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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.

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ABSTRACT

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." 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. 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. 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"**

Keywords: Structured Teaching Programme, Osteoporosis, Women

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INTRODUCTION

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.

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 within six months, on osteoporosis and its related complications.

MATERIALS AND METHOD

Design and Samples

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.

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

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 within 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

Data Collection Method:

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:

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.

Data collection phase:

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

Statistical 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.

RESULTS AND DISCUSSION

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

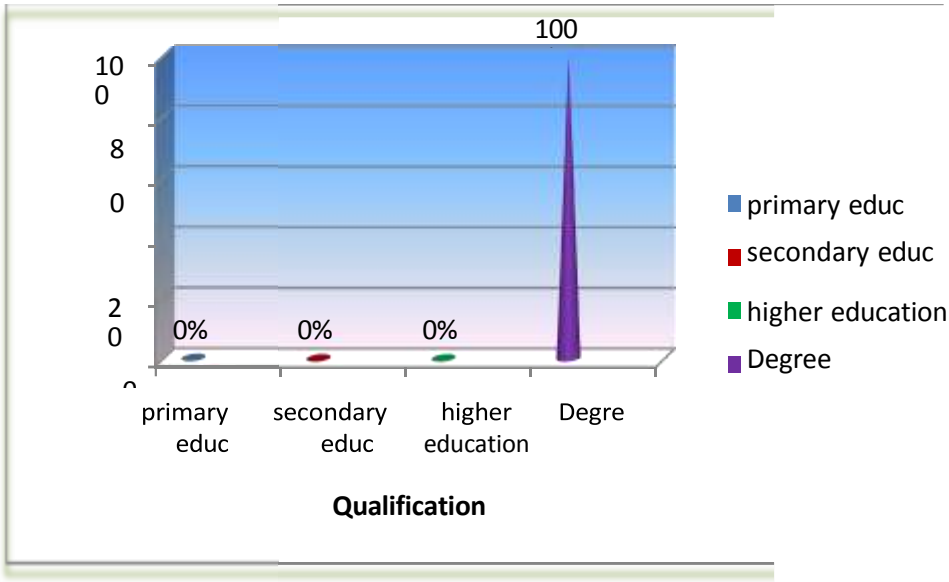
Table 1: Distribution of Socio-demographic variables of the subjects

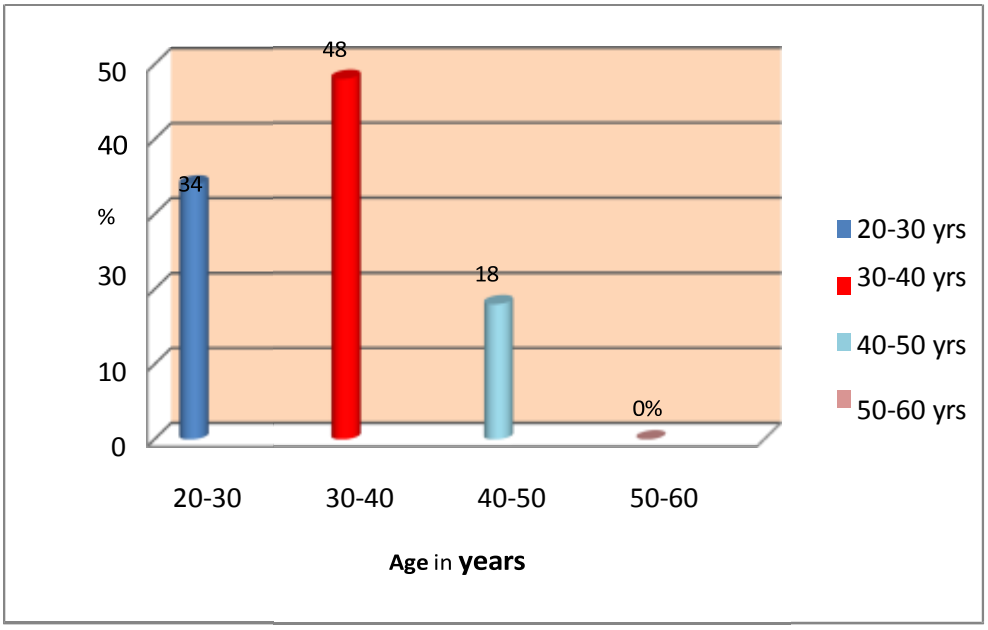
N=50

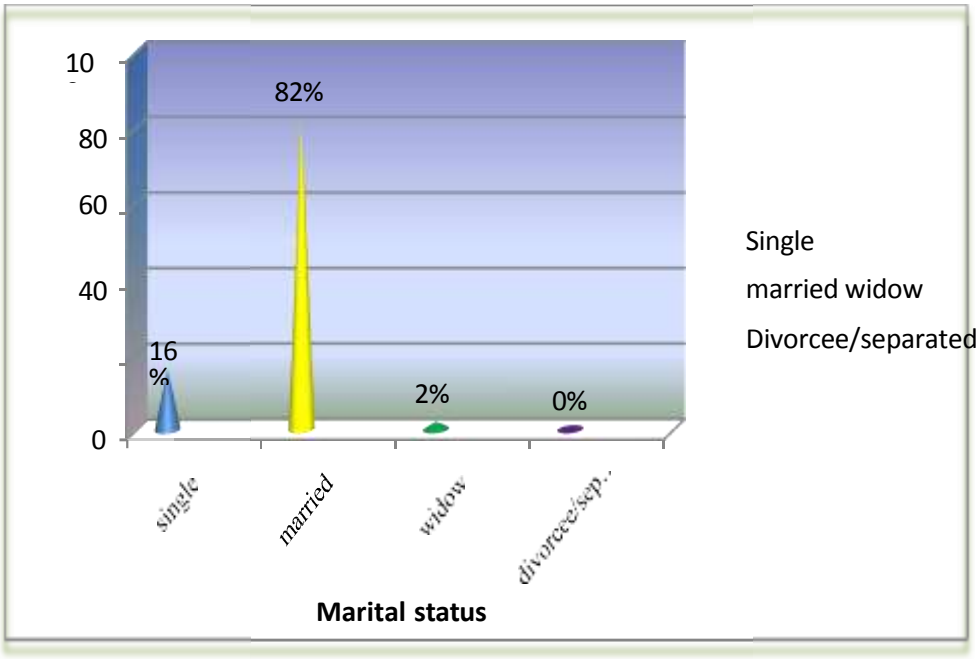
S.No.	Variables	Frequency	%
1	**Age (In Years)**		
a)	20-30yrs	17	34
b)	30-40yrs	**24**	**48**
c)	40-50yrs	9	18
d)	50-60yrs	-	-
2	**Qualification**		
a)	Primary education	-	-
b)	Secondary education	-	-
c)	Higher education	-	-
d)	Degree	**50**	**100**
3	**Monthly income in Rs/month;**		
a)	Less than 5000	- 16	- 32
b)	5001-10,000	**32**	**64**
c)	10,001-15,000	2	4
d)	15,001 and above		
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	- 23	- 46
b)	Between 18.5 to 24.9 kg/m^2	**25**	**50**
c)	Between 25 to 29.9 kg/m^2	2	4
d)	Above 30 kg/m^2		
9.	**Exposure to mass media within six months, on osteoporosis and its related Complications;**		
a)	Yes	13	26
b)	No	**37**	**74**

The above table results shows that (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. (100%) of the subjects were Degree holders. (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. (82%) of the subjects were married and only (2%) of them belonged to widow group.(54%) of the subjects were Hindus and only (18%) of them were Muslims.(74%) of the subjects were lived in rural area and only (26%) of them were lived in urban area. (88%) of the subjects were not having family history of osteoporosis and only (12%) were having family history of osteoporosis.(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.(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.






10
80
60
40
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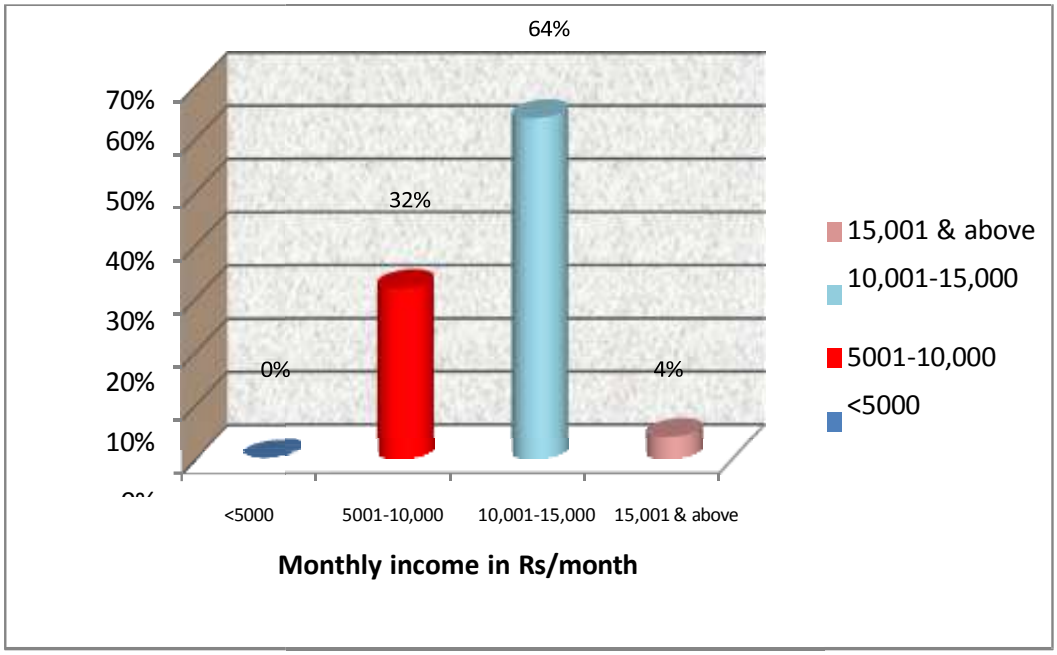
single
married
widow
divorcee/sep.
Marital status
Single
married widow
Divorcee/separated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Monthly income in Rs/month
15,001 & above
10,001-15,000
5001-10,000
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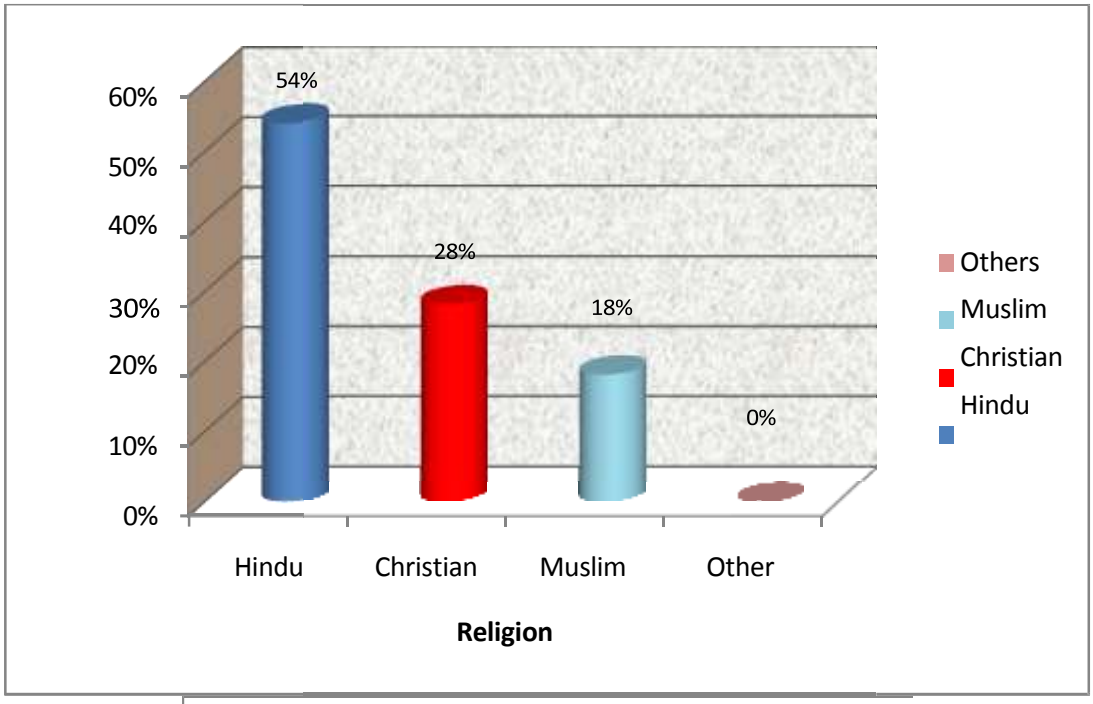
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50%
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10%
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Hindu
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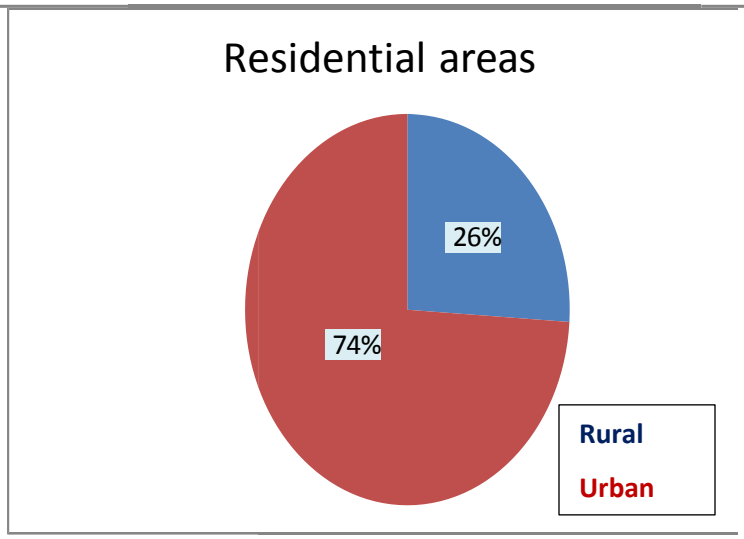
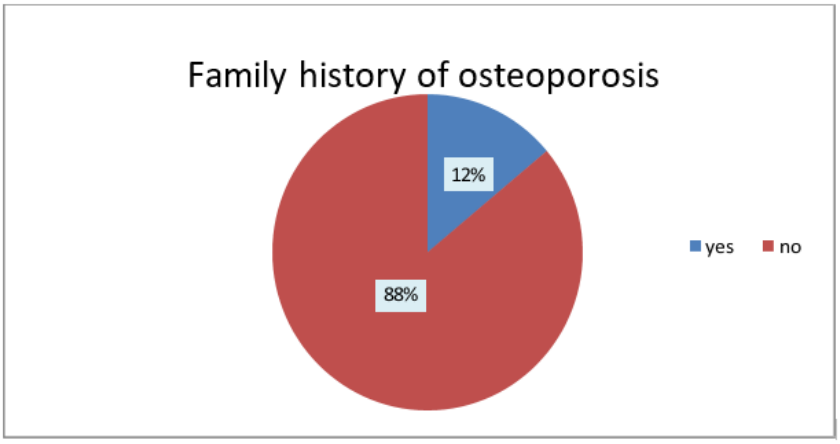

Residential areas
26%
74%
Rural
Urban


Family history of osteoporosis
12%
88%
yes
no

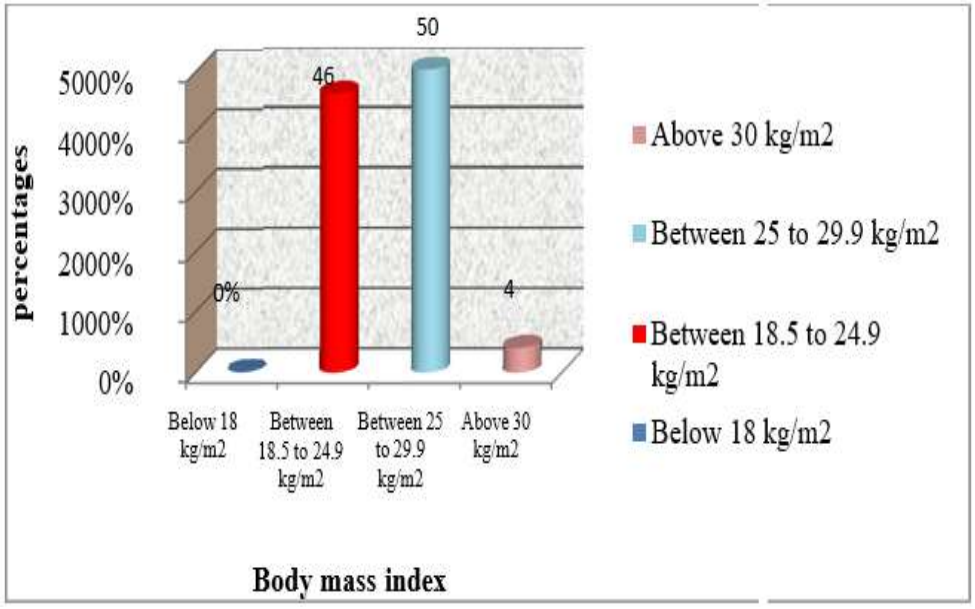


Table-2: **Distribution of subjects according to the overall level of pre and post-test knowledge scores**

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**

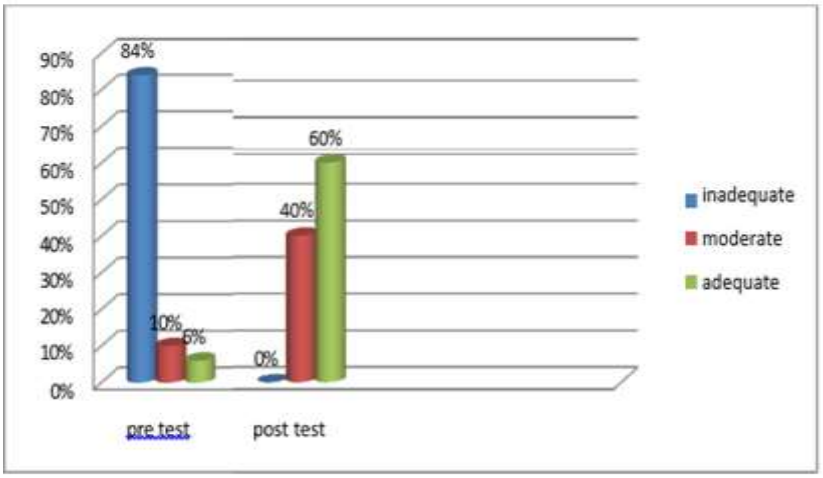


Figure 13: Distribution of subjects according to the overall level of pre and post-test knowledge scores

As per the first objective, Table: 2 and Figure 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.

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

Sr 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			
2	After intervention	40	21-36	29.80	74.5	4.170	18.156	49	SS *

SS* - Statistically significant

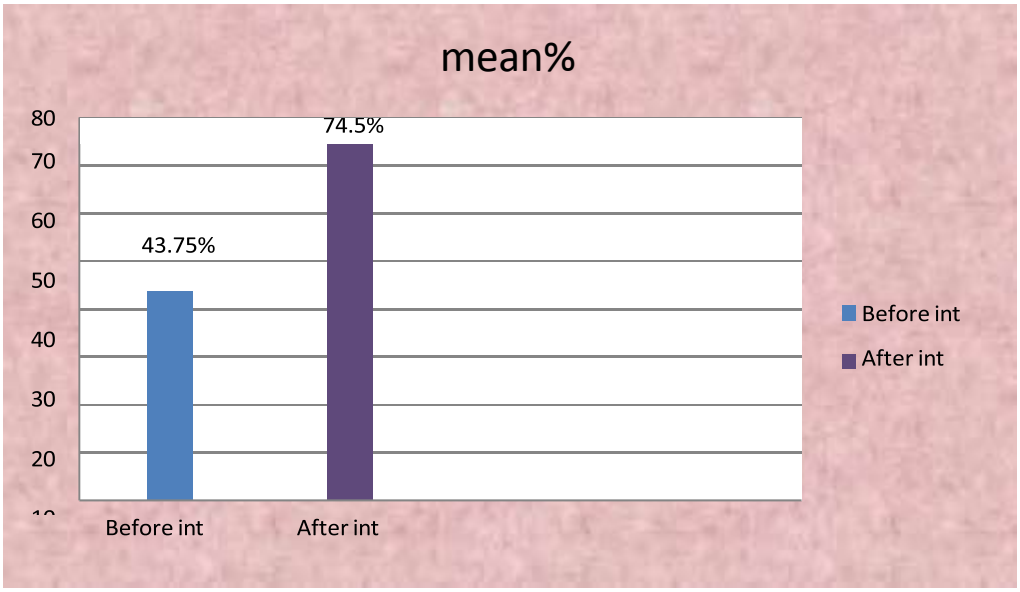


Figure 15: Comparison of pre and post-test mean scores on knowledge among subjects

As per the second objective, Table 4 and Figure 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.

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

Sr 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 within 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**

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.
3. The findings of the study are discussed under the following headings.
4. Socio-demographic variables
5. Assessment of knowledge regarding different areas of Osteoporosis.
6. Effectiveness of structured teaching programme on Osteoporosis.
7. Association of post–test knowledge scores and selected demographic variables.

Findings related to demographic variables

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].

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].

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].

Marital status

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

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].

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].

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].

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.

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].

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.

Whereas 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.

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

The second objectives 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 (H1) 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.

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 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 within six months, on osteoporosis and its related complications at 0.05 level through ' $\chi 2$ ' test . Hence H2 was rejected.

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.

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