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Quality of Life in Patients With Osteoporosis People

Ali Khani Jeihooni[1], Iman Forghani Fasaei[2], Seyed Mansoor Kashfi[3], Zahra Khiyali[4*], Farzaneh Mobasheri[5]

1. Assistant Professor, Department of Public Health, School of Health, Fasa University of Medical Sciences, Fasa, Iran.
2. Department of Medicine, School of Medicine, General Medicine, Fasa University of Medical Sciences, Fasa, Iran.
3. Assistant Professor, Department of Public Health, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran.
4. Instructor, Department of Public Health, School of Health, Fasa University of Medical Sciences, Fasa, Iran.
5. Instructor, Department of Social Medicine, School of Medicine, Fasa University of Medical Sciences, Fasa, Iran.

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ABSTRACT

Introduction: Osteoporosis and fractures resulting from it, along with increased pain, disability, decreased Quality of Life (QoL) and death, is an important health issue worldwide.

Objective: The purpose of this study was to determine the quality of life in patients with osteoporosis referring to Fasa Bone Density Test Center, compared to the healthy people.

Materials and Methods: This was an analytical cross-sectional study, conducted on 300 subjects (150 subjects with osteoporosis and 150 subjects without osteoporosis) referring to Fasa Bone Densitometry Center. Qualeffo-41 (Quality of Life Questionnaire of the European Foundation for Osteoporosis) standard questionnaire, which its validity and reliability have been confirmed in Iran, was used to determine the quality of life and scored based on a scale of 100. Higher scores in this instrument indicated lower quality of life. The data were analyzed using Chi-square test and Independent t test and $P<0.05$ was considered as the significance level.

Results: The mean score of overall quality of life in patients with osteoporosis and the healthy ones were 23.96±2.34 and 11.78±4.84, respectively. Comparison of the scores of different domains of quality of life showed that patients with osteoporosis were different from healthy individuals in all domains ($P<0.05$).

Conclusion: Considering the effect of osteoporosis in reducing the quality of life in patients, prevention and early treatment of this disease appear to improve the quality of life in the affected people.

Introduction

Osteoporosis is one of the most common metabolic bone diseases [1], known as a major public health problem [2]. More than 200 million people are affected by this disease worldwide [3]. Osteoporosis does not have an acute onset but a gradual process and in case of the disease, considerable control, time, and costs are required to compensate for bone mass loss [4]. Fractures are the most

*** Corresponding Author:**
Zahra Khiyali, MSc.
Address: *Department of Public Health, School of Health, Fasa University of Medical Sciences, Fasa, Iran.*
Tel: *+98 (917) 8562818*
E-mail: *khiyaliz@yahoo.com*

common and serious side effects of osteoporosis. This disease is responsible for 1.5 million fractures per year [5, 6]. Therefore, the importance of the disease is associated with increased femoral, hip, and spinal fractures [7]. It has been determined that the number of hip fractures will increase by 31% and 24% in men and women by 2025, respectively. Therefore, therapeutic and medical expenses will also increase dramatically from $34.800 million in 1990 to $131.500 million in 2050 [8].

Based on studies, 1 out of 5 American women older than 50 years develops osteoporosis and about half of all women over 50 years have a history of fracture of the pelvis, wrists or spine [9]. Based on demographic changes, it is expected that more than 75% of osteoporosis fractures occur in developing countries [10]. Studies conducted in Iran suggests that 17% of patients have osteoporosis and 35% have osteopenia [11]. A meta-analysis study by Bagheri et al. reported that the lowest and highest prevalence of osteoporosis in the femur area was observed as 1.5% and 43% and the lowest and highest prevalence for the spinal column were 3.2% and 51.3% in the Iranian women [7]. Decreased physical activity, mobility due to pain, depression and social isolation are among the major consequences of osteoporosis fractures globally. These problems have adverse effects on daily activities, reduce the quality of life and are accompanied by healthcare and social services costs [12].

According to studies, women with osteoporosis have a lower quality of life compared to healthy women, even when there is no fracture [13]. Some studies reported such differences only in significant social activities [8] thus additional supplementary studies may be necessary to compare other areas of quality of life in patients with osteoporosis and healthy people. It seems that quality of life in patients with osteoporosis should be investigated even before the occurrence of fractures to develop effective strategies for disease acceptance and dealing with it through performing counseling interventions, and providing appropriate support and care [14].

Quality of Life (QoL) is a broad multi-dimensional concept, which reflects all aspects of the welfare of an individual, including health status, as well as environmental, spiritual, and economic issues. Health-related QoL is especially associated with physical, psychological, and social health aspects as well as the effects of illness and treatment on these parameters [15]. Osteoporosis does not affect the quality of life per se but its complications and especially consequent fractures are the main factors in reducing the QoL [16, 17]. Given the impact of multiple factors on QoL [18], factors like environmental, geographical, cultural, ethic, race, and even personal perception of QoL mentioned in Gil study [19], 34.1% osteoporosis prevalence in Fasa City, Iran [20], as well as lack of any study on this subject in Fasa, the researcher tried to assess the QoL of patients with osteoporosis. Focusing on the quality of life is important in order to identify educational, consulting, and treating needs and is the basis to improve QoL. Therefore, the present study was conducted with the aim of assessing the QoL in patients with osteoporosis, referring to the Bone Density Test Center in Fasa, compared to healthy people.

Materials and Methods

This was a cross-sectional analytical study conducted on patients referred to the Osteoporosis Center in Fasa. According to Hassanzadeh et al. [8] study, considering the mean difference of 3.09, standard deviation of 3.2, with 95% confidence level, and power of 80%, the sample size was estimated as 127 which increased to 300 (150 patients with osteoporosis and 150 healthy ones) in order to increase the power of the study.

Subjects of this study were selected from April to August 2015, based on the list of the individuals referred to the Bone Density Test Center of Fasa, registering for the bone densitometry test. Also they should meet the inclusion criteria (lack of chronic kidney disease, cancer, heart and lung diseases, diabetes, uncontrolled blood pressure, severe mental, vision, and hearing disorders) used for both healthy and affected groups. The inclusion criteria werer confirmed through the self-report questionnaire. Bone density was measured by DEXA (Dual Energy X-Ray Absorptiometry) using the Hologic Device in bones L1 to L4 densitometry. The information obtained from densitometry including bone density in the lumbar spine and in the femur region were recorded as the amount of bone density, as per defined by the World Health Organization (WHO).

According to WHO, the osteopenia is a condition in which bone density is 1 to 2.5 standard deviations less than the average number of young adults of the same race and gender. Osteoporosis is a condition in which bone mass density is more than 2.5 standard deviations below the average number of young adults of the same race and gender [21]. Therefore, in the present study, among those referring to the Bone Density Test Center, based on the results of bone densitometry testing and with the approval of the orthopedic specialist, people who had a value of below -2.5 SD were considered as patients with osteoporosis and those with bone densitometry above -1 SD were considered healthy. The data collection instrument was a

two-part questionnaire including demographic information and quality of life measurements.

Quality of Life Questionnaire (Qualeffo-41) was developed by Lips and the activists of quality of life group at the International Osteoporosis Foundation, which had 41 questions in 5 domains to investigate pain, physical function (daily activities, housework, and mobility), social activities, belief in public health, and mental activity [22-24]. This instrument has already been used in Iran [8]. In this study, the reliability of the instrument was confirmed by a preliminary study on a sample size of 30 subjects and the Cronbach α was found as 0.78. In this questionnaire, each subject was scored from 1, which represents the best situation to 5, which indicates the worst situation. Then, the mean score of each field was calculated based on the total number of questions answered and finally the total score and the score of each area for every subject studied was transferred to domain scores from 0 to 100. Eventually, the total score for all questions for subjects studied varies from 0 to 100. After identifying patients with osteoporosis and healthy people, subjects completed the questionnaire by the self-report method but it was completed by the researcher for the illiterate people.

To collect data, 450 people registered on the list were contacted and their test result was asked and 300 people were selected according to the inclusion criteria. The research data were analyzed using SPSS (V. 19) by the Chi-square test and Independent t test and $P<0.05$ was considered as the significance level. Normal distribution of the data was also controlled by The Kolmogorov-Smirnov test. In order to observe ethical considerations, the present study was conducted by obtaining written consent from the research subjects following the description of the purpose and ensuring that the information provided will be kept confidential.

Results

Of all subjects, 268 (89.3%) were females and 32 (10.7%) of them were males. The mean age of the subjects were 54.21±2.73 and 56.18±2.12 years for the affected and healthy group, respectively. Mean BMI in the affected group was 24.12±1.14 kg/m^2 and in the healthy group it was 26.16±2.21 kg/m^2, and no statistically significant difference was observed between the two groups in this regard. Other demographic variables of the two study groups are listed in Table 1.

Table 1. Distribution of demographic variables in the two groups of patients with osteoporosis and healthy individuals

Variable		N (%)		Sig.*
		Affected (n=150)	Healthy (n=150)	
Marital status	Married	149(99.30)	148(98.70)	0.99
	Single	1(0.70)	2(1.30)	
Gender	Female	133(88.70)	135(90)	0.70
	Male	17(11.30)	15(10)	
Educational level	Illiterate	46(30.70)	51(34)	0.20
	Under diploma	104(69.3)	95(63.4)	
	Upper diploma	0(0.00)	4(2.70)	
Smoking	Yes	0(0.00)	3(2)	0.24
	No	150(100)	147(98)	
History of osteoporosis	Yes	21(14)	31(20.7)	0.12
	No	129(86)	119(79.3)	
History of bone fracture	Yes	22(14.7)	139(92.66)	0.001
	No	128(85.3)	11(7.34)	

*The Chi-Square test

Table 2. Comparison of Quality of Life scores and Its various domains in patients with osteoporosis and healthy individuals

Variable		Mean±SD		Sig.*
		Affected (N=150)	Healthy (N=150)	
Pain		18.10±0.73	12.27±1.23	0.001
Physical function	Motor activities	15.60±1.30	4.66±1.18	0.001
	Daily activities	32.54±1.40	14.65±2.36	0.001
	Housework	20.45±0.77	5.77±1.71	0.001
Social activities		18.48±2.48	9.68±1.57	0.001
Belief in health		14±0.0	6.54±1.10	0.001
Mental activities		24.78±1.65	18.76±2.32	0.001
Total score of Quality of Life		23.96±2.34	11.74±4.84	0.001

*The Independent t test

The results show the lower mean score of QoL in patients with osteoporosis and healthy people in the domains of pain, physical function (daily activities, housework, and mobility), social activities, belief in public health, and mental activity. Based on the Independent t test, the score of QoL and its domains in patients with osteoporosis was significantly higher than those in the healthy people (P=0.001) (Table 2).

Discussion

Osteoporosis is a disease that is accompanied by increased bone fragility as a consequence of the decline in bone density. When a fracture occurs, in addition to pain and disruption in physical function, decreased mobility and social interaction and emotional problems might follow, which all of these determine the quality of life in patients with osteoporosis [25]. The findings showed that QoL score in all its domains including the areas of pain, physical function (daily activities, housework, and mobility), social activities, belief in public health, and mental function is higher in patients with osteoporosis, compared to the healthy people. It is worth reminding that a higher score indicates a lower quality of life, based on the standard of scoring in the Qualeffo-41 questionnaire.

In the present study, a significant difference was observed in the quality of life related to the field of pain between the two groups which is consistent with the results of many previous studies [14, 25–27]. This difference in the amount of pain can be explained, due to the nature of an asymptomatic disease and that the disease occurs in various forms including the skeletal fractures, kyphosis and even bone pain, considering that most patients with osteoporosis in this study had the history of bone fracture. Fear of collapse and fracture resulting from it may be related to limited movement and motility. A statistically significant difference was observed in the QoL regarding to physical function in all three areas between the two groups. Altındağ [25] showed that women with osteoporosis are at the highest risk for physical inability and problems with everyday life activities and consequently, a decrease in their QoL. Maintaining or improving daily activities may improve the QoL.

Avoiding social interactions due to low self-confidence, physical pain in everyday life activities, emotional problems, anxiety and fear of fracture, and depression caused by being dependent on others [28] are the negative consequence of this disease. In the present study, significant statistical difference was observed in the quality of life associated with the field of social activities between the two groups. Hassanzadeh [8] and Esmaili [29] showed that the mean score of the quality of life in patients with osteoporosis in the field of social activities was higher than those of the healthy people, reflecting the low quality of their lives in the field of social activities. Findings of the current study is consistent with their study results. Lee [30] mentioned that given the gradual and unexplained process of osteoporosis, disruption occurs in people's social activities and consequently, their QoL declines.

In the present study, a statistically significant difference was observed in the QoL related to the field of

belief in health between the two groups. Shojaezadeh [31] showed a relationship between osteoporosis and belief in the health of people. These findings are consistent with other studies [25, 26]. The study by Hassanzadeh [8] conducted on people who have not yet had bone fracture, showed that the QoL in the areas of pain, physical function, belief in general health, and mental function in patients with osteoporosis has no significant difference, compared to the healthy patients. This conclusion is inconsistent with the present study. The causes of this contradiction can be differences between the studied groups in term of the history of bone fracture in which, in the present study most people had a history of bone fracture.

A statistically significant difference was observed in the QoL related to the domain of mental function, between the two groups. A study in Brazil [26] showed that women with osteoporosis had disorders in all areas of their QoL including mental function, compared to the healthy women and they believed that a lifestyle without mobility is a factor that leads to pain, impaired physical function, and mental function. The study by Kuru [32] also showed the negative effect of osteoporosis-induced fracture on the QoL of patients in the domain of mental function which our results are consistent with it.

Osteoporosis is known as one of the most common bone diseases in Iran and imposes a lot of life and financial losses to the community. According to the results, it is suggested that future studies be conducted with larger sample sizes with considering other important variables like menopause. Regarding the effect of osteoporosis on all aspects of the QoL in patients with osteoporosis, early diagnosis and treatment to reduce the complications and improving the quality of life and reducing the economic and social costs of the disease, are suggested.

Limitation of this study included applying a self-report questionnaire, not considering the menopausal variable as an important variable in the study, and the impossibility of generalizing the result of the study to the whole society, because the subjects were selected from the individuals referring to bone densitometry centers.

Ethical Considerations

Compliance with ethical guidelines

This research was approved by the Research Center of Fasa University of Medical Sciences, No. 93153 with Ethics Code No. IR.FUMS.REC.1393.013.

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Conflict of interest

The authors certify that they have no affiliation with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter or materials dismissed in this manuscript.

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