u> 1. ಹಾಲು ಮತ್ತು ಹಾಲಿನ ಉತ್ಪನ್ನಗಳಾದ ತುಪ್ಪ, ಬೆಣ್ಣೆ, ಮೊಸರು. 2. ಸಾರ್‌ಡೈನ್‌ನಂತಹಚಿಕ್ಕ ಮೀನುಗಳನ್ನು ಮೂಳೆಗಳ ಸಮೇತತಿನ್ನುವುದು. 3. ಮೊಟ್ಟೆ 4. ಹಸಿರು ತರಕಾರಿಗಳು ಮತ್ತು ಹಣ್ಣುಗಳು 5. ಸೋಯಾಬೀನ್ **<u>ವಿಟಮಿನ್ 'ಡಿ' ಆಹಾರದ ಉದಾಹರಣೆಗಳು</u>** 1. ಮೊಟ್ಟೆಯ ಹಳದಿ ಭಾಗ 2. ಉಪ್ಪು ನೀರಿನ ಮೀನು 3. ಡೈರಿ ಉತ್ಪನ್ನಗಳು 4. ಪಿತ್ತಕೋಶ 5. ಮೀನೆಣ್ಣೆ **<u>ತೊರೆಯಬೇಕಾದಆಹಾರ ಪದಾರ್ಥಗಳು</u>** 1. ಪ್ರೋಟೀನ್ ಹೆಚ್ಚಿರುವಆಹಾರ 2. ಕೆಫೀನ್‌ನ ಹೆಚ್ಚು ಸೇವನೆ 3. ಮಧ್ಯಪಾನ	ಜಾಗರೂಕತೆಯಿಂದ ಕೇಳಿಸಿಕೊಳ್ಳುವರು		

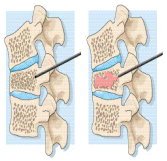
ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
		b. <u>ವ್ಯಾಯಾಮ</u>:– ದೇಹದ ಎಲುಬಿನ ಸಾಂದ್ರತೆ ಕಂಡುಕೊಳ್ಳುವಲ್ಲಿ ಸಾಮಾನ್ಯವಾದ ವ್ಯಾಯಾಮ. ಕಾಪಾಡಿಕೊಳ್ಳುವ ವ್ಯಾಯಾಮಗಳು → ನಡೆಯುವುದು → ಮೆಟ್ಟಿಲು ಹತ್ತುವುದು → ದೇಹದತೂಕಈಜು → ನೃತ್ಯ → ಓಡುವುದು → ಯೋಗ ವ್ಯಾಯಾಮವನ್ನು ಸತತವಾಗಿ ೩೦ ನಿಮಿಷಗಳು ಮಾಡಬೇಕು. c. <u>ಆರೋಗ್ಯಕರಜೀವನ ಶೈಲಿ</u>:– ➢ ಮಧ್ಯಪಾನ ನಿಲ್ಲಿಸಿ ➢ ಧೂಮಪಾನ ನಿಲ್ಲಿಸಿ **<u>ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್‌ನ ಶೀಘ್ರ ಪತ್ತೆ ಹೆಂಗಸರಲ್ಲಿ ಎಲುಬಿನ ಸಾಂದ್ರತೆ ಪರೀಕ್ಷೆ</u>** 1. ಮುಟ್ಟು ನಿಲ್ಲುವ ಸಮಯದ ಹೆಂಗಸರು 2. ದೀರ್ಘಕಾಲದ ಸ್ಟೊರಾಯ್ಡ್ ಸೇವನೆ 3. ಹೈಪರ್‌ಥೈರಾಯ್ಡಿಸಂತೊಂದರೆಇರುವವರು 4. ಮೂಳೆಮುರಿತ, ತೂಕ ಕಳೆದುಕೊಂಡ ಚರಿತ್ರೆಇರುವ ಮುಟ್ಟುನಿಂತ ಹೆಂಗಸರು 5. ಬೆನ್ನು ನೋವಿನ ತೊಂದರೆಇರುವವರು		        	

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ– ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
ತಂತ್ರಗಳನ್ನು ವಿವರಿಸುವರು ತೊಂದರೆಗಳು ಮತ್ತು ಅದರ ನಿರ್ವಹಣೆ	15 ನಿಮಿಷ	d. <u>ಸಂರಕ್ಷಣೆಯ ಕ್ರಮಗಳು:</u>– ಸಂರಕ್ಷಣೆಯ ಕ್ರಮಗಳು ಮೂಳೆ ಮುರಿಯುವ ಪರಿಸ್ಥಿತಿಯನ್ನು ತಡೆಯುವುವು. 1. ಕುಳಿತಾಗ – ಮಲಗಿರುವಾಗ ನಿಧಾನವಾಗಿ ಏಳಬೇಕು. 2. ಸ್ನಾನಗೃಹ ಮತ್ತು ಶಯನ ಗೃಹಗಳ ಮಧ್ಯೆರಾತ್ರಿ ದೀಪ ಉರಿಯುತ್ತಿರಲಿ. 3. ಹೆಚ್ಚು ಎತ್ತರದ ಮತ್ತು ಬಿಗಿಯಿಲ್ಲದಚಪ್ಪಲಿ ಧರಿಸಬಾರದು. 4. ವಿದ್ಯುತ್‌ತಂತಿ ಮತ್ತು ಕಂಬಿಗಳು ನಿಮ್ಮ ಕೆಲಸದ ಸ್ಥಳದಿಂದ ದೂರವಿರಲಿ. 5. ಅಡುಗೆಕೋಣೆಯಲ್ಲಿ ಆಗಾಗ ತೆಗೆಯುವ ವಸ್ತುಗಳನ್ನು ಬಗ್ಗಿ ತೆಗೆಯದ ಸ್ಥಳಗಳಲ್ಲಿರಿಸಿ. <u>ಸಂಬಂಧಪಟ್ಟ ತೊಂದರೆಗಳನ್ನು ನಿವಾರಿಸುವ ತಂತ್ರಗಳು</u> 1. ವೈದ್ಯಕೀಯ ನಿರ್ವಹಣೆ 2. ಮೂಳೆಮುರಿತ/ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಿರ್ವಹಣೆ 1. <u>ವೈದ್ಯಕೀಯ ನಿರ್ವಹಣೆ:</u>– a. ಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆ b. ಆಹಾರದಲ್ಲಿಕ್ಯಾಲ್ಸಿಯಂ ಹೆಚ್ಚು ಸೇವನೆ c. ವಿಟಮಿನ್ 'ಡಿ' ಸೇರಿಸುವುದು d. ವ್ಯಾಯಾಮ e. ಜೀವನ ಶೈಲಿಯ ಬದಲಾವಣೆ f. ಎಸ್ಟ್ರೋಜನ್ ಸೇರಿಸುವಚಿಕಿತ್ಸೆ	ಶಿಕ್ಷಕರು ವಿವರಿಸುವರು ಸಂಬಂಧಪಟ್ಟ ತೊಂದರೆಗಳು ಮತ್ತು ನಿರ್ವಹಣೆ	    ಎಲ್‌ಸಿಡಿ	ತೊಂದರೆಗಳನ್ನು ನಿವಾರಿಸಲುಇರುವ ನಿವಾರಣಾ ತಂತ್ರಗಳನ್ನು ತಿಳಿಸಿ ತೊಂದರೆಗಳು ಮತ್ತು ನಿರ್ವಹಣೆ

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
		a. **ಕ್ಯಾಲ್ಸಿಯಂ ಸೇರಿಸುವುದು** i. ಕ್ಯಾಲ್ಸಿಯಂಕಾರ್ಬೊನೇಟ್ ೫೦೦mg/ಟ್ಯಾಬ್ಲೆಟ್ ii. ಕ್ಯಾಲ್ಸಿಯಂ ಕಾರ್ಬೊನೇಟ್+೫mg ವಿಟಮಿನ್ ಡಿ೩ iii. ಕ್ಯಾಲ್ಸಿಯಂ ಗ್ಲೂಕೋನೇಟ್ ೪೦೦mg/gr b. **ಹೆಚ್ಚಿನಕ್ಯಾಲ್ಸಿಯಂಆಹಾರ ಸೇವನೆ** ನಮ್ಮ ಸಮತೋಲನ ಆಹಾರದಲ್ಲಿ ಸರಿಯಾದತೂಕದಕ್ಯಾಲ್ಸಿಯಂ, ಕ್ಯಾಲೋರಿ ಮತ್ತು ಪೋಷಕಾಂಶಗಳನ್ನು ಸೇವಿಸುವುದರಿಂದದೇಹವು ಸೂಕ್ತ ಕ್ಯಾಲ್ಸಿಯಂ ಹೀರಿಕೊಳ್ಳುವುದನ್ನು ಸಮದೂಗಿಸುತ್ತದೆ. 1. ೨ ರಿಂದ 19 ವಯಸ್ಸಿನವರಲ್ಲಿ ಶಿಫಾರಸ್ಸು ಮಾಡಲ್ಪಟ್ಟಕ್ಯಾಲ್ಸಿಯಂ ಸೇವನೆ 1300 mg/ದಿನಕ್ಕೆ. 2. ೨೦– ೫೦ ವರ್ಷ ವಯಸ್ಸಿನವರು ತೆಗೆದುಕೊಳ್ಳಬೇಕಾದದ್ದು 1000 mg/ದಿನಕ್ಕೆ ೩. 51 ವರ್ಷ ಮತ್ತುಅದಕ್ಕೆ ಮೇಲ್ಪಟ್ಟವರಲ್ಲಿ ೩೦೦–೫೦೦mg/ದಿನಕ್ಕೆ			
		ಕ್ಯಾಲ್ಸಿಯಂನ ಆಕರಗಳು 1.ಒಂದುಕಪ್ ಹಾಲು ಅಥವಾಕ್ಯಾಲ್ಸಿಯಂಯುಕ್ತಆಹಾರ — 300 mg ೨.ಮಜ್ಜಿಗೆ — 284 mg ೩.ಚಾಕೋಲೇಟ್ — 291 mg 4.ಚೀಸ್ — 174 mg ೫.ಮೊಸರು — 415 mg 176 mg			

		೬.ಮೀನು ಮೂಳೆಯ ಸಮೇತ 7. 1 ಕಪ್ ಬೇಯಿಸಿದ ಸೊಪ್ಪು ಮೊಟ್ಟೆ ೮.ಸೇಬು, ಬಾಳೆಹಣ್ಣು ೯.ಎಲೆಕೋಸು – 1 ಕಪ್	372 mg 200 mg 28 mg 10 mg 44 mg			
		c. **ವಿಟಮಿನ್ ಡಿ ಸೇವನೆ**				
		ನೈಸರ್ಗಿಕ ಆಹಾರದಿಂದಲೇ ಚರ್ಮ ವಿಟಮಿನ್ 'ಡಿ' ಉತ್ಪಾದಿಸುತ್ತದೆ.	**ಸೇರಿಸುವುದು** 400– 800/U ಸೇವನೆಯನ್ನು ವಯಸ್ಕ ರಲ್ಲಿ ಶಿಫಾರಸ್ಸು ಮಾಡುವರು			
		d. **ವ್ಯಾಯಾಮಕಾರ್ಯಕ್ರಮ** ಒತ್ತಡದಚಟುವಟಿಕೆ ಮತ್ತು ಮಾಂಸಖಂಡಗಳ ಚಟುವಟಿಕೆ ಎಲುಬುಗಳ ಬೆಳವಣಿಗೆಗೆ ಸಹಕಾರಿಯಾಗುತ್ತದೆ. ವ್ಯಾಯಾಮಕೂಡ ಎಲುಬುಗಳ ಸಾಂದ್ರತೆಯ ಹೆಚ್ಚುವಿಕೆಗೆ ಸಹಾಯವಾಗುತ್ತದೆ.				

		ವ್ಯಾಯಾಮವು ಮಾಂಸಖಂಡಗಳ ಬೆಳವಣಿಗೆಗೆ– ಸಮತೋಲನಕ್ಕೆ ಮತ್ತುಅನ್ಯೋನ್ಯಕ್ಕೆ ಸಹಕಾರಿಯಾಗಿದೆ.	ತೂಕ ನಿರ್ವಹಿಸುವ ವ್ಯಾಯಾಮ ↓ ಗುರುತ್ವಾಕರ್ಷಣ ಬಲಕ್ಕೆ ವಿರುದ್ಧವಾಗಿ ಕೆಲಸ ಮತ್ತು ವ್ಯಾಯಾಮ ನಡಿಗೆ, ↓ ಎತ್ತರಏರು, ಭಾರಎತ್ತು, ಮೆಟ್ಟಿಲು ಹತ್ತು, ಟೆನ್ನಿಸ್ ಆಟ, ನೃತ್ಯ	ನಡಿಗೆ ವಾರಕ್ಕೆ ೩ ಸಲ ೩೦ ನಿಮಿಷಗಳು		   	
		e. **<u>ಜೀವನ ಶೈಲಿಯ ಬದಲಾವಣೆ – ಶಿಫಾರಸ್ಸು ಮಾಡಿದ್ದು</u>** ➢ ಧೂಮಪಾನದಿಂದದೂರ ➢ ಮಧ್ಯಪಾನದೂರ ➢ ಅತಿಯಾದಧೂಮಪಾನ ಬೇಡ ➢ ವ್ಯಾಯಾಮರಹಿತಜೀವನ ಶೈಲಿ ಬೇಡ f. **<u>ಎಸ್ಟ್ರೋಜನ್‌ಚಿಕಿತ್ಸೆ ಮಾರ್ಪಾಡು</u>**:– • ಎಸ್ಟ್ರೋಜನ್ ಸೇವನೆಯು ಮೂಳೆಯಲ್ಲಿ ಕ್ಯಾಲ್ಸಿಯಂ ಹೀರುವಿಕೆಯನ್ನು ಕಡಿಮೆಗೊಳಿಸಿ ಮೂಳೆ ಮುರಿತವನ್ನುತಡೆಯುತ್ತದೆ. • ಕಾರ್ಬಕೋಸ್ಟೀರೋಯಿಡ್ಸ್ –ಇದನ್ನು ತೆಗೆದುಕೊಳ್ಳುವ ರೋಗಿಗಳು ಕಡಿಮೆ ಪ್ರಮಾಣದಔಷಧಿಯನ್ನು ಶಿಫಾರಸ್ಸು ಮಾಡಲಾಗುತ್ತದೆ.			   	

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವ–ವರ್ತನೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
		2. <u>ಎಲುಬು ಮುರಿತ ಮತ್ತು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆ ನಿರ್ವಹಣೆ</u> :– a. ಕುಂಡಿಯ ಎಲುಬು ಮುರಿತವನ್ನು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ಮೂಲಕ ಸರಿಪಡಿಸಿ ಮುರಿದ ಮೂಳೆಗಳನ್ನು ಸೇರಿಸುವುದು. b. ಬೆನ್ನುಮೂಳೆಯ ಮುರಿತವನ್ನು ಹೊಸ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ವಿಧಾನಗಳಾದ ಪ್ರಿಕ್ಯುಟೇನಿಯಸ್ ವರ್ಟಬ್ರೊಪ್ಲಾಸ್ಟ್, ಕೈಪೋಪ್ಲಾಸ್ಟಿ, ಮೆಟಾಕ್ರೈಲೈಟ್ ಸಿಮೆಂಟ್ ಬಳಸಿ ಮುರಿತ ಸರಿಮಾಡುವುದು.			

ನಿರ್ದಿಷ್ಟ ಗುರಿಗಳು	ಸಮಯ	ಸಾರಾಂಶ	ಕಲಿಸುವವರ–ಕಲಿಯುವವರಚಟುವಟಿಕೆ	ಕಲಿಕಾ ಸಾಮಗ್ರಿಗಳು	ಮೌಲ್ಯಮಾಪನ
೩ ನಿಮಿಷ		<u>ಸಮಾಪ್ತಿ</u> ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಬಹಳಷ್ಟು ವ್ಯಕ್ತಿಗಳಲ್ಲಿ ತಡೆಗಟ್ಟಬಹುದು. ಇದನ್ನು ವೈದ್ಯಕೀಯ, ಪೋಷಕಾಂಶ, ಜೀವನ ಶೈಲಿಗಳಿಂದ ಪರಿಹರಿಸಬಹುದು. ಹೆಂಗಸಿಗಿರುವ ಜ್ಞಾನದಿಂದ ಆಸ್ಟಿಯೋಪೋರೋಸಿಸ್ ಮತ್ತುಅದಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟ ತೊಂದರೆಗಳಿಂದ ತಪ್ಪಿಸಿಕೊಳ್ಳಬಹುದು. ಪ್ರಾಥಮಿಕ ಮತ್ತು ಮಾಧ್ಯಮಿಕ ತೊಂದರೆಗಳಿಂದ ತಪ್ಪಿಸಿಕೊಳ್ಳುವಲ್ಲಿ ಮಹಿಳೆಯರನ್ನು ಉತ್ತೇಜನಗೊಳಿಸಿ.			

ANNEXURE – P

FORMULA'S USED FOR DATA ANALYSIS

1. **Mean =** $\frac{\sum x}{N}$

2. **Standard deviation** $= \frac{\sum d^2}{N}$

3. **Spearman's Brown Prophecy formula for reliability,** $r^1 = \frac{2r}{1+r}$

   r = the correlation coefficient

   r^1 = the estimated reliability of the entire test

4. **Correlation Coefficient**

$$r = \frac{1/n\sum(x-x)(y-y^-)}{\sqrt{1/n\sum(x-x)1/n(y-y^-)}}$$

5. **Paired 't' test**

$$t = \frac{\text{Mean}}{SD/n}$$

   SD= Standard deviation

   n= No. of paired observations

6. **Chi-Square**

$$\chi^2 = \frac{(O-E)^2}{E}$$

   O = Observed frequency

ANNEXURE – Q : MASTER SHEET
(SOCIO - DEMOGRAPHIC DATA)

Variables	Age	Qualification	Monthly income in Rs/month	Marital status	Religion	Residential areas	Family history of Osteoporosis	Body mass index	Exposure to mass media within six months
1	b	d	c	b	a	b	b	b	B
2	c	d	d	b	b	b	b	c	B
3	b	d	c	b	c	b	b	b	C
4	b	d	c	b	a	b	a	b	C
5	b	d	c	b	a	b	b	b	C
6	a	d	c	a	b	b	b	b	B
7	c	d	d	b	a	b	b	c	B
8	b	d	c	b	b	b	a	b	B
9	c	d	c	b	b	a	a	c	A
10	a	d	c	a	c	a	b	b	A
11	a	d	c	b	c	b	b	b	B
12	b	d	c	b	b	b	b	c	B
13	b	d	c	b	c	b	b	b	A
14	c	d	c	b	b	b	b	c	A
15	b	d	c	b	a	b	b	b	B
16	c	d	c	b	b	b	b	c	B
17	b	d	b	b	c	b	b	c	B
18	a	d	c	b	a	a	a	c	A
19	a	d	b	b	a	b	b	c	B
20	a	d	b	a	a	a	b	b	B
21	a	d	b	b	c	b	b	b	B
22	b	d	b	b	a	b	b	c	B
23	b	d	c	b	a	b	b	d	B
24	a	d	c	a	b	a	b	b	B
25	b	d	b	b	a	b	b	c	A

Variables	Age	Qualification	Monthly income in Rs/month	Marital status	Religion	Residential areas	Family history of Osteoporosis	Body mass index	Exposure to mass media within six months
26	a	d	b	a	b	a	b	b	b
27	b	d	b	b	a	b	b	b	b
28	b	d	c	b	a	b	b	c	b
29	b	d	c	b	a	b	b	c	b
30	c	d	c	b	a	b	b	d	b
31	b	d	c	b	a	b	b	c	b
32	b	d	b	b	a	b	b	c	b
33	a	d	b	b	a	b	b	b	b
34	a	d	c	b	a	b	b	b	a
35	a	d	b	b	a	b	b	b	a
36	c	d	c	b	a	b	b	c	b
37	a	d	b	b	a	b	b	c	b
38	b	d	b	b	a	a	b	c	b
39	a	d	b	a	b	a	b	b	b
40	b	d	b	b	a	b	a	c	a
41	a	d	b	a	b	a	b	b	b
42	b	d	c	b	a	b	b	c	b
43	b	d	c	b	a	b	b	c	b
44	b	d	c	b	a	a	b	b	b
45	c	d	c	b	b	a	a	c	a
46	a	d	c	a	c	a	b	b	b
47	a	d	c	b	c	b	b	b	b
48	b	d	c	b	b	b	b	c	b
49	b	d	c	b	c	b	b	c	b
50	c	d	c	b	b	a	b	c	b

Knowledge questionnaire– PRE TEST

Sl. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
4	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	1	0
5	0	0	1	0	0	0	1	0	1	1	1	0	1	0	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	1	0	0	1	0
6	0	1	1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0
7	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1
8	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	1	0	0	1	1	1	1	0	0	1	1	1	0	1	1	1	0	0	1
9	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	1	0	1	0	0	0	0	1	1	1
10	0	0	0	1	0	1	1	1	1	1	0	0	1	0	0	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	0	0	1	0	0	1	0	1	0	0	0	0	1
11	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	1	1	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0
12	0	0	0	0	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	1	0	1	0	0	1	0	1	1	1	1	1	1	1	1	0	1	0	0	0	1	0	1	0	0	0	1	1	0	0
13	1	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0
14	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0
16	0	1	1	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	1	1	1	0	0	1	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	1	1	0	1	0
17	0	0	0	0	0	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
18	0	1	1	1	1	1	1	0	1	1	0	0	1	1	1	0	0	0	0	0	1	1	0	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	1	0	1	1	0	1	1
19	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0	0	1	1	0	0	0	1	1
20	0	1	1	1	1	1	0	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	0	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	1	1
21	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
22	0	0	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1	1	1
23	0	0	0	0	1	0	0	0	1	1	0	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	1	0	0	1	0	0	0	1	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
26	1	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	0	0	0	1	0	0	0	1	1	1	0	0	1	1	0	0	0	0	1	0
27	0	0	0	0	1	0	1	0	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	1	0	1	0
28	1	1	0	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	1	1	0	1	0	0	1	1	0	0	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0
29	1	0	0	0	1	1	1	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0
30	0	0	1	0	1	0	0	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	1	1	0	1	1	1	1	1	1	1	0	1	0	0	0	1	1	0	0	1	1	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	0	1
32	1	1	0	1	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	1	0	1	0	1	1	1	1	0	0	1	0	1	1	0	0	0	0	1	0
33	0	1	0	1	0	0	1	1	1	1	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	1	1	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	0	1
34	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0
36	0	0	1	0	0	1	1	0	1	1	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
37	1	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	0	0	1	0	1	0	0	1	1	1	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	0	0	1	1
38	1	0	0	0	0	0	1	0	1	1	0	0	0	1	1	1	0	0	1	0	0	1	0	1	0	1	1	1	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
39	1	1	1	0	0	0	1	1	1	1	0	0	0	1	1	0	0	1	1	0	0	1	0	1	1	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	0	0	0	0	1	1	0	0
40	0	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	0	0	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	1	1	0	0	0	1	1
Tot	**16**	**19**	**19**	**19**	**18**	**19**	**31**	**15**	**32**	**33**	**16**	**13**	**18**	**17**	**19**	**19**	**17**	**15**	**15**	**13**	**24**	**15**	**18**	**17**	**18**	**14**	**14**	**17**	**20**	**26**	**16**	**17**	**13**	**16**	**24**	**17**	**16**	**18**	**17**	**15**	**16**	**13**	**13**	**12**	**10**	**10**	**17**	**12**	**22**	**15**

Knowledge questionnaire– POST TEST

Sl.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	0	0	0	1	1	1	0	1	1	1	0	0	0	0	1	1	0	0	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	0
4	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	0	0	1	1	1	0	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1	1
6	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	0	1	1	1	1	1	1	0
10	1	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
11	1	1	1	1	0	1	1	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	0	1	0
12	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	0	0	1	1	0	1	0	1	0	1	0	0	1	1	1	0	1	1	1
13	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	1
14	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	0	1	1	0	0	1	0	0	0	0	1	1	1	0	1	1	1	1
15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0
16	0	1	0	1	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	0	1	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	0	1
17	1	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	0	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	1	1	0	1	0
18	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1	1
19	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	0	1	1	1	1	0	1	1	1	0	1	1	1
20	1	0	0	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0
21	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
22	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0	1	0	0	0	1	0	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	1	0	1	1	1	1	0	1	0
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0
26	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	0	1	0
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28	1	1	1	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	1	1	0	1	1	0	1	0
29	0	0	1	1	1	1	1	0	1	1	0	0	0	1	0	0	0	0	1	1	1	1	0	1	0	1	0	1	1	1	0	0	1	0	0	0	1	1	1	0	0	0	1	0	1	1	1	0	1	1
30	1	1	1	0	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	0	0	1	1	0	1	1	0	1	0
31	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	0	0	0	1	1	0	0	0	1	1	1	0	0	1	1	0	0	1	0	1
32	1	1	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	0	0
33	0	1	1	0	1	0	1	0	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	0	1	0	1	1	1
34	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	0	1	1	1	1	0
35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1
36	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	0	1	0
37	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	1	0	1	0	1	1	1	1
38	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	0	1	1	1	0	1	1	1	1	1	1	1	0
39	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	9	1	1	1	1	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	1	1	1
40	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0	0	1	0	1	1	1	1	0	0	1	1
Tot	33	34	32	29	31	31	36	26	33	36	34	33	32	28	33	33	34	35	28	29	31	32	32	31	32	30	32	29	32	34	24	25	26	34	32	24	28	28	21	20	22	22	26	30	29	32	33	22	33	24