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EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING MENOPAUSAL OSTEOPOROSIS AMONG PERI MENOPAUSAL WOMEN'S IN SELECTED COMMUNITY AREA AT KOLLAM

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ABSTRACT
The research project under took was "A study to assess the effectiveness of structured teaching programme on knowledge regarding menopausal osteoporosis among perimenopausal women's in the selected community area at Kollam" the objectives of the study were to assess the knowledge regarding menopausal osteoporosis among perimenopausal women's in selected Community area at Kollam, to assess the effectiveness of structured teaching programme on knowledge regarding menopausal osteoporosis among perimenopausal women's in the selected Community area at Kollam, to find out association between knowledge regarding menopausal osteoporosis among perimenopausal women's and selected demographic variables in the selected Community area at Kollam, a quantitative research design was adopted for this study. The study was conducted among 60 perimenopausal women's in the Century Nagar, Pallithottam, Community Area at Kollam. In order to assess the knowledge of perimenopausal women's regarding menopausal osteoporosis, the study sample was selected by convenient sampling technique. The tool used for data collection consisted of demographic profoma and structured questionnaire basic introduction of the study was given to the subjects. The analysis of the data was based on the objectives of the study using quantitative and inferential statistics. The findings of the present study revealed that there was significant association between knowledge and demographic variables like education and religion. There is no significant association between age, marital status, occupation, monthly income, family type, source of information and food pattern, and the structured teaching programme was effective to increasing the knowledge regarding menopausal osteoporosis among perimenopausal women's. Based on the findings the investigator have drawn implication which were of vital xiv concerns in the field of nursing practice, nursing administration, nursing pattern, nursing education for future development.

KEYWORDS: Effectiveness; structured teaching programme; knowledge; menopausal osteoporosis; perimenopausal women's.

INTRODUCTION
Menopause is defined as the absence of menstrual period for 12 months. It is a time in women's life and when the function of the ovaries ceases. The perimenopausal period is the time in the women's life when the physiological change occurs that begins the transition to menopause. Every women experiences her midlife years differently, the changes that occur during this period including changes in sexual wellbeing, are typically caused by a mix of both menopause and aging as well as by typical midlife stresses and demand.[1] Osteoporosis is a silent killer disease. postmenopausal osteoporosis is a condition characterized by the loss of bony tissue leading to bone that are brittle and prone to fracture. Osteoporosis is common in elderly especially in ladies after 45 years and in women after menopause. After menopause in women the process of osteoporosis is accelerated due to deficiency of estrogen. Estrogen helps in the Menopause accelerates the bone loss to 2-5% per year, which may continue till 10 years. Prevalence of osteoporosis increases with age in women and not in men. It is reported that 42.5% women and 24.6% men above the age of 50 years suffer from osteoporosis in India. Menopausal osteoporosis is a serious public health concern.[2] Currently it is estimated that over 200 million people worldwide suffer from this disease.[2] Aging of population worldwide will be responsible for a major cause according to International Osteoporosis Foundation [IOF]. Asian audit, in 2009, expert groups estimated that the number of osteoporosis patients in India was approximately 26 million in 2003 with projections indicating that this would rise to 36 million

patients by 2013, sources estimate that 50 million people in India are either osteoporotic or have low bone mass. Approximately 30% of all postmenopausal women have osteoporosis in the United States and in Europe. At least 40% of these women3 and 15-30% of men4 will sustain one or more fragility fractures in their remaining life time. A study was conducted in India to assess the prevalence of osteoporosis and find low bone mass of healthy adult and its risk factors among 881 participants. Among these, 498 were women and 383 men aged 50 and above were analyzed in this study. A self-administered questionnaire was used to assess. there demographic characteristics, diet, lifestyle and medical history the prevalence osteoporosis was high in women [47%] compared to men [15.5%]. Osteoporosis is often called as "silent disease", because initially bone loss occurs without symptoms. People may not know that they have osteoporosis until there bone become so weak that a sudden strain, bump or fall causes a fracture of a vertebrae may positive calcium metabolism and osteogenesis initially be felt or seen in the form of severe back pain, loss of height or spinal deformities such as stooped posture. Recently published data have clearly demonstrated widespread vitamin D deficiency across India, at all ages and in both sexes, particularly in the urban areas. Poor sunlight exposure, skin pigmentation and a vitamin D deficient diet are some[3] obvious causes for this finding. Indians have low Bone Mineral Density (BMD) as compared to the western Caucasians. According to WHO, The annual incidence rate of osteoporotic fracture in women is greater than the incidence rate of heart attack, stroke and breast cancer. Osteoporosis will put bigger burden to the health care system as treatment is expensive. One out of 8 male and one out of 3 female in India suffers from osteoporosis, making India one of the largest affected countries in the world. One in two Indian women above the age of 45 suffers from osteoporosis. So this is a huge problem in India. Failure to identify at-risk patients, to educate them, and to implement preventive measures may lead to tragic consequences. Medical care includes calcium, vitamin D, antiresorptive agents and estrogen receptor modulator. Surgical care includes vertebroplasty and kyphoplasty. Risk factors for osteoporosis include age[>30], gender [women's >50 years], ethnicity [Caucasian and Asian women's], bone structure and bone weight, family history, prior history of fracture or bone breakage, certain medications [long term use of steroids], medical conditions including cancer and stroke. The diagnosis include Bone Mineral Density [BMD] test, bone measurement. The treatment include weight bearing exercise, calcium and vitamin D supplements, medications like estrogen therapy, injectable teriparatide [bone building agents], calcitonin, denozumab [antibody therapy, taken twice a year].[5] Prevention is better than cure. Osteoporosis can be prevented in women by early diagnosis and treatment helps in preventing complications. Hormone therapy is believe to be useful in preventing or decreasing the increased rate of bone loss that lead to osteoporosis, there are many ways to protect oneself against osteoporosis include exercise like jogging, playing tennis, walking and dancing, eat food high in calcium[4] [Recommended Daily Allowance for calcium for people age 31-50 years is 1200 mg/day, people> 50 years should get 1200 -1500 mg /day], calcium supplements like calcium carbonate and calcium citrate, vitamin D [400-2000 IU/day] replacing estrogen hormones, limiting the amount of alcohols and smoking that causes the production of less estrogen that protect bone.

OBJECTIVES

The objectives of the study are.

- To assess the knowledge regarding menopausal osteoporosis among perimenopausal women's in selected Community area at Kollam.
- To assess the effectiveness of structured teaching programme on knowledge regarding menopausal osteoporosis among perimenopausal women's in the selected Community area at Kollam.
- To find out association between knowledge regarding menopausal osteoporosis among perimenopausal women's and selected demographic variables in the selected community areas Kollam.

REVIEW OF LITERATURE

1. Literature related to prevalence of menopausal osteoporosis.

1. An observational, retrospective cohort study was conducted to assess Age-related prevalence of osteoporosis and fragility fracture in an outpatient clinic Klimax in Vienna, Austria, between August 1990 and January 2012 women's at an age of 40 years of age or older who underwent Bone Mass Density (BMD) testing upon their initial consultation. The data source was an electronic database comprising data of all patients presenting at the menopause and osteoporosis outpatient clinic. For the current analysis, individual patient files were aggregated. Only data obtained at the first consultation were used. The clinic staff consisted of senior and resident physicians as well as radiological assistants specifically trained to differentiate between fragility and traumatic fractures according to World Health Organization (WHO) criteria and supporting guidance. Women ≥40 years, who were referred to a menopause and osteoporosis outpatient clinic for Bone Mass Density (BMD) measurements, were assessed for patient characteristics, bone mass density and previous fragility fractures of the hip, the distal forearm and the vertebrae. It is found that between 1990 and 2012, 99, 399 women, mean age 56.1 years, were referred to the clinic for bone mass density testing. Of the total population, 52.5% showed normal, 34.0% osteopenic and 13.5% osteoporotic BMD. The prevalence of osteoporosis and fragility fractures in middle-aged women, < 65 years, is hitherto under-recognized. Measuring bone mass density alone is not sufficient to identify patients at risk for fractures. Supplemental screening for clinical risk factors already during perimenopause may be advantageous.[7]

2. A cohort study conducted to determine the trend in incidence of osteoporotic fractures among premenopausal and postmenopausal women during the periods immediately before and after publication of the Women's Health Initiative and Heart and Estrogen/Progestin Replacement Study (HERS) II data. The cohort of women aged 40 to 69 years was included. A total of 43,017 new fractures were identified. The incidence of fracture was significantly greater during 2004 to 2005 than 2000 to 2001. The use of estrogen, estrogen plus progestin, and other hormones declined over the period from 2000 to 2003, whereas the use of other bone-modifying drugs increased from 2003 through 2005. The study indicated that the incidence of osteoporosis related fractures among premenopausal and postmenopausal women increased significantly in the 3 years after publication of Women's Health Initiative and Heart and Estrogen/Progestin Replacement Study II results. This trend followed a decline in the use of hormone therapy, concurrent with an increase in the use of other bone-modifying agents.[8]

3. A study conducted to determine the prevalence of osteoporosis among postmenopausal women above the age of 60years from Delhi and rural Haryana by measuring their bone mass density of healthy women living in seven residential areas of Delhi and 10 rural communities of rural Haryana were the samples. 430 women in the age group 60- 70 were underwent bone mass density assessment. Amongst those 265 were osteoporotic by world health organization (WHO) criteria. Mean height of women with osteoporosis was not significantly different from those without osteoporosis; but had lower body weight. 7% of osteoporotic women had suffered one or more fractures, forearm constituting 5% followed by hip fracture. Study concluded that the estimated prevalence of osteoporosis was 62%. It was less among urban postmenopausal women who had more years of formal education.[9]

2. Review of literature related to knowledge of menopausal osteoporosis

1. A study was carried out in India to assess the awareness of osteoporosis in postmenopausal womens.100 postmenopausal women's` were selected for the study. The women included in the study were selected from localities of Chandigarh. Women who volunteered for the study were explained the questionnaire in their own vernacular language and the responses were recorded accordingly by trained health volunteers. In this study was developed by Kim on the basis of Rosen stock's Health Belief Model. It has two main subscales: Osteoporosis Health Belief Calcium Scale (OHBCS) and the Osteoporosis Health Belief Exercise Scale (OHBES). Other parameters such as the participants' height, weight, body mass index (BMI), dietary habits, and physical activity were recorded. There was no statistically significant difference between the mean susceptibility scores of three groups (normal, osteopenic, and osteoporotic).[10]

2. A study was conducted among women's who were undergoing bone densitometry in the healthcare centers in Lublin to establish the level of knowledge about osteoporosis prevention and to answer the question whether the level of knowledge is dependent on socio-demographic factors. The research was realized by means of a survey method, a poll technique in 2014. The study involved 292 women aged 51-83. The study involved 292 women aged 51-83. The examined women were patients undergoing bone densitometry in the healthcare centers in Lublin. The majority of the examined women correctly indicated risk factors for osteoporosis, i.e. a low calcium diet (71.2%), menopause (74.7%), older age (81.8%) and eating disorders (79.5%). Respondents presented the basic exercise knowledge (M = 9.97) and low knowledge concerning risk factors, screening and treatment of osteoporosis (M = 7.87). The calcium knowledge remained on an average level (M = 14.03). Better educated women, city inhabitants as well as women having very good or good social and welfare conditions showed a significantly higher level of knowledge about osteoporosis prevention. Even women undergoing bone densitometry examination present insufficient knowledge about osteoporosis prevention.[11]

3. A cross sectional study was conducted by among women's aged more than 40 years in Alexandria of Egypt in order to assess knowledge about osteoporosis as well as identifying its relation with other variables. A cross sectional survey included 532 women aged at or more than 40 years who lived in Alexandria governorate in Egypt was conducted using a self-administered questionnaire as well as the Facts on Osteoporosis Quiz. The mean age of studied women was 49.92 ± 7.75 years. The majority of them (95.1%) reported that they are familiar with osteoporosis and 77.1% perceive it as a serious disease and mass media was the main source of information regarding OP (54.2%) among them. The mean total score of the quiz was 11.3 ± 3.6. It was significantly associated with the level of education and employment status. Regarding the total knowledge percent score, nearly one half of studied females (51.5%) achieved a percent score ranging from 50% to less than 75% and 18.8% of them obtained a score of 75% or higher. The knowledge of osteoporosis among Alexandrian women could be considered moderate as regards its risk factors, preventive measures and consequences. Controlling the quality of health information provided through the mass media as well as motivating health care providers to play a role in providing information regarding osteoporosis is recommended.[12]

3. Review of literature related to prevention of menopausal osteoporosis

1. A descriptive study was conducted to assess women's knowledge and practices regarding the prevention and treatment of osteoporosis. 185 women sample are selected to measures the knowledge and practices were obtained with a hand-delivered questionnaire. The results

shows that women are receiving inadequate information about osteoporosis, possess limited knowledge about the disease, and are not taking adequate measures to prevent or treat osteoporosis.[13]

2. The descriptive study was conducted to assess knowledge of women in prevention of osteoporosis, diagnosis and treatment strategies. 21l women sample were selected at the age of 60 years and above living in the south western state. The result reveals that the older women at 60 years have poor knowledge about prevention and treatment of osteoporosis in pretest. The score is slightly increased after the interventions of the posttest. The researcher recommended the additional educational programme to increase the awareness of risk factors and behaviors like it to enhance bone health.[14]

3. A study was conducted by National Institute of Health (NIH) consensus development panel on osteoporosis prevention, diagnosis; therapy and objective were to clarify the factors associated with prevention and treatment of osteoporosis. The participants were a non-federal, no advocate, 13 members a panel was convened, representing the fields of internal medicine, family and community medicine. Thirty two experts from these fields presented to the panel and audience of 699. The panel answering predefines question, developed conclusions based on evidence presented in one form and literature. They concluded the study that, through prevent in white postmenopausal women, osteoporosis occurs in all population and at all ages. Adequate calcium and vitamin D intake is crucial to develop optimal peak bone mass and to preserve bone mass throughout life. Regular exercises, especially resistance and high impact activities, contributes to development of high peak bone mass and may reduce risk of falls is older person. Fracture prevention is the primary treatment goal for patient with osteoporosis.[15]

4. Review of literature related to Structured Teaching Programme on menopausal osteoporosis.

1. An experimental study was conducted to assess the effectiveness of planned teaching programme on knowledge of Type I osteoporosis and its prevention among menopause women in selected public health centers of Bijapur District, Karnataka. A pre-experimental design was used to find the effectiveness of planned teaching programme on type I osteoporosis among 100 menopause women between the age group of 40 - 70 years were included with convenient sampling technique. Data was collected by using demographic Performa and questionnaires through interview method. The result test shows that the improvement of mean knowledge scores of posttest when compared with lesser value of pretest. The findings reveal that the menopause women had inadequate knowledge regarding type I osteoporosis and its prevention. Hence its emerging need of the day to educate all the menopause women about osteoporosis and its prevention.[16]

2. An experimental Study was conducted among Postmenopausal Women Employed at Y.C.M Hospital of Pune to assess the Effectiveness of structured Teaching Programme on the Knowledge Regarding Prevention of Osteoporosis. Experimental one group pretest posttest design was used. The data collection was scheduled for the month of February and March 2013.Before the data collection the investigator obtained consent from the sample and the tool was administered. This assessment was done using Fisher's exact test. Following is the summary of the results of Fisher's exact test. The null hypothesis is rejected. The demographic variables which were found to have significant association with knowledge. Findings of the study showed that most of the subjects were above 40years with primary educational background all of the clients are married, Most of the subjects had good knowledge regarding prevention of osteoporosis and had a positive attitude towards the treatment and prevention. Study showed that there was a positive statistical significant relationship between knowledge score and demographic variables. Since all the sample belong to medical profession so they are more concentrated towards health related issues and are aware regarding the osteoporosis treatment and prevention as well.[17]

3. An experimental study was conducted to assess the effectiveness of teaching programme on Osteoporosis among Hospital Aides Evaluative approach was employed with pre experimental one group pretest posttest design. The sample consisted of 80 Hospital Aides selected using purposive sampling technique. The mean posttest knowledge score was higher than the mean pretest knowledge score. The posttest score ranged from 24-37 and that of pretest ranged from 7-23. The mean difference between posttest and pretest knowledge score was highly significant. There was no significant association between pretest knowledge scores and selected variable like age, family income, years of experience, and education. Planned Teaching Programme was effective in enhancing the knowledge regarding Osteoporosis among Hospital Aides.[18]

MATERIALS AND METHOD

Methods

A quantitative approach is used in that the research design is adopted for the study is one group pretestposttest research design. Here independent variable is structured teaching programme regarding menopausal osteoporosis among perimenopausal women's and dependant variable is knowledge of menopausal osteoporosis among peri menopausal women's. The setting will be pallithottam community area situated at kollam. The populations in the study include peri menopausal women's in selected villages at kollam. Convenient sampling used in this study.

Tools / instruments

The instruments used for the present study are demographic proforma and structured questionnaire which were validated by the experts.

Data collection

Data will be collected after obtaining prior administrative permission and informed consent from perimenopausal women's. The tools for data collection procedure are demographic proforma including age, religion, marital status, educational qualification, occupational status, monthly income, family type, food habits, source of information.

The data collection was conducted from 26/2/2018 to 5/3/2018.

The convenient sampling was used to select the samples. Setting for the study is the Pallithottam areas at Kollam. Initially, the structured questionnaire was given to 60 samples. On the first day, pretest is done by using demographic proforma and structured questionnaire regarding menopausal osteoporosis. Then structured teaching programme given the perimenopausal women's and post test is done after 5 days by using the same structured questionnaire regarding menopausal osteoporosis.

Data analysis

The researcher will analyze the data by using descriptive and inferential statistics based on the objectives and hypothesis of the study. To compute the data, a master data sheet was prepared by the investigator.

FINDINGS OF THE STUDY

Description of sample characteristics

This section describe the percentage wise distribution of demographic variables.

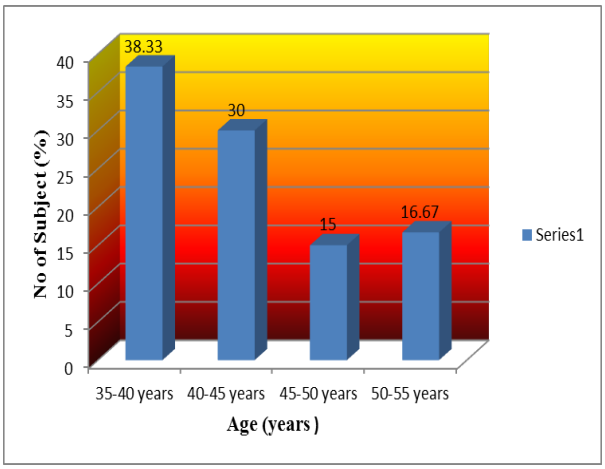

Figure 1: Bar diagram showing frequency and percentage distribution of perimenopausal women's according to their age.

The data presented in figure 1 shows that 38.33% were in the age group of 35 – 40 years, 30% in the age group of 40 – 45 years, 15% were in the age group of 45 – 50 years and 16.67% were in the age group of 50 – 55 years.

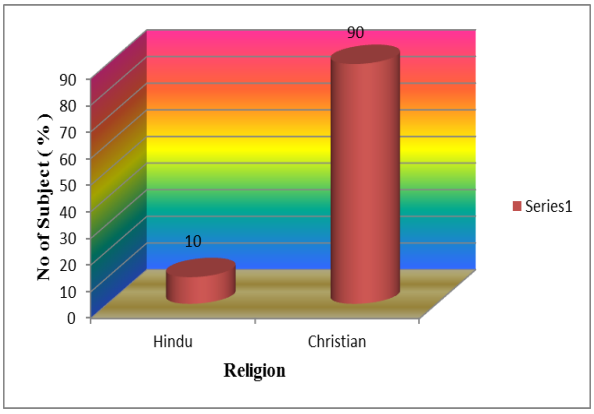

Figure 2: Cylinder diagram showing frequency and percentage distribution of perimenopausal women's according to their religion.

Figure 2 shows the 10% were Hindus and 90% were Christians.

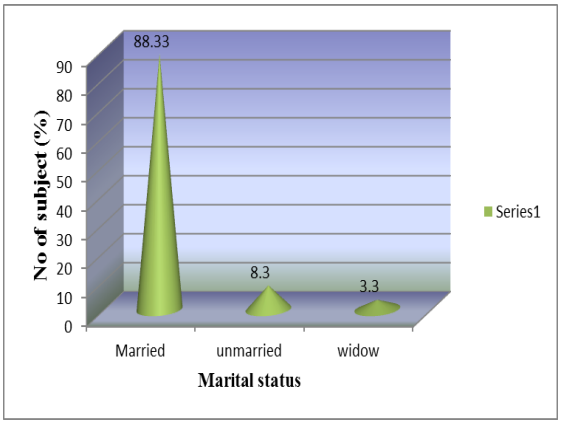

Figure 3: Cone diagram showing frequency and percentage distribution of perimenopausal women's according to their marital status.

Figure 3 shows the 88.33% were married, 8.3% were unmarried and 3.3% were widows.

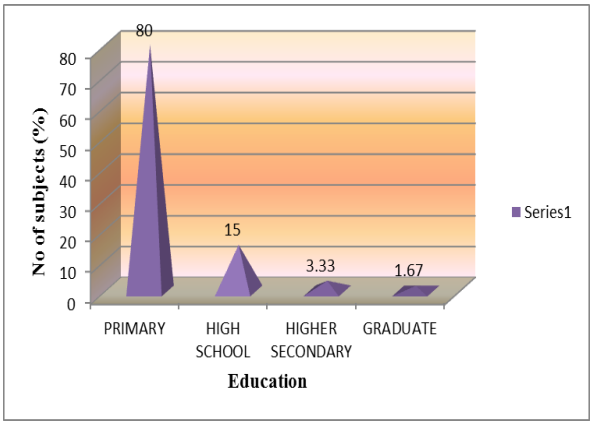

Figure 4 Pyramid diagram showing frequency and percentage distribution of perimenopausal women's according to their education.

Figure 4 shows that 80% had primary school education, 15% were in the high school education, 3.33% were in higher secondary and 1.67% were graduate.

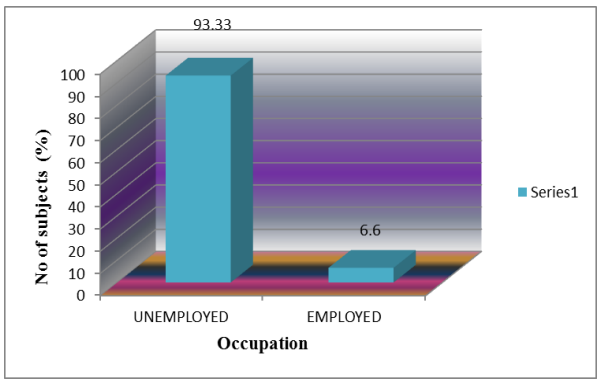

Figure 5: Bar diagram showing frequency and percentage distribution of perimenopausal women's according to their occupation.

Figure 5 shows that 93.33% were unemployed and 6.6% were employed.

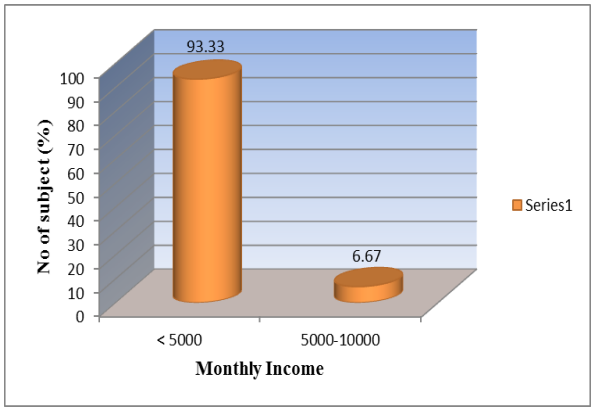

Figure 6: Cylinder diagram showing frequency and percentage distribution of perimenopausal women's according to their monthly income.

Figure 6 shows 93.33% were income <5000 and 6.67% were in the income between Rs.5000-10000.

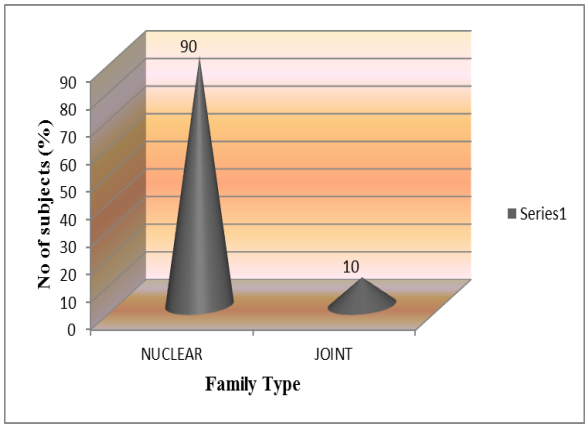

Figure 7: Cone diagram showing frequency and percentage distribution of perimenopausal women's according to their family type.

Figure 7 shows that 90% were under nuclear family and 10% were under joint family.

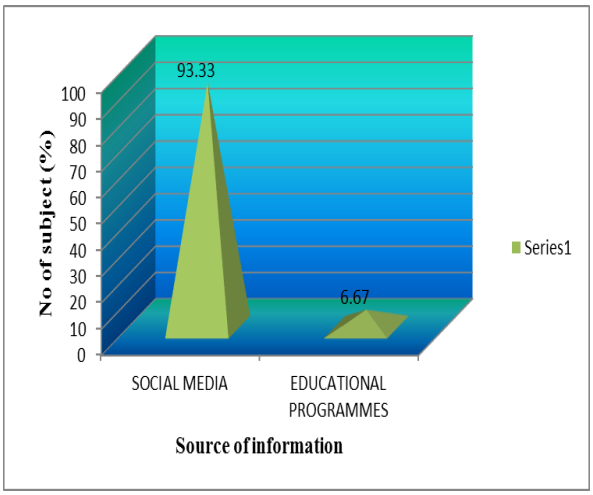

Figure 8: Pyramid diagram showing frequency and percentage distribution of perimenopausal women's according to their source of information.

Figure 8 shows that 93.33% got information from social media and 6.67% from educational programmes.

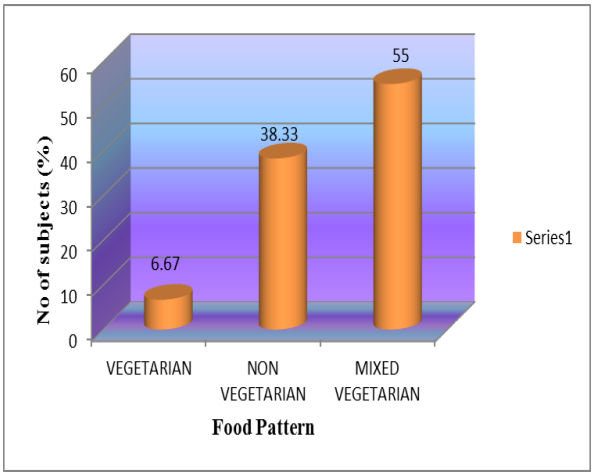

Figure 9: Cylinder diagram showing frequency and percentage distribution of perimenopausal women's according to their food pattern.

Figure 9 shows that 6.67% were vegetarian, 38.33% were non vegetarian and 55% were mixed vegetarian.

The effectiveness of structured teaching programme on knowledge regarding menopausal osteoporosis among peri menopausal women's

The overall mean value of pretest and posttest knowledge score are 14.72, 23.38 and S.D are 4.01 and 2.75respectively. When computed the data the calculated 't' value 21.03 which is greater than the table value at 0.05 level of significance. Hence the research hypothesis is accepted. So it can be concluded that there is a significant difference in between pretest and posttest scores of knowledge among peri menopausal women's.

Table 1: Comparison of Mean, Standard Deviation, 't' value of pretest and posttest on knowledge regarding menopausal osteoporosis.

	N	Mean	Standard Deviation	t
Pretest score	60	14.72	4.01	21.03*
Posttest score	60	23.38	2.75	

t(59) = 2.0,*significant at 0.05 level.

The data present in table 1 shows that the mean posttest score (23.38) greater than mean pretest score (14.72) on knowledge regarding Menopausal Osteoporosis. The 't' value is greater than the table value (2.00) i.e., the Structured Teaching Programme was effective. Hence the null hypothesis was rejected and the research hypothesis was accepted. So it can be concluded that there is a significant difference in between pretest and posttest scores of knowledge among perimenopausal women's regarding menopausal osteoporosis.

Table 2: Association between knowledge and selected demographic variables.

Sl no	variables	Knowledge			df	chi squarevalue
		Inadequate	Moderate	Adequate		
1.	**Age in years**					
	35 - 40 years	8	14	1	6	8.204
	40 – 45 years	9	7	1		
	45 – 50 years	10	2	0		
	50 – 55 years	4	4	0		
2.	**Religion**					
	Hindu	1	2	1	2	6.649
	Christian	30	25	1		
	Muslim	0	0	0		
3.	**Marital status**					
	Married	30	26	0	2	0.3293
	Unmarried	0	2	0		
	Widow	1	1	0		
4.	**Education**					
	Primary	26	20	0	4	
	High School	5	4	2		
	Higher Secondary	0	3	0		

The table above shows the association of pretest knowledge of perimenopausal womens with selected demographic variables. when computed the data, calculated chi square the age is 8.204, religion is 6.649, marital status is 0.3293, education is, occupation is 1.162, monthly income is 3.860, family type is 1.294, source of information is 2.725 and food type is 1.875 respectively, which is greater than the table value at 0.05 level of significance. So it can be concluded that there is an association between pre test knowledge among perimenopausal women's with selected demographic variables age, religion, marital status, education, monthly income, family type, source of information and food type of perimenopausal women's.

CONCLUSION

This study attempted to assess the effectiveness of structured teaching programme on knowledge regarding menopausal osteoporosis among perimenopausal women's. The following conclusions are made drawn from the findings of the study.

- The structured teaching programme has found to be effective and promotes in enhancement of knowledge regarding menopausal osteoporosis among perimenomausalwomens.
- There is association between pretest knowledge among perimenopausal womens with selected demographic variables[age, religion, marital status, education, monthly income, family type, source of information and food type].

RECOMMENDATIONS

Based upon the study findings, the following recommendations were made for the future study.

- A similar study can be replicated in a large sample to generalize the findings.
- A quasi experimental study can be conducted to assess the effectiveness of Structured Teaching Programme on the level of knowledge regarding menopausal osteoporosis among perimenopausal women's.

REFERENCES

1. From Http:// www.medicine net.com.
2. Cooper c, Companion G, Melton LJ 3rd. Hip fractures in the elderly: a worldwide projection. Osteoporosis lnt, 1992 Nov; 2(6): 285–289.
3. Melton 111 LJ, Chrischilles EA, Cooper c, Lane AW, Riggs B; Perspective: How many womens have

osteoporosis; J Bone Miner Res, 1992; 7: 1005-1010.
4. Randell, A, Sambrook PN, Nguyen, TV, Lapseyh, Jones G, Kelly PJ. 'Direct clinical and welfare costs of osteoporotic fractures in early men and women, 1995; 5: 427–432.
5. Web MD. Medical reference, Reviewed by Melinda Ratini, Do, Ms on, September 27, 2017.
6. NIH Medline Plus, A Publication of the national institute of health and the friends of the national library of medicine winter. 2011, Nov; 4(5): 12.
7. Age related prevalence of osteoporosis, Journal climactrac, 2017; 20(2). Available from; https://www.tendfonline.com/doc/full/10.1080/13697137.2017.1282452.
8. Islam S, Liu Q, Chines A, Helzner E. Trend in incidence of osteoporosis – related fractures among 40 -69 year old women: Analysis of a Large Insurance Claims Database, 2000-2005. Medscape [serial on the internet]. 2009 jan 30 [cited 2010 sep 29]; 16(1): [about 7 p.]. Available from;www.ncbi.nlm.nih.gov/pubmed/18703983.
9. Chhibber G, Roy R, Eunice M, Srivastava M, Ammini AC. Prevalence of osteoporosis among elderly women living in Delhi and rural Hariyana. IJEM[serial on the internet], 2007[cited 2010 oct. 17]; 11(1&2): [about 4 p.]. Available from :www.endosocietyindia.org/.../prevalence%20of%20osteoporosis.
10. Available from https://www.ncbi.n/m.nih.gov.
11. Available from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4993984/.
12. Available from www.sciencedirect.com/science/article/pii/51110116415000794.
13. Violeta Reberio, Judith Blakeley, MoureenL aryea, Women's knowledge and practices regarding the prevention and treatment of osteoporosis, Health care women's international, 21(4): 347-53.
14. Curry LC, Hogstel MO; risk status related to knowledge of osteoporosis in older women, Journal of women aging, 13(2): 71-83.
15. NIH Consensus development panel on osteoporosis prevention, diagnosis and therapy, 2001 February.
16. IOSR Journal of Nursing and Health Science [IOSR-GNHS] e-ISSN:2320-1959. P-ISSN: 2320-1940, [Nov- Dec. 2014; 3(6): Version ii], PP 21-25. Available from wwww.iosrjournals.org, www.iosrjournals.org21.
17. International Journal of Science and Research [IJSR] ISSN [Online]: 2319-7064 Index Copernicus value (2013): 6.14 / Impact Factor (2013): 4.438).
18. I scholar, international journal of nursing education volume 5 no; 2013 page no; 44- 47. Available from http://www.i-scholar.in.