Original Article

Quality of life in Osteoporotic patients compared with healthy people in an urban focus, South of Iran

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ABSTRACT

Background: Osteoporosis and related fractures with increased pain, disability, reduced quality of life and mortality is a global health concern. The main aim of this study is to investigate the quality of life in people with osteoporosis compared with healthy subjects in the city of Fasa, Fars province, South of Iran. Materials and Methods: A descriptive cross-sectional study was conducted on 300 (150 with and 150 without osteoporosis) patients referred to a clinical center in the city of Fasa. The bone densitometry and bone mineral density (BMD) were measured in subjects. Based on the World Health Organization (WHO) standards, BMD was measured and the subjects with BMD < -2.5 standard deviation (SD) of the average value were defined as patient cases, while those with BMD > -1 SD were considered to be normal (control) cases. The Qualeffo-41 questionnaire was used to estimate the quality of life and was reported on a scale of 100. Data were analyzed using Chi-square test, independent T-test, and descriptive statistical methods. $p<0.05$ was considered as statistically significant. Results: The mean total score of quality of life in patients with osteoporosis and healthy subjects was 23.96 ± 2.34 and 11.78 ± 4.84, respectively. Comparing the different aspects of quality of life among osteoporotic patients and healthy subjects showed a statistical difference between the two groups in the total aspects of quality of life. Conclusion: Given the impact of osteoporosis on ameliorating health status, early awareness, treatment and prevention of osteoporosis appears to enhance the quality of life in patients.

Keywords: Osteoporosis, quality of life, bone mineral density, Iran.

Introduction

Osteoporosis is the most common metabolic bone disease [1]. This disease affects more than 200 million women worldwide [2].

Osteoporosis does not occur suddenly; it progresses gradually without obvious, subjective symptoms. Once osteoporosis has occurred, significant time, cost, and management are required in order to repair reduced bone quantity even in cases of early diagnosis [3-5]. Fractures are the most serious and prevalent morbid events in osteoporosis. This disease is responsible for 1.5 million cases of fractures annually [6, 7]. Therefore, the significance of this disease is correlated with the increase in femoral, pelvic, and vertebral breakage [8]. According to previous surveys, it has been estimated that the number of hip joint fractures would rise to 310% and 240% in men and women by the year 2025, respectively. Accordingly, the medical and treatment costs would remarkably increase so that it would reach from $34,800 M in 1990 to $131,500 M in 2050 [9]. In the USA, every five American women over age 50, a woman has osteoporosis and approximately half of all women >50 years have reported pelvic, wrist, or vertebral fractures [10]. Based on demographic changes, it is predicted that >75% of fractures due to osteoporosis occur in developing countries [11].

In Iran, data from the national program for prevention, diagnosis and treatment of osteoporosis suggest that 70% of

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women and 50% of men >50 years' age suffer from osteoporosis and osteopenia [12]. In a meta-analysis review on osteoporosis prevalence among Iranian women, it was reported that the lowest and the highest prevalence in femoral area were 1.5% and 43% and in vertebral area were 2.3% and 51.3% [8].

Pain, diminution of physical activity and mobility, depression and social isolation are considered as the most important consequences from fractures due to osteoporosis in the world. On the one hand, these complications affect daily living activities unfavorably and lower the quality of life. On the other hand, these are associated with health treatment and social services costs [13]. Even when there is no fracture, studies have indicated that osteoporotic women compared with those lacking it have a lower quality of life [14]. It seems that the quality of life in osteoporotic patients should be monitored even before the appearance of fractures to develop effective strategies in combating disease, implementation of consultative interventions, and suitable support and surveillance [15].

Quality of life is a multi-dimensional concept reflecting all individual's well-being including physical and mental health, economic issues, and the living environment [16]. Osteoporosis by itself is considered to be an insignificant factor in reducing the quality of life. Its complications and specifically fractures are the main effective factors in this reduction [17]. According to the results Monshipour et al.[18] based on the impact of various factors on quality of life and Gil et al [19], which reflects the impact of various environmental factors, geographical, cultural, ethnic and even personal perception of life on the quality of life, researchers to test the quality of life of people with osteoporosis pay, because according to the quality of life in educational needs, counseling and treatment is important and basis for planning in order to improve the quality of life. Thus the main aim of the present study was to explore the quality of life in osteoporotic patients in comparison with healthy ones and to deplore the effects of this disease on various aspects of quality of life in these people.

Materials and Methods

This study is a cross-sectional descriptive. based on the previous studies [7] and the sample size formula, 300 subject sample size was determined for the study (osteoporotic (#150) non-osteoporotic (#150) subjects).

Study area

All sampled individuals are residents in the city of Fasa, Fars province, South of Iran.

Sampling method

In the present study, subjects were selected by random sampling from those referred to the Bone Densitometry Centre in the city of Fasa. The exclusion criteria included previous osteoporosis diagnosis, affliction to chronic renal diseases, cancer, heart and lung failures, diabetes, uncontrolled hypertension, and severe mental, optical and auditory disorders.

Osteopenia is, according to W.H.O., the conditions in which bone density is in the range of 1-2.5 standard deviation (SD) less than the average value of young adults in the same race and gender. Osteoporosis is defined as when bone mass density is more than 2.5 SD below the average value of young adults in the same race and gender [20]. As a result, subjects with bone densitometry < -2.5 would be taken as osteoporotic patients, while those with bone densitometry > -1 are considered as normal in this survey.

Data questionnaires

The tools of data collection involved a two parts questionnaire with demographic data and determination of the quality of life. The latter questionnaire (Qualeffo-41) was prepared by Philips Cooper's group at the International Osteoporosis Foundation, which bears 41 questions in 5 major issues to survey pain, physical performance (daily activities, house works, and mobility), social activities, public health belief, and mental function [21]. Reliability of the questionnaire in the study Mohammadbeigi et al. [9] was confirmed by Cronbach's alpha 0 /80.

In this questionnaire, each individual would be scored from 1 to 5 representing the best and the worst cases, respectively. Based on the number of all questions answered, the average score in each issue would then be calculated. Finally, the total score and each issue score would be transferred to points range between zero and 100. Therefore, the average score for all questions and each issue for each examined subject would vary between zero and 100. The higher the subject's score the quality of life in that subject would be lower.

Statistical analysis and Ethics

Research data were analyzed using the independent sample t-test and Chi-square test in the SPSS software version 20. P-value < 0.05 was considered to be statistically significant. To follow the codes of ethics, the present research was conducted using the standard patient consent from the affiliated website. The aims were explained and the confidentiality of the data was assured.

Results

The female to male ratio in all the examined subjects was approximately 9:1. In fact, there were 268 women (89.3%) and 32 men (10.7%) registered in this study. The mean and standard deviation (SD) of age in surveyed subjects (both patients and control) were 54.21 ± 2.73 and 56.18 ± 2.12, respectively, and the biomass profiles in patients and control group were 24.12 ± 1.14 and 26.16 ± 2.21, respectively. No statistically significant differences were observed between these two groups of patients and control ($P > 0.05$).

The mean scores of quality of life among osteoporotic males and females on issues of pain, physical performance, social activities,

public health belief, and mental function were higher than those of non-osteoporotic subjects. These differences were all statistically significant (P<0.05). The total score for quality of life was almost double in osteoporotic patients compared with control group (approximately 24:12) (Table 1).

According to Table 2, a relationships between such parameters as marital status, gender, education level, smoking habit, osteoporotic history, and bone fracture history with affliction to osteoporosis in examined subjects. These findings showed that there were no statistically significant relationships between marital status, gender, smoking habit, osteoporotic history and bone fracture history with affliction to osteoporosis (P > 0.05). There was, however, a statistically significant relationship between the subject's education level and his/her affliction to osteoporosis (P < 0.001).

Discussion

Osteoporosis is a disorder associated with augmentation of bone brittleness as a sequel in bone quality reduction. Once fracture occurs, low mobility, social interaction, and emotional difficulties may follow in addition to pain and physical performance disruption. All of these characters would determine the quality of life in osteoporotic patients [22]. The present findings indicated that the score of quality of life was impaired in all of its issues including pain, physical performance, social activities, public health belief, and mental function among osteoporotic patients. The latter achieved a higher score in contrast to the control group. This is in line with the standard scoring of Qualeffo-41 questionnaire since a higher score refers to a lower quality of life in patients. Si et al. [23] and Ferreira et al. [24] studies reflects the impact of osteoporosis on quality of life in patients with osteoporosis.

In the present study, there was a statistically significant difference between the two surveyed groups in the issue of pain related to the quality of life. This finding is in line with studies Altındağ et al. [22], Haliloğlu et al. [25], Ferreira et al. [24], and El-Shazly et al. [26]. Bianchi et al. [27] In Italy was found that depression was high among osteoporotic patients even in the absence of any fractures. Pain and suffering due to this disorder and factors such as concern on future, breakdown, decline in social activities, and individual autonomy caused a decrease in their quality of life.

Fear from fall and its ensuing fracture may be related to restricted movement and reduction of mobility. In the current study, there was a statistically significant difference between the two surveyed groups on physical performance within all the three issues related to the quality of life. The Turkish study referred to above showed that osteoporotic females were more exposed to the risk of physical inability, concerns related to the daily life activities, and its due reduction in the quality of life. The maintenance or improvement of daily activities may help recover the quality of life [22].

Avoidance of social interactions on the basis of low self-confidence, physical pain in daily life activities, emotional difficulties, fear from fracture, and depression due to dependence on others are the negative sequel from this disorder [28]. A significant statistical difference was also observed between the two surveyed groups concerning social activities in this study. Mohammadbeigi et al. [9], Esmaeili et al. [29] showed that the mean score on quality of life in the issue of social activities among afflicted women was higher than non-afflicted ones which pointed to the former's lower quality of life.

Lee [30] said in his study due to the gradual and non-obvious osteoporosis, this disease caused disruption in social activities and consequently reduced quality of life.

In the present study also significant statistical difference was observed between the two surveyed groups concerning public health belief. Study by Shojaezadeh et al. [31] indicated that there was a relationship between osteoporosis and belief to health among subjects. This finding is in line with studies Altındağ et al. [22], Ferreira et al. [24], Kashfi et al. [32] and Hazavehei et al. [33]

The difference between the two groups on the issue of mental function under the quality of life was also statistically significant in our study. Ferreira et al. [24] reported in their survey of 220 Brazilian women that osteoporotic ones in contrast to the healthy ones suffered in all the quality of life issues including the mental function .These authors believed that life style without mobility would be a major factor leading to pain and physical and mental function disruptions. The results presented by Kuru et al. [34] also revealed the negative impact of fracture due to osteoporosis on the quality of life in the issue of mental function among patients, this is in accord with the results presented in this study.

Considering that osteoporosis is known to be one of the most prevalent skeletal disorders in Iran and it incurs a heavy burden of physical and financial losses on the society, and with regard to the above-presented data, it is suggested to embark on early diagnosis and treatment measures so that the likelihood of its symptoms could be diminished, the quality of life improved, and the social and economic costs due to this disorder be decreased.

One of the major limitations in the present study could be the self-reporting manner of filling in the questionnaire. The other limitation is that this study could not be extrapolated to the whole community since the study samples were from subjects referred to the bone densitometry center which could not be a true representative of the whole society.

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References

1. KSBMR scale: Osteoporosis health information: What Osteoporosis? http://www. ksbmr.org/info/ index 2. php/KSBMR scale (Accessed June 2015).
2. Stetzer E. Identifying Risk Factors for Osteoporosis in Young Women and Practice. Internet Journal of Allied Health Sciences and Practice 2011; 9: 1-8.
3. Ha JY, Choi EY: Health perception, health concern, and health promotion behavior of the elders. J Korean Gerontol Nurs, 2013, 15: 277–285.
4. Jeihooni AK, Hidarnia A, Kaveh MH, Hajizadeh E, Askari A. The Effect of an Educational Program Based on Health Belief Model on Preventing Osteoporosis in Women. Int J Prev Med. 2015 Nov 24;6:115. doi: 10.4103/2008-7802.170429. eCollection 2015.
5. Khani Jeihooni A, Askari A, Kashfi SM, Khiyali Z, Kashfi SH, Safari O, et al. Application of Health Belief Model in Prevention of Osteoporosis among Primary School Girl Students. Int J Pediatr 2017; 5(11): 6017-29.DOI:10.22038/ijp.2017.25144.2130.
6. Aziz Zadeh Forozi M, Haghdoost AA, Saidzadeh Z, Mohamadali Zadeh S. Study of knowledge and attitude of Rafsanjanian female teachers toward prevention of osteoporosis. Birjand University of Medical Sciences 2009; 1: 71-8.
7. Malgo F, Appelman-Dijkstra NM, Termaat MF, van der Heide HJ, Schipper IB, Rabelink TJ , et al. High prevalence of secondary factors for bone fragility in patients with a recent fracture independently of BMD. Arch Osteoporos. 2016 Dec;11(1):12. doi: 10.1007/s11657-016-0258-3. Epub 2016 Feb 23.
8. Bagheri P, Haghdoost A, Dortaj rabari E, Halimi L, Vafaei Z, Farhang nya M, Shayan L. Ultra Analysis of Prevalence of Osteoporosis in Iranian Women "A Systematic Review and Meta-analysis". Iranian Journal of Endocrinology & Metabolism 2011; 13(3):315-25.
9. Mohammadbeigi A, Hassanzadeh J, Mohammadsalehi N, Nasimi B, Ranjbar-Omrani Gh. Impacts of osteoporosis on quality of life in elderly women. Chron Dis J 2013; 1(1): 13-7.
10. Strom O, Borgstrom F, Kanis JA, Compston J, Cooper C, McCloskey EV, et al. Osteoporosis: burden, health care provision and opportunities in the EU: a report prepared in collaboration with the International Osteoporosis Foundation (IOF) and the European Federation of Pharmaceutical Industry Associations (EFPIA). Arch Osteoporos 2011; 6(1-2): 59-155.
11. Keramat A, Patwardhan B, Larijani B, Chopra A, Mithal A, Chakravarty D, et al. The assessment of osteoporosis risk factors in Iranian women compared with Indian women. BMC Musculoskelet Disord 2008; 9: 28.
12. Doosti Irani A, Poorolajal J, Khalilian A, Esmailnasab N, Cheraghi Z. Prevalence of osteoporosis in Iran: a meta-analysis. J Res Med Sci. 2013;18(9):759-766.
13. Korkmaz N, Tutoğlu A, Korkmaz I, Boyacı A. The Relationships among Vitamin D Level, Balance, Muscle Strength, and Quality of Life in Postmenopausal Patients with Osteoporosis. Journal of Physical Therapy Science 2014; 26(10): 1521-1526.
14. Compston J E, Flahive J, Hooven F H, Anderson Jr F A, Adachi J D, Boonen S , et al. Obesity, Health-Care Utilization, and Health-Related Quality of Life After Fracture in Postmenopausal Women: Global Longitudinal Study of Osteoporosis in Women (GLOW). Calcif Tissue Int 2014; 94:223–231.
15. Solomon, D. H., Johnston, S. S., Boytsov, N. N., McMorrow, D., Lane, J. M. and Krohn, K. D. Osteoporosis Medication Use After Hip Fracture in U.S. Patients Between 2002 and 2011. J Bone Miner Res 2014; 29: 1929–1937. doi: 10.1002/jbmr.2202.
16. Wilson S, Sharp C. A, Davie M.W.J. Health-related quality of life in patients with osteoporosis in the absence of vertebral fracture: a systematic review. Osteoporos Int 2012;23:2749-68.
17. Dempster DW. Osteoporosis and the burden of osteoporosis related fractures. Am J Manag Care 2011; 17 (6): 164-9.
18. Monshipour SM, Mokhtari Lakeh N, Rafat F, Kazemnejad Leili E. Related factors to Menopausal women's quality of life in Rasht. Holistic Nursing and Midwifery Journal 2014;25(79):80-88.
19. Gil KM, Gibbons HE, Hopkins MP, Jenison EL, VonGruenigen VE. Baseline characteristics influencing quality of life in women undergoing gynecologic oncology surgery. Health and Quality of Life Outcomes 2007; 5(25) :1-7.
20. Saag KG, Sambrook P, Watts NB. Osteoporosis. In: Klippel JH, Stone JH, Crofford LJ, White PH. Primer on the Rheumatic Diseases. 13th ed. New York: Springer; 2008. 1022-1043.
21. Lips P, Cooper C, Agnusdei D, Caulin F, Egger P, Johnell O, Kanis JA, Liberman U, Minne H, Reeve J, Reginster JY, de Vernejoul MC, Wiklund I: Quality of life as outcome in the treatment of osteoporosis: the development of a questionnaire for quality of life by the European Foundation for Osteoporosis. Osteoporos Int 1997, 7(1):36–8. 10.1007/BF01623457
22. Altındağ Ö, Soran N. Osteoporosis significantly reduces quality of life. Gaziantep Med J 2014; 20(3):217-220.
23. Si l, Winzenberg T. M, Graaff B. de, Palmer A. J. A systematic review and meta-analysis of utility-based quality of life for osteoporosis-related conditions. Osteoporos Int 2014;25:1987–1997 DOI 10.1007/s00198-014-2636-2.
24. Oliveira Ferreira N, Arthusob M, Silvaa R, Orcesi Pedroa A, et al. Quality of life in women with postmenopausal osteoporosis: Correlation between QUALEFFO 41 and SF-36. Maturitas 2009;62: 85–90.
25. Haliloğlu S, Uzkeser H, İçağasioğlu A. The Effect of Back Pain on Quality of Life, Sleep Quality and Depression in

Patients with Postmenopausal Osteoporosis Turkish Journal of Osteoporosis 2014;20: 6-9.
26. El-Shazly S, Mahmoud N. Measuring the Quality of Life Among Elderly with Osteoporosis. ASNJ 2007: 6(2):23-37.
27. Bianchi ML, Orsini MR, Saraifoger S, Ortolani S, Radaelli G, Betti S. Quality of life in post-menopausal osteoporosis. Health Qual Life Outcomes 2005; 3: 78.
28. Deo P, Nayak R, Rajpura J. Women's Attitudes and Health Beliefs toward Osteoporosis Screening in a Community Pharmacy. Hindawi Publishing Corporation Journal of Osteoporosis 2013; 2013:1-8.
29. Esmaeili Shahmirzadi S, Shojaeizadeh D, Azam K, Tol A. A survey on quality of life in the elderly with osteoporosis. J Health Syst Res 2013; 8(7): 1180-89.
30. Lee SH: A Study on Regional Bone Mineral Density by Osteoarthritis Grade of the Knee-Data from 2010–11 Korea National Health and Nutrition Examination Survey. Master's thesis, The Graduate School of Public Health Seoul National University, 2014, pp 19–24.
31. Shojaezadeh D, Sadeghi R, Tarrahi MJ, Asadi M, Lashgarara B. Application of Health Belief Model in Prevention of Osteoporosis in Volunteers of Khorramabad City Health Centers, Iran. Journal of Health System Research 2012;8(2):183-192.29. Kuru P, Akyüz G, Peynirci H, et al. Fracture History in osteoporosis:Risk factors and its effect on quality of life. Balkan Med J 2014; 31:295-301.
32. Kashfi SM, Khani Jeihooni A, Rezaeianzade A. Effect of health workers' training programs on preventive behavior of leishmaniosis based on BASNEF model. J Res Health Sci. 2012 Dec 13; 12(2):114-8.
33. Hazavehei SM, Khani Jeihooni A, Hasanzadeh A, Amini S. The Effect of Educational Program Based on BASNEF Model for Eye Care in Non-insulin Dependent Diabetic Patients. J Res Health Sci. 2010 Dec 18;10(2):81-90.
34. Kuru P, Akyüz G, Peynirci H, et al. Fracture History in osteoporosis:Risk factors and its effect on quality of life. Balkan Med J 2014; 31:295-301.

Table 1: Comparison between the scores in quality of life and its different issues among control subjects and osteoporotic patients (SD=standard deviation)

Variable		Patients (#150) Mean ± SD	Control (#150) Mean ± SD	*P*-value
Pain		18.10 ± 0.73	12.27 ± 1.23	*P*<0.001
Physical performance	Mobility	15.60 ± 1.30	4.66 ± 1.18	*P*<0.001
	Daily activity	32.54 ± 1.40	14.65 ± 2.36	*P*<0.001
	Housework	20.45 ± 0.77	5.77 ± 1.71	*P*<0.001
Social activities		18.48 ± 2.48	9.68 ± 1.57	*P*<0.001
Public health belief		14 ± 0.00	6.54 ± 1.10	*P*<0.001
Mental function		24.78 ± 1.65	18.76 ± 2.32	*P*<0.001
Total score of quality of life		23.96 ± 2.34	11.78 ± 4.84	*P*<0.001

Table 2: The relationships between scores on the various demographic, habitual and skeletal parameters with affliction to osteoporotic disorder

Variable		Patients (#150) Number (%)	Control (#150) Number (%)	*P*-value
Marital status	Married	149 (99.30)	148 (98.70)	1
	Single	1 (0.70)	2 (1.30)	
Gender	Male	133 (88.70)	135 (90)	0.70
	Female	17 (11.30)	15 (10)	
Education level	Illiterate	46 (30.70)	51 (34)	0.001
	< Diploma	104 (69.30)	95 (63.30)	
	> Diploma	0 (0)	4 (2.70)	
Smoking habit	Yes	0 (0)	3 (2)	0.24
	No	150 (100)	147 (98)	
Osteoporotic history	Yes	21 (14)	31 (20.70)	0.12
	No	129 (86)	119 (79.30)	
Bone fracture history	Yes	128 (85.30)	128 (85.30)	1
	No	22 (14.70)	22 (14.70)	