Research Article **ISSN: 2394 – 7403**

International Journal of Medicine and Health Profession Research

Journal home page: www.ijmhpr.com

https://doi.org/10.36673/IJMHPR.2021.v08.i01.A03

BONE MINERAL DENSITY AMONG MIDDLE AGED WOMEN

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ABSTRACT

Osteoporosis is described as low bone mineral density (BMD) and a major health concern for postmenopausal women. However, osteoporosis and its risk factors have been significantly understudied in the middle-aged populations. The study aimed to estimate the effectiveness of Osteoporosis Prevention programme on bone mineral density among women. A Quasi experimental, post-test only design used with 90 samples in each group. Osteoporosis Knowledge and Health Belief scale and BMD machine was used. Study group had education on prevention of osteoporosis and self regulated brisk walking for 45 minutes, 5 days/ week for 3 months. BMD score revealed that 75(83.3%) had normal BMD in the study group and 48(53%) had osteopenia in control group. The knowledge and belief improved in study group with statistical significance at $p<0.001$ which concludes that osteoporosis prevention programme was effective in improving BMD and reduces osteopenia among middle aged women.

KEYWORDS

Osteoporosis, Bone mineral density and Middle age women.

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INTRODUCTION

Osteoporosis is the foremost of four bone mineral disorders in Indians. It occurs commonly in women than men and it is called as silent killer where millions of people are suffering and unaware of the condition. It is a major economic concern in less developed and developed countries. According to the WHO criteria, osteoporosis is defined as a BMD that lies 2.5 standard deviations are below the average value for young healthy women (WHO, 2017).

Women who have low BMD have an augmented risk of fracture and permanent damage. An osteoporotic fracture occurs every 3 seconds and is most commonly found in spinal vertebrae and the femoral head or hip[1]. Osteoporotic fractures can reduce mobility and quality of life and can lead to death in extreme cases. By 2050, the worldwide incidence of osteoporotic fractures is anticipated to have increased by 310% in men and by 240% in women, which greatly increases the burden of osteoporosis in future generations[2].

Osteoporosis is a significant medical and public health concern for postmenopausal women to whom the estrogen levels decrease sharply which influences bone loss[3]. The purpose of the present study was to assess the effectiveness of Osteoporosis Prevention programme on bone mineral density among women with a secondary objective to assess their knowledge and belief on osteoporosis.

MATERIAL AND METHODS

A quasi experimental, post-test only design was adopted and samples were selected from the rural community of Kancheepurum with 90 samples in each group. Osteoporosis knowledge questionnaire and health belief scale was used to assess the Knowledge and Health Belief regarding osteoporosis and BMD machine was used to assess the bone density. Study group had education on prevention of osteoporosis and self regulated brisk walking for 45 minutes, 5 days/ week for 3 months and control group led a normal life. Post assessment was conducted after 3 months of the intervention.

Women who were pregnant, overweight, postmenopausal, taking drugs that are known to affect BMD (eg, proton pump inhibitors, glucocorticoids, antidepressants were excluded from the study. Participants completed a questionnaire assessing calcium intake, number of times of exercise (≥30 minutes) per week, family history of low BMD and any history of musculoskeletal injury.

RESULTS AND DISCUSSION

BMD score revealed that 75(83.3%) had normal BMD and 15(16.7%) had osteopenia among women in study group as compared with 48(53%) had osteopenia in control group (Table No.1). These findings are analogous to the few studies[4,5] which showed that BMD begins to decline in men and women during early–middle-age and progresses into old age.

The post test, 51(56.67%) study group women had adequate knowledge and 79(87.7%) had inadequate knowledge in the control group. Regarding health belief, 87(96.67%) had high level of Health Belief in study group and 57(63.33%) had moderate level in control group. The post test mean score of knowledge in the study group was 21.77±4.53 as compared to 4.50±3.71 in control group ($t = 16.147$) which is statistically significant at $p<0.001$. This result is consistent with the study by Brecher *et al*[6] which found that prevention programs increased patient knowledge of osteoporosis as well as increased calcium intake.

The results of the correlation analyses showed that among women, there was a significant and positive correlation of exercise status with BMD ($r=0.30$, $P=.01$) and other variables such as calcium intake, family history of low BMD and any history of musculoskeletal injury did not show any relationship with BMD status. The study by Nahar V, Nelson K, Ford M *et al*[7] also reported that a moderate and statistically significant advantage of exercise on BMD. The study results conclude that osteopenia and osteoporosis screening measures and preventive measures are essential for early-middle-aged men and women.

Table No.1: Bone Mineral Density (BMD) scores

S.No	Level of BMD	Osteoporosis (< -2.5)		Osteopenia (-1.0 - -2.5)		Normal (>0)	
		No.	%	No.	%	No.	%
1	Study Group	-	-	15	16.7	75	83.3
2	Control Group	-	-	48	53.3	42	46.7

CONCLUSION

Educational strategies must be employed to reduce misperceptions and barriers related to osteoporosis. Preventive interventions among middle aged women should be given by nutritious diets with adequate amounts of calcium, vitamin D and also focus on increasing physical activities to curtail osteoporosis in later age during menopause.

FUNDING

This research was funded by Deanship of Scientific Research at King Khalid University, grant number "RGP 2/186/42".

ACKNOWLEDGMENT

The authors extend their sincere appreciation to the Deanship of Scientific Research at King Khalid University for funding this study through the Large Research Group Project under grant number "RGP 2/186/42".

DECLARATION OF CONFLICTING INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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Please cite this article in press as: Premalatha Paulsamy *et al.* Bone mineral density among middle aged women, *International Journal of Medicine and Health Profession Research,* 8(1), 2021, 24-27.