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Original Research Article

Quality of Life among Postmenopausal Women with Osteoporosis in North Maharashtra: A Cross-Sectional Study

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Abstract

Introduction: Osteoporosis is characterised by reduced bone mass and structural destruction of bone tissue which increases the brittleness of bone that leads to increased fracture risk. It is very common among postmenopausal women.

Aim: To assess the quality of life of among the postmenopausal osteoporotic women without fracture and to find out the association of quality of life with selected demographic variables.

Materials and Methods: The present cross-sectional was conducted at Hospital of ACPM Medical College, Dhule, after obtaining the permission from concerned authorities. The sample was 120 postmenopausal osteoporotic women who belong to the age group 45-65 years. After obtaining the informed consent, the participants were interviewed using Short Form-36 (SF-36) quality of life questionnaire. The questionnaire consisted of 36 items and eight subscales which are summarised in two domains: Physical Component Summary (PCS) and Mental Component Summary (MCS). The statistical analysis was carried out using Statistical Package for the Social Sciences (SPSS) software version 22.0.

Results: The results of this study showed that participants scored less (29.99±9.56) in role limitations due to emotional problems. Also, the participants scored less (43.39±4.57) in the domain of MCS in comparison to PCS (47.78±4.53). Further, association of PCS and MCS scores of quality of life were tested (p-value<0.05) with selected demographic variables such as age, religion, education, occupation and BMD. The results showed that there was no significant association found between PCS scores and age (p-value=0.84), religion (p-value=0.94), occupation (p-value=0.805) and BMD (r= -0.058, p-value >0.05). Also, there was no significant association between MCS scores and age (p-value=0.69), religion (p-value=0.86), occupation (p-value=0.70) and BMD (r-value=-0.0604, p-value >0.05).

Conclusion: The participants scored less in the subscale of role limitations due to emotional problems of the SF- 36 questionnaire. The quality of life was less in the mental component subscore. This indicated that osteoporosis make the postmenopausal women anxious and affects their daily activities.

Keywords: Bone density, Bone resorption, Menopause, Short Form-36 questionnaire

Introduction

Osteoporosis is characterized by reduced bone mass and structural destruction of bone tissue which increases the brittleness of bone that leads to increased fracture risk

[1]. It is a common problem among postmenopausal women. The fragility fractures are the most common complications of osteoporosis [2]. Often, the disease will be undiagnosed as the symptoms don't affect severely and it will only become apparent after the fracture has occurred [3]. Menopause in women, hypovitaminosis D, inadequate peak bone mass, gradual bone loss owing to aging processes, and a range of behavioural, dietary, and environmental variables that impact bone mass in some people are the most significant causes of osteoporosis [4,5]. As per the statistics, more than 200 million individuals suffer from osteoporosis. According to the International Osteoporosis Foundation, one in every three women over the age of 50 and one in every five males may develop osteoporotic fractures throughout their lifetime [6]. Furthermore, osteoporosis reduces the quality of life, increases disability adjusted life duration, and places a significant financial burden on the healthcare systems of nations that handle such individuals' treatment [7,8]. Postmenopausal women are more likely to develop osteoporosis because their bone mineral density decreases owing to a reduction in oestrogen levels. Other physiological, emotional, and psychological changes endanger the health and quality of life of these vulnerable females [9]. As the serious complication of osteoporosis is the fracture many researchers carried out research on the impact of osteoporotic fracture on quality of life. [10]. As per the results of above mentioned study 41% of the postmenopausal women with osteoporosis reported a worse quality of life in contrast to just 11% of those in the control group [10]. Hence, it is especially important to understand the level of quality of life before beginning the treatment started to plan for the proper intervention strategies includes care, support and treatment. Therefore, this study is aimed to assess the levels of quality of life exclusively among postmenopausal women without fracture and to understand the quality-of-life scores in the physical and mental health aspect of the participants. The secondary objective of the study was to find out the association of quality of life with selected demographic variables.

Materials and Methods

This cross-sectional survey was conducted at the Hospital of ACPM Medical College, Dhule Maharashtra after obtaining the permission from concerned authorities. The present tertiary hospital runs a free osteoporosis clinic every second Saturday of the month. Bone mineral density was measured by portable ultrasound bone densitometer (Sunlight Mini Omni Bone Sonometer) at the wrist region. The study was conducted after obtaining the ethical permission from the Institutional Ethics Committee. The sample size was decided by complete enumeration. A total of 120 postmenopausal women, who attended the osteoporosis clinic during the study period with osteoporosis were included in this study.

Inclusion criteria: Postmenopausal osteoporotic women, who attended the osteoporosis clinic during the study period, who belong to the age group of 45-65 years and whose bone mineral density score (T score) was between -1 and -3 were included in the study [8].

Exclusion criteria: The postmenopausal women with complicated fractures and those who were admitted to the hospital were excluded from the study.

Study Procedure

After obtaining the informed consent, the participants were interviewed, and baseline information on age, caste, religion, education and occupation was collected [11,12]. Clinical measurements included height and weight. Height was measured in centimetres by stadiometer and weight was measured using the digital weighing scale in Kilograms. Bone Mineral Density

(BMD) was measured by a bone mineral density test [13]. A technician who had received specialised training from the company for measuring BMD performed a bone mineral density test to determine each patient's BMD. A "T" or a "Z" score is used to express the results of a bone density test. T-scores analysis [14]

The quality of life was measured by using the SF-36 quality of life questionnaire which is a standardized tool and its reliability is reported domain wise [15]. However, the tool was translated into Marathi, the native language, by a professional translator. The translated questionnaire was evaluated by a team of experts. It had 36 questions with the below subscales of health,

- Physical Function (PF) (10 items),
- Role limitations due to Physical problems (RP) (4 items),
- Bodily Pain (BP) (2 items),
- General health (GH) 5 items
- Energy (E) (4 items),
- Social Functioning (2 items),
- Role limitations due to Emotional problems (RE) (3 items)
- Emotional Wellbeing (EW) (5 items)
- Health change (1 item)

The eight subscales are further summarized into Physical Component Summary (PCS) and Mental Component Summary (MCS) which depict the physical well-being and emotional well-being of the participants [16]. The scoring of this tool involves two process. First step includes the recording the pre-coded numeric values as per the scoring key given by the questionnaire. The scoring of each item was done in a range of 0 to 100 range so that the lowest and highest possible scores are 0 and 100, respectively. And highest score represents the most favorable health state. Scores represent the percentage of total possible score achieved. In the second step items in the same scale were averaged together to create the eight scale scores as per the instructions of the tool.

Results

The mean±Standard Deviation (SD) age of the participants was 56.8±2.5 years. Majority {n=99 (82.5%)} were Hindus and, belonged to general category and other backward classes i.e., n=52 (43.34%). Of total, 46 (38.33%) of the participants has preuniversity education and higher proportions {85 (70.83%)} of the women were stay-at-home homemakers. In the clinical characteristics the mean height score was 155.30 (5.18), the mean±SD height score was 155.30 (5.18) cm, the mean weight score was 65.82 (9.07) kgs and the mean BMD score of the participants was -2.164 (0.519).

Description of quality of life among postmenopausal osteoporotic women: The quality of life was measured with the SF36 quality of life questionnaire. The final transformed score for each item in every domain ranged from 0-100. Higher scores show a better quality of life. The results of this study showed that participants scored less in role limitations due to emotional problems (29.99±9.56). Also, the participants scored less in the domain of MCS (43.39±4.57) in comparison to PCS (47.78±4.53).

Table 1: Mean and SD of SF 36 Domains

SF-36 subdomains	Mean±SD
Physical function	50.56±9.37
Role limitations due to physical health	50.00±9.16
Role limitations due to emotional problems	29.99±9.56
Energy/fatigue	45.15±8.56
Emotional well-being	50.55±7.27
Social functioning	47.93±9.61
Pain	39.06±6.96

General health	50.00±8.57
Health Change	49.00±7.65

Table 2: QoL Component of SF 36 Questionnaire

SF-36 subdomains	Mean±SD
Physical component summary Physical functioning (PF), Role Functioning (RF), Bodily Pain (BP), General Health (GH), Health Change (HC)	47.78±4.53
Mental component summary Energy, Social Functioning, Role Emotional (RE), Emotional Wellbeing (EW)	47.78±4.53

Association of Socio-Demographic Variables with the Quality of Life Score: Association of PCS and MCS scores of quality of life were tested with selected demographic variables such as age, religion education, occupation and BMD. The results showed that there was no significant association found between PCS and MCS scores with selected socio-demographic variables.

Discussion

Any chronic disease may make the individual perceive their quality of life negatively. Particularly in case of osteoporosis if it is associated with complications like fracture it adversely affect the quality of life. The research findings also prove that the Health Related Quality of Life (HRQoL) is generally affected among osteoporotic patients without fracture [17]. Currently, postmenopausal osteoporosis is much prevalent and it is a major public health concern [18]. The results of this study revealed that the quality of life of the postmenopausal women was less in role limitations due to emotional problems (29.99±9.56). Also, the participants scored less in the domain of MCS (43.39±4.57) in comparison to PCS (47.78±4.53). Though, the participants did not have a any fracture or severe pain, the presence of osteoporosis affected their mental health. Also, participants scored less in role limitations due to emotional problems (29.99±9.56) on the SF-36 quality of life questionnaire.

The results of this study are compared with some of the national and international studies and similar results were seen. Singh N et al., Bianchi M et al., Ciubean A et al., Cortet B et al., and Baczyk G et al., are the studies that were considered for the comparative analysis [9,10,19,20,21]. Two studies compared the quality of life of postmenopausal women with osteoporotic, osteopenic and normal BMD and revealed that quality of life was significantly lower in osteoporotic and osteopenic women [9,21]. However, both the studies used Questionnaire of the European Foundation for Osteoporosis (QUALEFFO)-41 questionnaire for measuring the quality of life. Two studies compared quality of life of osteoporotic women with and without fracture and showed that quality of life was poorer among the patients who had experienced the fracture [10,20]. Whereas, one study used SF-12 questionnaire and another study used the QUALEFFO-41 questionnaire [20,10]. Additionally, another study used both SF-36 and QUALEFFO-41 questionnaires to assess the quality of life of postmenopausal women in comparison to healthy controls and also demonstrated a lower quality of life among postmenopausal osteoporotic women [19]. Results from the same study showed that, with the exception of the energy/fatigue domain, postmenopausal women with osteoporosis had significantly lower scores on the SF-36 domains than non osteoporotic postmenopausal women.

In addition, there was no significant association was found between PCS and

MCS scores with selected demographic variables in the current study. Contrary to it, a study showed significant association between age and level of education with the health-related quality of life of osteoporotic patients after fracture [22]. Further, there was no correlation between PCS (r-value=-0.058, p-value >0.05) and MCS (r-value=-0.0604, p-value >0.05) scores of quality of life with the BMD values of the postmenopausal women. This indicates that there was no significant relationship between PCS and MCS scores of quality of life and the BMD values of the postmenopausal osteoporotic women. Over time, neither of the variables has an influence on the quality of life. [23]

Preventing fractures is the main objective of therapy for osteoporosis. Consequently, improving bone density is just one of many therapy goals. Other goals include reducing pain, decreasing falls, and boosting functional ability. However, the therapy should also be directed towards enhancing the quality of life. Chronic discomfort, worsening kyphosis, height loss, and functional restrictions start to substantially impact the patients' quality of life in terms of their health. Therefore, assessment of the quality of life among postmenopausal osteoporosis women is very important. In addition, it is essential to develop tailored preventive, therapeutic, and rehabilitative programmes for the postmenopausal women with osteoporosis. These preventive programmes ought to incorporate education and encourage for regular exercise in order to maintain a healthy weight and the strength of the muscles and bones, which will lower the risk of fractures and enhance the quality of life of the postmenopausal osteoporotic women

Conclusion

It may be concluded that quality of life of most postmenopausal women who are living with osteoporosis is generally affected. However, there was no significant association found with the selected demographic variables and the quality of life. Also there was no significant correlation found between BMD scores and the quality of life. The quality of life of osteoporotic patients should be examined before fractures in order to render a care, support and treatment includes counseling, psychosocial support, and therapeutic interventions to assist patients in developing self-reliant efficient methods for accepting and dealing with the condition.

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