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### **A study to assess the effectiveness of structured teaching programme on knowledge regarding prevention of osteoporosis among middle aged women teaching at selected educational institutions, Bangalore**

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#### **Abstract**

**Background:** Osteoporosis is a systemic skeletal disorder, characterized by reduced bone mass, deterioration of bone structure, increased bone fragility, and increased fracture risk. Women are eight times more likely to be at risk of osteoporosis than men. Evidence suggested that to adopt changes on some life habits at the earliest can prevent or delay development of osteoporosis. Some people call it a childhood disease with old age outcomes. The best time to prevent osteoporosis is early in life. People reach their peak bone mass between 20-30 years, after this age bone loss increases. Thus, the actual prevention of osteoporosis must be started from the young itself. Thus, the women can reach up to the level of peak bone mass and the maximum bone mass which they can achieved by adequate preventive measures and decreases bone loss in later life. Prevention is better than cure and osteoporosis is a disease which can be prevented without any expenses, but no absolute cure.

**Materials and methods:** A pre experimental study was employed to assess the knowledge regarding prevention of osteoporosis among middle aged women teaching at selected educational institutions, Bangalore. Non probability convenient technique was used, and 60 middle aged women were selected. Structured knowledge questionnaire was used to collect data.

**Result:** The study result showed that in the pretest, the subjects had inadequate knowledge with mean percentage of 13.10 and a standard deviation of 3.463, whereas in the posttest, there was a significant mean knowledge gain of 24.18 and standard deviation of 3.422. A significant association was found between age ( $p=0.00008$ ), education ( $p =0.00006$ ), family history of osteoporosis ( $p=0.030$ ), information regarding osteoporosis ( $p=0.047$ ) and pretest level of knowledge at 0.05 level of significance.

**Conclusion:** The study revealed that, in pretest majority (78.3%) of the middle-aged women had inadequate knowledge, whereas in posttest majority

(68.3 %) of the middle-aged women had gained adequate knowledge. These findings indicate that the structured teaching programme was effective in enhancing the knowledge of the middle-aged women regarding prevention of osteoporosis.

**Keywords:** Osteoporosis, Middle Aged Women.

## **Introduction**

Bones are rigid organs that constitute part of the endoskeleton vertebrates. Bones protect the various organs of the body, produce red and white cells, store minerals, provide structure and support for the body, and enable mobility. Bone is alive and constantly changing throughout life. Old, worn out bone is broken down by cells called osteoclasts and replaced by bone building cells called osteoblasts, a process of renewal called bone turnover.<sup>1</sup>

Osteoporosis, which literally means - porous bone, is a disease in which the density and quality of bone are reduced. As the bones become more porous and fragile, the risk of fractures is greatly increased. The loss of bone occurs - silently and progressively. Often there are no symptoms until the first fracture occurs.<sup>2</sup>

Middle aged women are more prone to get osteoporosis because there is a direct relationship between the lack of estrogen during peri menopause and menopause and the development of osteoporosis. Early menopause before age of 45 and any prolonged periods in which hormone levels are low and menstrual periods are absent or infrequent can loss of bone mass.<sup>3</sup>

Patient education programme are acknowledged as an effective way of imparting disease-related knowledge to patients. Such programme has been demonstrated to increase knowledge, improve compliance, change behaviour and decrease levels of a variety of disease symptoms. Results of a multidisciplinary programme involving patient education suggests that participants

develop more effective ways of coping, comply more readily with physician recommendations and acquire more knowledge about osteoporosis.

## **Materials & Method**

**Study Design:** The study used one group pre-test and post-test research design.

**Variables:** Study variables for the study includes age, marital status, education, religion, place of residence, type of family, family history of osteoporosis, dietary habits, and leisure time activities, history of irregular menstruation, early menopause, smoking, drinking, hormone therapy and previous knowledge about osteoporosis.

**Setting of the study:** The study was carried out at Degree Colleges, MS Ramaiah Arts, Science and Commerce College and Ramaiah institute of management studies.

**Sample size:** 60 middle aged women.

**Sampling technique:** Non probability convenient sampling technique was used to select the samples.

## **Inclusion and exclusion criteria**

### **Inclusion criteria**

Middle aged women who are:

- Willing to participate in the study
- Able to understand and speak English
- Available during the time of data collection

### **Exclusion criteria**

- Above the age of 40 years
- Are diagnosed with osteoporosis

**Development of tool:** After an extensive review of literature and discussion with experts, a structured knowledge questionnaire regarding prevention of osteoporosis was prepared. The questionnaire include introduction to osteoporosis, causes and risk factors, sign and symptoms, diagnosis, diet, exercises and lifestyle style modification on prevention of

osteoporosis. In addition, information regarding sociodemographic variables of subjects was collected.

**Validity** Content validity of the tool was established by inviting suggestions from experts that included 1 physician and 8 nurse experts. There was 100% agreement between the experts on relevance of items included on the tool.

**Reliability:** The tool was tested for reliability using split half test method ( $r=0.89$ ).

**Ethical clearance:** The ethical clearance for this study was obtained from the ethics committee of Ramaiah Institute of Nursing Education and Research.

**Pilot study:** Pilot study was conducted at Ramaiah institution of management, Bangalore. A total of 6 middle aged women were selected for the study. On completion of pilot study, it was found that it was feasible to undertake main study.

**Data collection procedure:** The data were collected in at Degree Colleges, MS Ramaiah Arts, Science and Commerce College and Ramaiah institute of management studies, Bangalore, after obtaining formal permission from the concerned authorities. Middle aged women who met the inclusion criteria were recruited. A total of 60 middle aged women were selected for the study. Subjects were given detailed information about the study and informed consent was obtained from all the subjects. Data were obtained by using structured knowledge questionnaire. The time taken by each subject was about 20-30 minutes. On the same day, structured teaching programme was delivered to the subjects using lecture method for the duration of 45 minutes with the help of power point presentation. On 7th day a post test was conducted to the subjects using the same tool on structured knowledge questionnaire regarding prevention of osteoporosis. The collected data were coded and entered in the master sheet.

**Statistical method:** The data analysis was done by using descriptive and inferential statistics. SPSS (version 20) was used to analyse the data.

- Frequency and percentage distribution were computed for sociodemographic characteristics.
- Frequency and percentage distribution were computed for knowledge.
- Comparison of knowledge regarding prevention of osteoporosis before and after structured teaching programme among middle aged women
- Association between knowledge regarding prevention of osteoporosis and sociodemographic variables using chi square test.

## **Results**

The collected data were analysed according to the objectives of study. The findings are presented below.

**Socio demographic characteristics of the subjects:** Frequency and percentage distribution were computed for sociodemographic characteristics of the subjects. Three fourth of the subjects (73.3%) belongs to 30 -35 years. With regard to marital status, majority of the subjects (95%) were married, with regard to educational status more than half of the subjects (70%) had completed their post-graduation. three fourth of the subjects (78 %) belongs to Hindu religion. With regard to place of residence, all the subjects were from urban area. With regards to type of family, more than half the subjects (63.3%) belongs to joint family. more than half of the subjects (68.3%) did not have family history of osteoporosis. With regard to type of diet, majority of the subjects (83.3%) consume non vegetarian diet. With regard to leisure time activities, more than one fourth of the subjects (41.7%) were not using any kind of activities. more than three fourth of the subjects (95%) did not experience any irregular menstruation. With regards to; attainment of menopause, 100% subjects

were not attained menopause. With regard to smoking, all the subjects (100%) were non-smokers. With regard to drinking more than three fourth of the subjects (91.7%) were not consuming any kind of drinks. 100 % of the subject were not on hormone therapy, with regard to information regarding osteoporosis, more than three fourth of the subjects (75%) did not receive any information and with regard to source of information less than one fourth of subjects (11.7%) had received information about prevention of osteoporosis from magazines.

#### **Frequency and percentage distribution of knowledge:**

The study finding showed that majority (78.3%) of the middle-aged women had inadequate knowledge, 18.3% had moderately adequate knowledge and only 3.3% had adequate knowledge before structured teaching programme. After structured teaching programme majority 68.3% of the middle-aged women had adequate knowledge and remaining 31.7% middle aged women were reported moderately adequate knowledge in posttest.

Comparison of knowledge regarding prevention of osteoporosis before and after structured teaching programme

The pre-test knowledge score was compared and it showed that, the post-test knowledge score  $24.18 \pm 4.222$  was higher than the pre-test mean score  $13.10 \pm 3.463$ . The calculated paired 't' value is significant at p value 0.00000.

Association between knowledge regarding prevention of osteoporosis and socio demographic data: Chi square was used to find the association between socio-demographic characteristics and knowledge of the novice nurses. The present study findings showed that there was no significant association between pre-test level of knowledge of middle aged women and

socio demographic variables such as marital status ( $p=0.646$ ), religion ( $p=0.334$ ), type of family ( $p=0.618$ ), type of diet ( $p=0.123$ ), leisure time activities ( $p=0.256$ ), history of irregular menstruation ( $p=0.356$ ), drinking ( $p=0.219$ ). Whereas, there was significant association between pre-test level of knowledge of middle-aged women and socio demographic variables such as age ( $p=0.00008$ ), education ( $p=0.00006$ ), family history of osteoporosis ( $p=0.030$ ), information regarding osteoporosis ( $p=0.047$ ).

#### **Discussion**

With an increase in the life expectancy, the geriatric population of the developing countries like India is increasing and the impact of osteoporosis on the population and the nation is expected to increase. Postmenopausal women especially those with age more than 65 years are prone to develop complication of osteoporosis like fragility fractures. Osteoporosis is regarded not only as a treatable, but also a preventable disease. The present study result supported that by enhancing the knowledge on prevention of osteoporosis and its awareness by adequate nutrition intake of calcium and vitamin D, exercises and healthy lifestyle practices among middle aged women might help to prevent the disease resulting in better health as they age. Based on the study finding showed that majority (78.3%) of the middle-aged women had inadequate knowledge, 18.3% had moderately adequate knowledge and only 3.3% had adequate knowledge before structured teaching programme. After structured teaching programme majority 68.3% of the middle-aged women had adequate knowledge and remaining 31.7% middle aged women were reported moderately adequate knowledge in post-test. The present study is

supported by a similar study conducted by V Indra at various areas in Thrissur, Kerala, 2016 where the pre-test knowledge showed that 56.7% had moderately adequate knowledge, 41.7% had inadequate knowledge and 1.6% had adequate knowledge on osteoporosis.<sup>4</sup>A similar study was conducted by Pratibha Khagta, 2019 on knowledge regarding prevention of osteoporosis which revealed that the pre-test level of knowledge majority 90% of the subjects had Poor knowledge, 10% subjects had Average knowledge.<sup>5</sup>The present study design was adopted to assess the effectiveness of structured teaching programme for improving the middle-aged women on prevention of osteoporosis. The effectiveness was assessed by comparing the pre-test and post-test knowledge scores. The pre-test knowledge score was compared and it showed that, the post- test knowledge score  $24.18 \pm 4.222$  was higher than the pre- test mean score  $13.10 \pm 3.463$ . The calculated 't' value was significant at  $p < 0.000000$ . The present study was supported by a study conducted by Mr. Won seok jo,<sup>2014</sup>. The result of the study showed that the post-test score of knowledge was significantly higher than mean pre-test knowledge score ( $p < 0.001$ ).<sup>6</sup>A similar study was conducted by Mrs. Lolita Lal, among 30 premenopausal women from Chaubepur, 2019. The study result showed that after structured teaching programme, the mean post-test knowledge score was significantly higher than mean pre-test knowledge score ( $t = 9.2$ ,  $p < 0.05$ ).<sup>7</sup>The present study findings showed that there was no significant association between pretest level of knowledge of middle aged women and socio demographic variables such as marital status ( $p=0.646$ ), religion ( $p=0.334$ ), type of family ( $p=0.618$ ), type of diet ( $p=0.123$ ), leisure time

activities ( $p=0.256$ ), history of irregular menstruation ( $p=0.356$ ), drinking ( $p=0.219$ ). Whereas, there was significant association between pretest level of knowledge of middle aged women and socio demographic variables such as age ( $p=0.00008$ ), education ( $p=0.00006$ ), family history of osteoporosis ( $p=0.030$ ), information regarding osteoporosis ( $p=0.047$ ).A similar study was conducted among 40 to 50 years of women in Guntur, Andhra Pradesh 2016. The study showed similar results, which proved that there is significant association between age, education, marital status among the premenopausal women.<sup>8</sup>A similar study was conducted among 45 - 65 years of menopausal women to assess the knowledge regarding osteoporosis in Moga village, Punjab 2018. The study result showed that, among all the demographic variables, dietary pattern and family income had significant association with knowledge level at  $P < 0.05$ .<sup>9</sup>

#### Limitations:

- Authenticity of the information regarding socio demographic variables is based only on the response of the subjects.
- Limited sample size.

#### Conclusion

In the present study it was found that, in pre-test majority of the middle-aged women had inadequate knowledge, whereas in post-test majority of the middle-aged women had gained adequate knowledge. The findings indicate that the structured teaching programme was effective in enhancing the knowledge of the middle-aged women regarding prevention of osteoporosis.

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