



Research Article

Evaluation of Quality of Life in Iraqi Patients with Osteoporosis in a Tertiary Care Facility in Baghdad

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Abstract

Background: Osteoporosis is a chronic health problem affecting the skeletal system, characterized by decreasing bone mass and weakening bone structure. It can lead to excruciating pain and incapacity, as well as a decrease in physical function, social function, and well-being, all of which are aspects of quality of life (QoL). **Objective:** To investigate the impact of osteoporosis on the life quality of Iraqi patients in a tertiary care center in Baghdad using the International Osteoporosis Foundation's (IOF) life quality survey. **Methods:** 80 females with osteoporosis attending Baghdad Teaching Hospital aged 18 years or older provided the data for this cross-sectional study. Bone density was determined using the dual-energy X-ray absorptiometry (DXA) technique. The IOF quality of life scale (Qualeffo-41) was employed. **Results:** Regarding QoL, participants gave the lowest scores to mobility (24.54), leisure and social activities (22.56), and the highest to the activities of daily living (8.14), general health perception (11.06), and jobs around the house (13.09). **Conclusions:** This study concluded that the quality of life for osteoporosis patients was poor. A large proportion of patients have moderate difficulties and need help during their practice of daily living activities. Generally, the total mean of the general health of the study sample was slightly worse to much worse.

Keywords: DXA, Osteoporosis, Quality of life, Physical function.

تقييم جودة الحياة لدى المرضى العراقيين المصابين بهشاشة العظام في مرفق رعاية من الدرجة الثالثة في بغداد

الخلاصة

الخلفية: هشاشة العظام هي مشكلة صحية مزمنة تؤثر على الجهاز الهيكلي، وتتميز بانخفاض كتلة العظام وإضعاف بنية العظام. يمكن أن يؤدي إلى ألم مبرح وعجز، بالإضافة إلى انخفاض في الوظيفة البدنية والوظيفة الاجتماعية والرفاهية، وكلها جوانب من جوانب جودة الحياة (QoL). **الهدف:** التحقيق في تأثير هشاشة العظام على نوعية حياة المرضى العراقيين في مركز رعاية من الدرجة الثالثة في بغداد باستخدام مسح جودة الحياة الذي أجرته المؤسسة الدولية لهشاشة العظام (IOF). **الطرائق:** قدمت 80 امرأة مصابة بهشاشة العظام يترددن على مستشفى بغداد التعليمي في سن 18 عاماً أو أكثر البيانات لهذه الدراسة المقطعية. تم تحديد كثافة العظام باستخدام تقنية قياس امتصاص الأشعة السينية ثنائية الطاقة (DXA). تم استخدام مقياس جودة الحياة الخاص بـ IOF (Qualeffo-41). **النتائج:** فيما يتعلق بجودة الحياة، أعطى المشاركون أدنى درجات في التنقل (24.54)، والأنشطة الترفيهية والاجتماعية (22.56)، والأعلى لأنشطة الحياة اليومية (8.14)، وإدراك الصحة العامة (11.06)، والوظائف في المنزل (13.09). **الاستنتاجات:** خلصت هذه الدراسة إلى أن نوعية الحياة لمرضى هشاشة العظام كانت رديئة. تعاني نسبة كبيرة من المرضى من صعوبات معتدلة ويحتاجون إلى المساعدة أثناء ممارستهم لأنشطة الحياة اليومية. بشكل عام، كان المتوسط الكلي للصحة العامة لعينة الدراسة أسوأ قليلاً إلى أسوأ بكثير.

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INTRODUCTION

Osteoporosis (OP) is one of the top 10 illnesses globally, generating significant misery in patients and enormous expenses to the healthcare system [1]. It is the most common cause of bone fractures in the elderly population [31]. OP is a long-term and irreversible condition that involves a diminution of bone quality and damage to its structure, causing an enhanced vulnerability to fracture [2]. Reduced quality of life (QL) in osteoporotic individuals is

mostly caused by spine or hip fractures, which induce pain and impairments in physical and social function [3]. Osteoporosis affects beyond twenty-two million females and 5.5 million males, making it a significant global health burden. People of both sexes who have osteoporosis, which is more prevalent in elderly populations and women [4]. OP causes major economic and social challenges, including extra costs from related illnesses like depression and chronic pain, as well as poor health. This is in addition to the direct healthcare costs for treating fractures and

rehabilitation. The gold standard for diagnosing osteoporosis continues to be bone densitometry, dual-energy X-ray (DXA), which measures bone mass. The World Health Organization (WHO) has recommended measuring the neck of the femur because it has a higher predictive capacity for fracture risk [6]. The spine is not suited because of natural degenerative changes, especially in elderly people. If hip measurement is not feasible, it is still a possibility. Other locations, including the forearm, can be utilized; however, because T-values differ between locations, they are less reliable and not advised [7]. According to the WHO definition from 1996, quality of life (QoL) refers to an individual's general outlook on their place in the world, which involves their aspirations, hopes, values, and concerns, while conforming to societal and cultural norms in their environments. [8]. Quality of life-related to health (HRQoL) instruments were evaluated as a crucial initial result because they are an essential precaution for evaluating the effect of a condition and the consequences of medicinal treatments; consequently, an improvement in HRQoL is regarded as an important fundamental result and predictor of curative success [8]. Engaging in regular physical activity and exercise can offer dual benefits by promoting health and preventing diseases. As a result, more people may be motivated to incorporate movement and physical activity into their daily routines. [9]. The current study is to highlight the influence of osteoporosis on a patient's life quality. The aim of the study was to assess the burden of osteoporosis on the QoL of a sample of Iraqi patients in an Iraqi tertiary care center in Baghdad by using the QoL assessment form (IOF).

METHODS

Study design and setting

Cases who were attending the DXA department in Baghdad Teaching Hospital were the subjects of this cross-sectional study. Regarding sample size calculation, a convenience sampling method was employed. All patients attending the DXA clinic in the hospital with a diagnosis of primary osteoporosis during the study period were included in the study. Eighty osteoporotic females participated in the survey. The participants in this study (≥ 18 years old) are recruited during the period of December 2022 to April 2023. Data is collected by the researchers through direct personal interviews performed in a small private room at the DXA unit. A structured questionnaire was used to obtain participants' data.

Inclusion criteria

We included all patients aged ≥ 18 years referred to the DXA unit in Baghdad Teaching Hospital to examine bone density.

Exclusion criteria

Patients with spinal surgery, patients with internal fixation in the lumbar spine, patients with recent

nuclear therapy, patients with scoliosis and lumbar deformity, and obese patients ≥ 140 kg were excluded from the study.

Data collection and outcome measurements

Data collection included educational level, occupation, marital status, number of children, residence, body mass index (BMI) classification, and DXA assessment of the spine. The density of bones was measured using DXA. According to the (WHO) definition of bone density, the densitometry data, which included osteodensitometry of the lumbar spine region, were documented. Osteoporosis is a disorder characterized by a bone mineral density (BMD) that is below 2.5 standard deviations of the mean value for young individuals of identical ethnicity and gender. Hence, in this study, the participants who were referred to the bone density test center, people with bone densitometry values less than -2.5 standard deviation, were assumed to have OP, and those with bone density values higher than -1 SD were deemed healthy [9]. Information from the National Foundation for Osteoporosis (Qualeffo-41), physical function, demographic information (age, level of education, body mass index used, as well as the bone density at the spine [4] The European Foundation for Osteoporosis developed the Qualeffo-41 (Quality of Life Questionnaire of the European Foundation for Osteoporosis) as a standardized tool to evaluate quality of life in patients suffering from vertebral fractures, a frequent osteoporosis complication. The questionnaire encompasses various domains, including physical functioning, which evaluates mobility limitations and challenges in daily activities. Social functioning was also evaluated to focus on interpersonal interactions, relationships, and engagement in social activities. Finally, health perceptions that are explored reflect the individual's overall sense of health and vulnerability to illness.

Ethical considerations

The study obtained permission from the Iraqi Ministry of Health and the Baghdad hospital management. All study participants consented to the study's purpose and procedures and received guidance on specific precautions to prevent osteoporosis.

Statistical analysis

Following the encoding of data from each questionnaire, they were recorded in an Excel spreadsheet and subsequently imported, and analysis of data was completed by employing SPSS-28 (the Statistical Package for Social Sciences, version 28). Basic descriptive statistics (frequency, percentage, mean, standard deviation, minimum, and maximum values) were utilized to summarize the data. We tested the importance of differences in percentages (qualitative data) using the Pearson Chi-square test. We also used Yate's correction or the Fisher Exact test when needed. Statistical significance was considered whenever the P value was equal to or less than 0.05.

RESULTS

This cross-sectional investigation involved a sample of 80 osteoporotic females. The arithmetic mean of age was 56.5 ± 12.9 years. The highest percentage of osteoporosis was in age groups 50-59 years (35.0%), while the lowest percentages (10.0%) were in the age group ≤ 40 years. 86.3% were married; 50.0% of them had five or more children (Table 1).

Table 1: Composition of the study sample by socio-demographic attributes.

Demographic characteristics	n(%)
Age (years)	
<40years	8(10)
40-49	9(11.2)
50-59	28(35)
60-69	24(30)
70-79	11(13.8)
Mean $\pm$ SD (Range)	56.5 $\pm$ 12.9 (18-79)
Educational level	
Illiterate	34(42.4)
Primary	21(26.3)
Secondary	9(11.3)
College	15(18.7)
Higher education	1(1.3)
Occupation	
Employed	17(21.3)
Unemployed	63(78.7)
Marital status	
Married	69(86.3)
Single	7(8.7)
Divorced	4(5)
No children	10(12.4)
One	3(3.8)
Two	3(3.8)
Number of children	
Three	13(16.3)
Four	11(13.7)
Five & more	40(50)
Mean $\pm$ SD (Range)	4.8 $\pm$ 3.1 (0-11)
Residence	
Urban	65(81.3)
Rural	15(18.7)
BMI classification	
Underweight (<18.5)	3(3.8)
Normal (18.5-24.9)	21(26.2)
Overweight (25-29.9)	28(35)
Obese (≥ 30)	28(35)
Mean $\pm$ SD (Range)	27.8 $\pm$ 5.7 (14-41)

Table 2 shows the T-score for patients who participated in the study. The highest percentage of them (47.4%) had a reading range from -3.0 to -3.9; the range was -2.0 to -2.9 with a rate of 45.0%, which was in second place, and 6.3% was between -4.0 to -4.9; 1.3% had a reading from -1.0 to -1.9. The range of DXA readings was from -4.9 to 1.8.

Table 2: Distribution of the study group according to DXA reading

DXA reading	n(%)
-1.0 to -1.99	1(1.3)
-2.0 to -2.99	36(45)
-3.0 to -3.99	38(47.4)
-4.0 to -4.99	5(6.3)
Mean $\pm$ SD (Range)	-3.09 $\pm$ 0.60 (-4.9 to -1.8)

As shown in Table 3, the frequency rate of osteoporosis in this study was 91.2% of the study sample, and the rate of osteopenia was 8.8%.

Table 3: Frequency distribution of osteoporosis and osteopenia among participants.

DEXA reading	n(%)
Osteoporosis (> -2.5)	73(91.2)
Osteopenia (-1.0 to -2.4)	7(8.8)
Mean $\pm$ SD (Range)	-3.09 $\pm$ 0.6 (-4.9 to -1.8)

Table 4 represents that 20.0% of the study sample have little difficulty with dressing; 15.0% of them have moderate difficulty with dressing; 22.5% of them had moderate difficulty with taking a bath or shower; 21.3% had moderate difficulty in getting to or operating a toilet; 30.0% of them woke up often from sleep. The results revealed that a high percentage of them have moderate difficulties and need help during their practicing daily living activities.

Table 4: The Assessment of the activities of daily living for the study sample

Activities of Daily Living	n(%)
Do you have problems with dressing?	
No difficulty	41(51.2)
A little difficulty	16(20)
Moderate difficulty	12(15)
May need some help	8(10)
Impossible without help	3(3.8)
Do you have problems with taking a bath or shower?	
No difficulty	44(55)
A little difficulty	13(16.3)
Moderate difficulty	18(22.5)
May need some help	3(3.8)
Impossible without help	2(2.5)
Do you have problems with getting to or operating a toilet?	
No difficulty	40(50)
A little difficulty	15(18.8)
Moderate difficulty	17(21.3)
May need some help	5(6.3)
Impossible without help	3(3.8)
How well do you sleep?	
Sleep undisturbed	23(28.7)
Wake up sometimes	19(23.8)
Wake up often	24(30)
Sometimes I lie awake for hours	10(12.5)
Sometimes I have a sleepless night	4(5)
B-Activities of Daily Living Score	8.14 $\pm$ 3.90

Activities of Daily Living score: > 4 = no difficulties; 4.1-8 = A little difficulty; 8.1-12 = Moderate difficulty; 12.1-16 = May require some assistance; 16.1-20 = infeasible without assistance

The findings of Table 5 showed that 36.3% of the study sample do the cleaning with great difficulty; 28.7% of them prepare meals with great difficulty; 28.7% of them wash the dishes without difficulty; 25.0% do day-to-day shopping with great difficulty; 27.5% lift a heavy object with great difficulty. The results of Table 6 showed that 31.3% of patients got up from a chair with great difficulty; 28.7% were

unable to bend down; 36.3% were unable to kneel. 36.3% walk 100 yards slowly with at least one stop; 41.3% have you been outside in the last week less than once a week; 31.3% use public transport with great difficulty; 46.3% have experienced moderate alterations of posture because of osteoporosis; a high percentage of the patients have great difficulties and need help during mobility.

Table 5: The Assessment of the jobs around the house for patients

Jobs Around the House	Difficulty level	n(%)
Can you do the cleaning?	No	10(12.5)
	Little	21(26.3)
	Moderate	13(16.3)
	Great	29(36.3)
	Impossible	7(8.8)
Can you prepare meals?	No	19(23.8)
	Little	22(27.5)
	Moderate	12(15)
	Great	23(28.7)
	Impossible	4(5)
Can you wash the dishes?	No	23(28.7)
	Little	20(25)
	Moderate	13(16.3)
	Great	19(28.8)
	Impossible	5(6.3)
Can you do your day-to-day shopping?	No	20(25)
	Little	23(28.7)
	Moderate	13(16.3)
	Great	20(25)
	Impossible	4(5)
Can you lift a heavy object of 20 lbs (e.g., a crate of 12 bottles of milk, or a one-year-old child) and carry it for at least 10 yards?	No	6(7.5)
	Little	20(25)
	Moderate	13(16.3)
	Great	22(27.5)
	Impossible	19(23.8)
C-Jobs Around the House Score	13.09±4.19 (6.0 to 22)	

Score: > 6=Without difficulty; 6.1-10.5= With a little difficulty; 10.6- 15= With moderate difficulty; 15.1- 19.5= With great difficulty; 19.6-22 = impossible

Table 6: The Assessment of Mobility for the study sample.

Mobility	Difficulty level	(%)
Can you get up from a chair?	No	23(28.7)
	Little	20(25)
	Moderate	8(10)
	Great	25(31.3)
	Only with help	4(5)
Can you bend down?	Easily	14(17.5)
	Fairly easily	19(23.8)
	Moderately	11(13.8)
	Very little	13(16.3)
	Impossible	23(28.7)
Can you kneel down?	Easily	5(6.3)
	Fairly easily	22(27.5)
	Moderately	7(8.8)
	Very little	17(21.3)
	Impossible	29(36.3)
Can you climb stairs to the next floor of a house?	No	9(11.3)
	Little	23(28.7)
	With at least one rest	46(57.5)
	Great	-
	Impossible	2(2.5)
Can you walk 100 yards?	Fast without stopping	16(20)
	Slowly without stopping	19(23.8)
	Slow with at least one-stop	29(36.3)
	Only with help	11(13.8)
	Impossible	5(6.3)
How often have you been outside in the last week?	Every day	15(18.8)
	5-6 days/week	2(2.5)
	3-4 days/week	9(11.3)
	1-2 days/week	21(26.3)
	< once/ week	33(41.3)
Can you use public transport?	No	16(20)
	Little	12(15)
	Moderate	9(11.3)
	Great	25(31.3)
	Only with help	18(22.5)
Have you been affected by the changes in your figure due to osteoporosis (for example loss of height, increase of waist measurement, shape of your back)?	Not at all	7(8.8)
	Little	13(16.3)
	Moderate	37(46.3)
	Quite a bit	3(3.8)
	Very much	20(25)
D-Mobility Score	24.54±7.25 (10 to 37)	

Mobility Score: > 10= Without difficulty; 10.1- 17.3= With a little difficulty; 17.4-24.5= With moderate difficulty; 24.6-31.7 With great difficulty; 31.8-37 Only with help.

Table 7 presented that 72.5% of the study sample do not play any sport now; 52.5% of them cannot garden at all; 61.3% of them do not perform any hobby now; 42.5% of them refrained from visiting entertainment venues such as cinemas or theaters, and 30.0% reported meeting friends or relatives once or twice a month. 31.3% participate in social interactions such as groups, social meetings, spiritual practices, and

donations organizations less than once a month; 28.7% do not experience backache or dysfunction that interferes with their intimacy activity. 11.3% of patients with severe back trouble or impairment interfered with sexuality; the total mean of the score for patients participation in social activity was less than once or never, which was 22.56 ± 5.64 .

Table 7: The assessment of the leisure, and social activities of patients

Leisure, Social Activities		n(%)
Do you play any sport now?	Yes	6(7.5)
	Yes, with restrictions	16(20)
	Not at all	58(72.5)
Can you do your gardening?	Yes	10(12.5)
	Yes, with restrictions	10(12.5)
	Not at all	42(52.5)
	Not applicable	18(22.5)
Do you perform any hobbies now?	Yes	19(23.8)
	Yes, with restrictions	12(15)
	Not at all	49(61.3)
Can you visit a cinema, theatre, etc.?	Yes	19(23.8)
	Yes, with restrictions	21(26.3)
	Not at all	34(42.5)
	No cinema, or theatre within a reasonable distance	6(7.5)
How often did you visit friends or relatives during the last 3 months?	Once a week or more	19(23.8)
	Once or twice a month	20(25)
	Less than once a month	24(30)
	Never	17(21.3)
How often did you participate in social activities (clubs, social gatherings, church activities, charity, etc.) during the last 3 months?	Once a week or more	18(22.5)
	Once or twice a month	24(30)
	Less than once a month	25(31.3)
	Never	13(16.3)
	Not at all	26(32.5)
Does your back pain or disability interfere with intimacy (including sexual activity)?	A little	23(28.7)
	Moderately	8(10)
	Severely	9(11.3)
	Not applicable	14(16.4)
E-Leisure, Social Activities Score		22.56 ± 5.64 (9.6-34)

Leisure, Social Activities Score: > 9.6= Once a week or more; 9.7- 18.2= Once or twice a month; 18.3- 26.8 = Less than once a month; 26.9- 34= Never.

Table 8 shows that 31.3% of the study samples were satisfied with their health in general, 31.3% of them thought the general well-being throughout the previous week was acceptable, and 40.0% of them thought the comprehensive welfare relative to ten

years ago considerably declined now. In general, the total mean of the general health of the study sample was slightly worse to much worse, which was 11.06 ± 2.60 .

Table 8: The General health perception of patients

General Health Perception		n(%)
For your age, in general, would you say your health is:	Excellent	2(2.5)
	Good	15(18.8)
	Satisfactory	25(31.3)
	Fair	19(23.8)
	Poor	19(23.8)
How would you rate your overall quality of life during the last week?	Excellent	2(2.5)
	Good	14(17.5)
	Satisfactory	25(31.3)
	Fair	19(23.8)
	Poor	20(25)
How would you rate your overall quality of life compared with 10 years ago?	Much better now	4(5)
	Slightly better now	2(2.5)
	Unchanged	10(12.5)
	Slightly worse now	32(40)
	Much worse now	32(40)
General Health Perception Score		11.06 ± 2.60 (4-15)

General Health perception score: >3 = Much better now; 3.1-6= Slightly better now; 6.1-9= Unchanged; 9.1-12= Slightly worse now; 12.1-15= Much worse now.

Table 9 showed that the Activities of Daily Living Score was 8.1 ± 3.9 (range 4-20); the Jobs Around the House Score was 13.1 ± 4.2 (range 6-22); the Mobility Score was 24.5 ± 7.2 (range 10-37); the Leisure, Social Activities Score was 22.6 ± 5.6 (range 9.6-34); and the

General Health Perception Score was 11.1 ± 2.6 (range 4-15). Table 10 showed there was no significant association between the sociodemographic characteristic of the study sample and the Qualeffo-41 Score.

Table 9: Summary of patient's quality of life score

QoL score	Mean±SD	Range
A. Activities of Daily Living	8.1±3.9	4.0-20
B. Jobs Around the House	13.1±4.2	6.0-22
C. Mobility	24.5±7.2	10-37
D. Leisure, Social Activities	22.6±5.6	9.6-34
E. General Health Perception	11.1±2.6	4.0-15
Total QoL score	84.8±23.5	71.9-182.2

Despite that, women in the age group 50-59 and 60-69 years (38% and 28%, respectively) had a poor quality of life. 80% of married women and 53.3% of women having five or more children had poor quality of life. 46.7% of obese patients have the lowest quality of life, and 86% of osteoporotic patients have poor quality of life.

Table 10: Association between sociodemographic characteristics of the study sample and Qualeffo-41 Score

Sociodemographic variable		Qualeffo-41 Score		p-value
		Poor (>123) n(%)	Fair & Good (≤23) n(%)	
Age (years)	<40years	5(16.7)	3(6)	0.469
	40-49	2(6.7)	7(14)	
	50-59	9(30)	19(38)	
	60-69	10(33.3)	14(28)	
	70-79	4(13.3)	7(14)	
Educational level	Illiterate	13(43.3)	21(42)	0.924
	Primary	8(26.7)	13(26)	
	Secondary	4(13.3)	5(10)	
	College	5(16.7)	10(20)	
Occupation	Higher education	-	1(2)	0.724
	Employed	7(23.3)	10(20)	
	Unemployed	23(76.7)	40(80)	
Marital status	Married	24(80)	45(90)	0.259
	Single	3(10)	4(8)	
	Divorced	3(10)	1(2)	
	No children	4(13.3)	6(12)	
Number of children	One	1(3.3)	2(4)	0.994
	Two	1(3.3)	2(4)	
	Three	4(13.3)	9(18)	
	Four	4(13.3)	7(14)	
Residence	Five & more	16(53.3)	24(48)	0.712
	Urban	25(83.3)	40(80)	
	Rural	5(16.7)	10(20)	
BMI classification	Underweight (<18.5)	-	3(6)	0.202
	Normal (18.5-24.9)	8(26.7)	13(26)	
	Overweight (25-29.9)	8(26.7)	20(40)	
	Obese (≥30)	14(46.7)	14(28)	
Spin T Score	-1.0 to -1.99	1(3.3)	-	0.388
	-2.0 to -2.99	12(40)	24(48)	
	-3.0 to -3.99	14(46.7)	24(48)	
	-4.0 to -4.99	3(3)	2(4)	
DXA reading Spine T Score	Osteoporosis (> -2.5)	26(86.7)	47(94)	0.261
	Osteopenia (-1.0 to -2.4)	4(13.3)	3(6)	

DISCUSSION

"Osteoporosis is a pathological condition that results in decreased bone mineral density and impaired bone structure, leading to an increased risk of fracture, especially in the hip, vertebral, and wrist regions." [10]. In the present study involving osteoporosis patients, the average age was 56.5±12.9 years, and the highest percentage of osteoporosis was in the age range 50-59 years (35.0%); 35% were obese and overweight, with a BMI (≥ 30). This is in line with a 2019 study by Al-Hafidh *et al.* who discovered that the BMI of participants diagnosed with osteoporosis was 32.31±5.27 kg/m² and 34.36±5.40 kg/m², respectively, and their ages were 59.93±6.88 and 46.36±4.07 years [11]. Furthermore, a cross-sectional study conducted by Wang *et al.* (2021) on a population of mainland China identified that the frequency of osteoporosis amongst persons aged 40 years or above was reported to be 20.6% in females [12]. Regarding the activity daily living domain, the results of a recent study revealed that a high percentage of patients have moderate difficulties and need help during their practicing of daily living activities by their mean of 8.14±3.90. That is

comparable with a study in Japan that found after a 6-month follow-up, participants (18.7%) needed assistance to leave their homes, 5.2% had severe functional limitations that confined them to their beds for most of the time, and 1.3% were bedridden. The percentage of participants with lower activity of daily living after six months of observation was 21.3% [13]. Additionally, a population-based prevalence study in Australia suggests that people with osteoporosis experience significant activity and daily living difficulties despite receiving standard health care in Austria [14]. Another study in the spine found high EQ-5D QoL scores were obtained on the dimensions of activities of daily living [15]. "Pain associated with osteoporosis limits patients' mobility, reduces their living space, and increases their dependence on third persons. As it intensifies, it can also lead to postural deformities and reduce physical fitness and life energy" [16]. Concerning jobs around the house domain, the findings of this study showed. 36.3% suffer great difficulty doing cleaning, 28.7% of them prepare meals with great difficulty, 28.7% of them wash the dishes without difficulty, 25.0% do day-to-day shopping with great difficulty, and 27.5% lift a heavy object with great difficulty, which means that

the sample has moderate to great difficulties in conducting the house jobs. This finding was in line with another study in Norway by Stanghelle *et al.*, who reported the highest score was in physical function (17.2 ± 13.2) [4]. Another study in Iran showed that QoL scores in domains of housework were higher in patients with osteoporosis compared to healthy people (a higher score indicates a lower quality of life, based on the standard of scoring in the Qualeffo-41 questionnaire) [17]. The difference in customs and traditions for each country shapes the roles and responsibilities of women. In Iraq, women are expected to perform most of the domestic and strenuous tasks at home. As a result, many women continue to do the housework despite experiencing pain. In respect to mobility for patients, the current study showed a high percentage of the patients have great difficulties and need help with mobility. This result was consistent with a study in Korea that used the EQ-5D questionnaire among 1000 Korean females aged 60 years or older who had osteoporosis. They reported that these women had significant limitations in the movability and common activities field of EQ-5D. Using the EQ-5D questionnaire, HRQoL was evaluated in different research. Mobility, self-care, pain/discomfort, typical activities, and anxiety/depression are the five health dimensions that make up the self-report description system known as the EQ-5D. Poor mobility had the worst effect on HRQoL in this research population [18]. Furthermore, in another study in Spain in 2022, the QoL was also assessed with the EQ-5D found High EQ-5D QoL scores were obtained on the dimensions of mobility (51.6%) [15]. Concerning leisure and social activities of patients, the finding of this study showed the total mean score for patients' participation in social activity was less than once or never, which was 22.56 ± 5.64 . According to a previous study by Hassanzadeh and Esmaili, patients with osteoporosis had a lower mean quality of life score in the domain of social activities than healthy people, indicating that the condition was impairing their social functioning. The current study's findings are in line with those of earlier research [19,20]. According to a different study by Nawrat-Szotysik *et al.* (2019), osteoporosis patients' decreased life satisfaction was due to their poor health, limited mobility, and lack of social interaction. The dimensions of quality of life that garnered the most inferior ratings among the participants were leisure and social pursuits (QOL 5; 71.9) [21]. Additionally, analytical prevalence research undertaken in Romania from June 2016 until August 2017 reported leisure and social activities for osteoporosis patients at 54.28 (30.71 ; 73.57) [22]. A possible reason for this is the high incidence of osteoporosis patients experiencing pain and impaired mobility. Moreover, osteoporosis patients often need assistance to perform basic daily activities even after fracture healing, and this may result in isolation and reduced social participation [23]. The concern of osteoporosis and fractures may cause reduced autonomy in daily life activities and social withdrawal. Therefore, assessing pain and quality of life is essential for appraising patients and tracking their improvement [24]. As for the general

health perception of patients, the current study showed that 40.0% of the study sample rated their comprehensive life satisfaction compared to 10 years earlier as much worse now. This finding is comparable with a study in Iraq in 2017 that found the overall quality of life of osteoporotic patients was significantly unsatisfying [25]. Additionally, a study by Rizzo *et al.* that included 134 osteoporotic patients found the general health of perception was low (59.1 ± 23.5) [23]. Nawrat-Szotysik *et al.* conducted another study and discovered that correlations were poor for QOL6 (general health perception) [16]. "This corresponds with prior research showing that osteoporosis can have significant effects on physical function/activity. These consequences build up over time through a cycle of deterioration, as fracture results in long-term impairments in physical function, such as muscle loss, avoidance of activity, and reduced physical ability, which in turn increase the risk of fracture and the possibility of further physical limitations. The cycle of deterioration is intricate, as other physical, psychosocial, and treatment-related factors, such as comorbidities, fears, and beliefs about physical activity and fracture risk, influence physical function and everyday activity" [23]. A summary of the patient's quality of life scores revealed that the Qualeffo-41 score for 37.5% of participants was poor, 56.3% was fair, and only 6.3% were good. This finding is consistent with many earlier studies using different types of quality-of-life questionnaires. A cross-sectional study in 2020 showed that osteoporosis negatively affected the quality of life of women compared to those who have normal bone mineral density. The study used the QUALEFFO-41 scale to measure life quality across three groups of females and found significant differences in three domains: pain, physical ability, and social involvement ($p < 0.01$). Osteoporotic women reported more pain, lower physical function, and lower social function than women with healthy bone density. These results suggest that osteoporosis impairs the QoL of patients in multiple aspects [26]. Another study in Romania employed the SF-36 tool and the overall QUALEFFO-41 score, which revealed that women after menopause with osteoporosis experience a diminished HRQoL compared to healthy subjects [27]. Additionally, a study in Korea suggests that osteoporosis significantly affects elder Korean women's HRQoL. The results from the multivariate logistic regression analysis showed that in all five areas of the ED-5Q, the odds ratios for disability had significantly risen. Furthermore, a study in Iran in 2021 compared the mean score of quality of life for osteoporotic patients and normal individuals and found the mean score of quality of life was 3.9 ± 1.2 in the normal and 4.5 ± 1.4 in the osteoporotic group. The differences were significant in the total score ($p < 0.001$) and all subdomains [28]. Another study in Iran showed that women with osteoporosis are at the highest risk for physical inability and problems with everyday life activities and so, a decrease in their quality of life [17]. Numerous factors, including childhood adversities, neighborhood environments, employment situations, severe psychiatric illnesses,

treatment management, and chronic mental illness, among others, can have a negative impact on global health status and quality of life [29]. Furthermore, the results may vary across different countries due to the heterogeneity of study framework, diagnostic approach, bone scan location, lifestyle pattern, and case selection. The findings in the current study revealed there was no significant association between the sociodemographic characteristics of the study sample and the Qualeffo-41 score. Although it can be demonstrated that women in the age group 50-59 had a poor quality of life, 38% had a poor quality of life. This is consistent with a study in Iraq by Khalifa *et al.* that found, in terms of quality of life, there was a statistically significant difference between women in the age range of 49-56 years and women in other age groups. This conclusion implies that the higher one's age, the worse one's quality of life [25]. In addition, the current study showed that 80% of married women and 53.3% of women with five or more children had the worst quality of life. This result is also consistent with that of Khalifa *et al.*, who discovered that women who had 7.0 pregnancies had the worst osteoporosis quality of life ($n = 17$; 42.5%), while those who had 5-6 pregnancies ($n = 11$; 26.2%) came in second [25]. Furthermore, the current study represented that 46.7% of obese patients have a lower quality of life. These results are comparable with the study by Ferreira *et al.*, who revealed that factors such as a high BMI and a sedentary lifestyle stood for the variables most frequently pointing to low QoL [30].

Study limitations

A potential limitation of face-to-face interviews is the possibility of communication problems between the participants and the interviewer, especially if the participants feel uncomfortable about disclosing certain information. However, this mode of administration was selected because most of the respondents had low literacy levels.

Conclusion

Osteoporosis poses a major health challenge. It is a silent condition that disproportionately affects the elderly and post-menopausal women. Furthermore, osteoporotic fractures may result in persistent pain, impaired mobility, and dependence on others. Enhancing the quality of life of osteoporosis patients and improving their well-being requires the establishment of awareness initiatives, patient guidance and instruction, prompt detection, treatment availability, and lifestyle alteration.

Recommendations

It is recommended that osteoporotic patients live a healthy lifestyle, which includes participating in physical activity programs tailored to their needs and supervised by qualified trainers who can manage these conditions, particularly for the prevention of fractures, which are the leading cause of deterioration in quality of life, physical fitness, and fear of falling.

Furthermore, diet and lifestyle changes, as well as the transmission of information regarding osteoporosis and prevention, are encouraged.

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Conflict of interests

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Supplementary data can be shared with the corresponding author upon reasonable request.

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