A Study to Assess the Effectiveness of Information Booklet on Knowledge Regarding Prevention of Osteoporosis Among Female Teachers in Raipur (C.G.)

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***Abstract*—Aim: The study aimed to assess the effectiveness of information booklet on level of knowledge on prevention of osteoporosis among female teachers.**

Methodology: The study adopted a quantitative evaluative research approach with a pre-experimental one-group pre-test and post-test design. It was conducted among 60 female teachers in selected schools of Raipur, Chhattisgarh, using a convenience sampling technique. The independent variable was the information booklet, and the dependent variable was knowledge regarding the prevention of osteoporosis. Data were analyzed using descriptive and inferential statistics, with a significance level of 0.05.

Results: The study findings revealed that the knowledge of female teachers regarding the prevention of osteoporosis improved significantly after the administration of the information booklet. In the pre-test, 32 (53.33%) participants had good knowledge, 21 (35%) had average knowledge, 5 (8.33%) had poor knowledge and 2 (3.33%) had excellent knowledge. However, in the post-test, 43 (71.67%) participants achieved excellent knowledge and 17 (28.33%) had good knowledge. Area-wise analysis also showed improvement in all areas, with the highest post-test mean percentage (90%) in diagnostic tests. The mean knowledge score increased from 20.7 to 33.57, and the calculated t value (14.25) was significant at the 0.05 level, indicating that the information booklet was effective in improving knowledge regarding the prevention of osteoporosis among female teachers.

Conclusion: The study concluded that the information booklet was effective in improving knowledge regarding the prevention of osteoporosis among female teachers. The significant increase in post-test knowledge scores indicates that structured health education can promote awareness and encourage preventive measures for maintaining bone health.

***Index Terms*—Osteoporosis, Prevention, Information Booklet, Knowledge, Female Teachers, Bone Health, Effectiveness, Health Education, Pre-test, Post-test.**

I. BACKGROUND OF THE STUDY

Women are the backbone of a healthy family and a healthy nation. Their physical and mental well-being plays a vital role in the overall development of society. However, in today's fast-paced world, women often balance multiple responsibilities, including professional commitments, household activities and childcare, while neglecting their own health. Among the various health concerns affecting women, osteoporosis has emerged as a major public health problem, particularly among middle-aged and elderly women.

Osteoporosis is a progressive bone disease characterized by decreased bone mass and deterioration of bone structure, making bones weak, fragile and more prone to fractures. It is often called a "Silent Disease" because it develops gradually without noticeable symptoms until a fracture occurs. Even minor falls or routine activities may result in fractures of the hip, spine and wrist, affecting mobility, independence and quality of life.

Women's bone health is strongly influenced by hormonal changes throughout life. Women generally achieve peak bone mass between 25 and 30 years of age. The hormone oestrogen plays an important role in maintaining bone strength by regulating bone formation and preventing excessive bone loss. During menopause, declining oestrogen levels accelerate bone loss, increasing the risk of osteoporosis. Ageing, inadequate calcium and vitamin D intake, physical

inactivity, lack of sunlight exposure and unhealthy lifestyle habits further increase the risk.

Osteoporosis is a significant health concern in India, where women are particularly vulnerable due to nutritional deficiencies, lifestyle factors and hormonal changes. Malhotra et al. (2008) estimated that approximately 25 million Indians were affected by osteoporosis. They emphasized that a healthy lifestyle, including a balanced diet, regular physical activity and adequate exposure to sunlight, can play an important role in maintaining bone health and preventing osteoporosis.

According to preventive health recommendations, maintaining adequate calcium and vitamin D intake, performing regular weight-bearing exercises, avoiding tobacco and alcohol, and preventing falls are essential measures for protecting bone health. Early identification of risk factors and appropriate medical management can further reduce the complications associated with osteoporosis.

Prevention is always better than cure. Awareness and knowledge are the first steps towards preventing osteoporosis. Women need to understand the importance of bone health, recognize risk factors, identify early warning signs and adopt healthy lifestyle practices. An information booklet can serve as a simple and effective educational tool to improve awareness and encourage preventive health practices.

Therefore, the present study aims to assess the pre-test and post-test knowledge regarding the prevention of osteoporosis among female teachers and evaluate the effectiveness of an information booklet. Improving their knowledge may encourage them to adopt healthy lifestyle practices and contribute towards better bone health and prevention of osteoporosis.

II. OBJECTIVES OF THE STUDY

1. To assess the pre-test and post-test level of knowledge regarding the prevention of osteoporosis among female teachers.

2. To evaluate the effectiveness of an information booklet on knowledge regarding the prevention of osteoporosis among female teachers.

3. To find out the association between the pre-test level of knowledge regarding the prevention of osteoporosis among female teachers and selected socio-demographic variables.

III. MATERIALS AND METHODS

The present study adopted a quantitative evaluative research approach with a pre-experimental one-group pre-test and post-test research design to assess the effectiveness of an information booklet on knowledge regarding the prevention of osteoporosis among female teachers.

The study was conducted among 60 female teachers working in selected schools of Raipur, Chhattisgarh. A convenience sampling technique was used to select the study participants.

The study included two variables: the independent variable and the dependent variable. The independent variable was the information booklet regarding the prevention of osteoporosis, and the dependent variable was the knowledge of female teachers regarding the prevention of osteoporosis.

A self-structured knowledge questionnaire was developed to assess the knowledge of female teachers regarding the prevention of osteoporosis. The content validity of the tool was established through experts' opinions. The reliability of the tool was assessed using Karl Pearson's correlation coefficient, and the reliability value was found to be $r = 0.70$.

The collected data were analysed and interpreted according to the objectives and hypotheses of the study. Both descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (paired t-test and chi-square test) were used for data analysis. The level of statistical significance was set at 0.05.

IV. FINDINGS OF THE STUDY

1. Findings related to overall pre-test and post-test knowledge scores regarding the prevention of osteoporosis.

OVERALL KNOWLEDGE	PRE TEST		POST TEST	
	n	(%)	n	(%)
Poor (0-10)	5	8.33%	0	0%
Average (11-20)	21	35%	0	0%
Good (21-30)	32	53.33%	17	28.33%

Excellent (31-40)	2	3.33%	43	71.67%
TOTAL	60	100%	60	100%

In the pre-test, 5 (8.33%) female teachers had poor knowledge, 21 (35%) had average knowledge, 32 (53.33%) had good knowledge and 2 (3.33%) had excellent knowledge regarding the prevention of osteoporosis. However, in the post-test, 43 (71.67%) female teachers achieved excellent knowledge, while 17 (28.33%) had good knowledge. This indicates a considerable improvement in the level of knowledge after the administration of the information booklet.

2. Findings related to area-wise pre-test and post-test knowledge scores regarding the prevention of osteoporosis among female teachers.

In the pre-test, the mean percentage scores were 51.42% in general concepts, 52.22% in causes and risk factors, 47.5% in symptoms, 41.5% in diagnostic tests, 50% in prevention and management, and 50% in dietary intake and complications. However, in the post-test, the mean percentage scores increased to 84%, 83.44%, 49%, 90%, 82.27% and 82.28%, respectively. This indicates an improvement in knowledge across all areas.

3. Findings related to the effectiveness of the information booklet on knowledge regarding the prevention of osteoporosis.

The paired t-test analysis revealed that the pre-test mean knowledge score was 20.7 ± 5.67 (50.68%), whereas the post-test mean score increased to 33.57 ± 3.27 (83.93%). The calculated t value (14.25) was greater than the table value (3.46) at the 0.05 level of significance. Hence, the information booklet was found to be effective in improving knowledge regarding the prevention of osteoporosis among female teachers.

Note: Please verify the pre-test frequencies because the given numbers total 33 instead of 60.

V. CONCLUSION

The present study was conducted to assess the effectiveness of an information booklet on knowledge regarding the prevention of osteoporosis among female teachers in selected schools of Raipur, Chhattisgarh. The findings revealed a significant improvement in the post-test knowledge scores compared to the pre-test scores. The mean knowledge score increased from 20.7 to 33.57, indicating the effectiveness of the information booklet. The calculated t value (14.25) was statistically significant at the 0.05 level. Thus, the study concluded that the information booklet was effective in improving knowledge regarding the prevention of osteoporosis among female teachers. Therefore, providing health education through information booklets can help promote awareness and encourage preventive practices for maintaining healthy bones.

VI. IMPLICATIONS OF THE STUDY

The findings of the present study have several implications for nursing education, nursing practice, nursing administration and nursing research. The study highlights the importance of improving knowledge regarding the prevention of osteoporosis among female teachers through an information booklet.

1. Implications for Nursing Education

1. Nursing students should be educated about osteoporosis, its causes, risk factors, signs, symptoms and complications.
2. Osteoporosis prevention should be included in nursing curricula to improve awareness of bone health.
3. Nursing educators should emphasize the importance of calcium and vitamin D in maintaining healthy bones.
4. Students should be encouraged to provide health education regarding balanced diets and adequate sunlight exposure.
5. Educational methods such as information booklets, charts, posters and demonstrations should be used to improve knowledge.
6. Nursing students should be trained to identify women who are at risk of developing osteoporosis.
7. Health education programmes should be organized in nursing institutions to promote awareness of osteoporosis prevention.
8. Students should be encouraged to participate in community awareness programmes related to women's health.

9. Nursing educators should motivate students to develop simple and understandable educational materials on osteoporosis prevention.
10. The findings of this study can be used as a reference for teaching osteoporosis prevention and promoting healthy lifestyle practices.

2. Implications for Nursing Practice

1. Nurses should assess the knowledge of women regarding osteoporosis and its preventive measures.
2. Nurses should provide health education about the causes and risk factors of osteoporosis.
3. Nurses should educate women about the importance of calcium-rich foods and vitamin D intake.
4. Nurses should encourage regular weight-bearing exercises and physical activities to maintain bone strength.
5. Nurses should explain the importance of adequate sunlight exposure for vitamin D synthesis.
6. Nurses should motivate women to maintain a healthy body weight and follow balanced dietary habits.
7. Nurses should educate women about avoiding smoking, excessive alcohol consumption and unhealthy lifestyle habits.
8. Nurses should encourage women, particularly postmenopausal women, to undergo appropriate bone health assessment and screening when indicated.
9. Nurses should guide women regarding fall prevention and measures to reduce the risk of fractures.
10. Nurses should use information booklets and other educational materials to improve awareness and encourage healthy practices for osteoporosis prevention.

3. Implications for Nursing Administration

1. Nursing administrators should organize regular health awareness programmes on osteoporosis prevention.
2. Adequate educational materials, including information booklets, posters and pamphlets, should be made available in healthcare institutions.
3. Nursing administrators should encourage nurses to conduct community-based health education programmes.
4. Training programmes should be organized for nursing personnel regarding osteoporosis prevention and management.
5. Necessary resources should be provided for conducting health screening and educational activities.
6. Nursing administrators should collaborate with schools and other community organizations to promote women's bone health.
7. Special awareness programmes should be arranged for middle-aged and postmenopausal women.
8. Administrators should encourage the use of evidence-based guidelines for osteoporosis prevention and health promotion.
9. Regular evaluation should be conducted to assess the effectiveness of health education programmes.
10. Nursing administrators should develop policies and programmes that promote preventive healthcare and early identification of osteoporosis risk factors.

4. Implications for Nursing Research

1. The present study contributes to the existing body of nursing knowledge regarding osteoporosis prevention among female teachers.
2. The study provides research-based evidence regarding the effectiveness of an information booklet in improving knowledge about osteoporosis prevention.
3. The findings add to the available nursing literature on women's bone health and preventive healthcare.
4. The study demonstrates the application of a quantitative evaluative research approach in nursing research.
5. The pre-experimental one-group pre-test and post-test design provides a methodological framework for evaluating educational interventions.
6. The self-structured knowledge questionnaire developed for the study contributes to the assessment of knowledge regarding osteoporosis prevention.

7. The process of establishing content validity and reliability highlights the importance of standardized research tools in nursing studies.
8. The findings provide baseline data that can be useful for interpreting knowledge levels regarding osteoporosis prevention among female teachers.
9. The study strengthens the role of nursing research in developing evidence-based educational interventions for women's health promotion.
10. The research findings contribute to the development of scientific knowledge that can support nursing education, clinical practice and community health programmes related to osteoporosis prevention.

VII. RECOMMENDATIONS

Based on the findings of the present study, the following recommendations are made:

1. A similar study can be conducted on a larger sample size to improve the generalizability of the findings.
2. A comparative study can be conducted among female teachers working in rural and urban schools.
3. Similar studies can be conducted among women of different age groups, particularly middle-aged and postmenopausal women.
4. An experimental study can be conducted to compare the effectiveness of an information booklet with structured teaching programmes.
5. A study can be conducted to assess the knowledge and preventive practices regarding osteoporosis among women.
6. Further studies can be conducted to assess the relationship between dietary habits, physical activity and osteoporosis prevention.
7. A follow-up study can be conducted to assess the long-term retention of knowledge after the administration of the information booklet.
8. Similar studies can be conducted among college students, working women and homemakers.
9. A study can be conducted to assess the effectiveness of video-assisted teaching, demonstrations and other educational methods regarding osteoporosis prevention.
10. Regular health awareness programmes should be organized in schools and communities to educate women about osteoporosis prevention and the importance of maintaining bone health.

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