HEALTH-RELATED QUALITY OF LIFE
IN OSTEOPOROSIS PATIENTS

Tran Viet Luc [1,2], Nguyen Ngoc Tam[1,2], Dang Thuy Ha[1],
Nguyen Trung Anh[1,2], Nguyen Thi Hoai Thu[1,2]
1. National Geriatric Hospital, 2. Hanoi Medical University

ABSTRACT:

Objective: To assess the health-related quality of life in osteoporosis patients at the National Geriatric Hospital. **Method:** The study was a cross-sectional descriptive study. A sample of 141 patients with osteoporosis aged from 60 years. Health-related quality of life was collected using the EQ-5D-5L questionnaire. **Results:** The mean age of the patients was 73.12 ± 8.62 years, and 94.3% were female. The mean EQ-5D-5L total score was 18.30 ± 3.79. **Conclusion**: The proportion of patients with osteoporosis who have decreased quality of life is still increasing so the quality of life. It needs to be studied throughout the course of the disease, in order to develop counseling, support, and treatment interventions.

Keywords: *osteoporosis, health quality of life, older people, ED-5D-5L*

1. INTRODUCTION

Today, the aging population is increasing rate. Vietnam is one of the fastest-aging countries in Asia. By 2050, the number of people 60 years and over will more than double from 11.9 million to 29 million people making up almost a third of the total population [1]. The number of people over 80 estimated also triple to almost 6% of the population [2] so the rate of chronic diseases also increases including osteoporosis. Osteoporosis was first discovered by John Hunter, a British surgeon, in the 1800s and he was also the first to introduce the process of remodeling. [3]

Osteoporosis is a disease that is characterized by low bone mass, deterioration of bone tissue, and disruption of bone microarchitecture: It can lead to compromised bone strength and an increase in the risk of fractures [4]. Osteoporosis is the most common bone disease in humans, representing a major public health problem. It is more common in Caucasians, women, and older people. Osteoporosis affects a large number of people of all ages, races, and genders and its prevalence will increase as the population ages. It is a silent disease until fractures occur, which causes important secondary health problems and even death [5]. Osteoporosis is influenced by many factors such as age, sex, hormones, lifestyle, exercise, height, weight, and some chronic diseases.

Quality of Life (QoL) is defined by the WHO as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" [6]. The primary purpose of treatment is to improve the quality of life by reducing disease effects. Fractures due to osteoporosis can be life-altering, reduce life quality, cause pain, disability, elevated health cost, and loss of independence among older people worldwide, moreover, it increases the risk of physical

health problems and causes challenges for their treatment if they have other illness [7]. Not only causes negative effects on the elderly but also has significant effects on people who care for them (physical, emotional, and financial pressures). With these effects, osteoporosis causes certain effects on the patient's QoL. Focusing on research on factors affecting the quality of life of the elderly in Vietnam, in order to take measures to increase the quality of life, the level of autonomy for the elderly is the aim of many studies. The number of studies about QoL in patients with osteoporosis in Vietnam is little and rare, just only in one gender, another subject, or in psychology while there are many in the world. Therefore, we conducted this study to assess the health-related quality of life in osteoporosis patients at the National Geriatric Hospital.

2. METHOD AND MATERIALS

2.1. Study design

The study is a cross-sectional descriptive study.

2.2. Study subject, sampling, and sample size

Older patients 60 years old were being examined and treated at National Geriatric Hospital

Included criteria

• Patients who were diagnosed with osteoporosis by specialist doctors according to the International Osteoporosis Foundation's criteria [1]

• Patients who had already been diagnosed with and received treatment for osteoporosis before

• Patients were able to interview and have the physical and cognitive abilities to do a face-to-face interview

• Patients and patient's families agreed to participate in the study (agree to answer questions regarding general health and disease status according to the outline proposed by the researcher)

Excluded criteria

• Patients or families refused to participate in the study.

• Patients who were unwilling to participate in any part of the study

• Patients with mental disorders, dementia, paralysis, other psychotic disease, or not enough cognitive ability to respond to the interview

• Patients did not understand Vietnamese and inability to communicate

Sampling

Convenience sampling

The sample size is calculated using the formula: $n = (Z_{1-\frac{\alpha}{2}})^2 \frac{p(1-p)}{d^2}$

p = 0.25 (Prevalence of osteoporosis patients with reduced quality of life according to Ngo Van Quyen's study) [8]

From the formula, the estimated sample size was 109 patients.

2.3. Location and time

Inpatients and outpatients at National Geriatric Hospital excepted for Emergency and Stroke departments, Intensive care unit. The research was conducted from July to October 2022.

2.4. Tools and data collection method

Data were collected by using designed tools included: General information, EuroQoL 5 Dimensions 5 levels (EQ-5D-5L) and EQ VAS scale. Data were collected by using research questions through interview, diagnosis test, laboratory test and medical record at National Geriatric Hospital.

General information: age, gender, occupation, marital status, highest level of education, smoking, drinking alcohol, BMI, living area

Health-related quality of life: Mobility, self-care, usual activities, pain/discomfort, anxiety/depression, and EQVAS

Tools to assess the quality of life in older osteoporosis patients

* Euro Quality of Life 5 Dimensions 5 levels (EQ-5D-5L): HRQoL in osteoporosis patients was measured by the EQ-5D HRQoL Questionnaire which is a standardized measure of health status developed by the EuroQoL Group in 2009. The EQ-5D-5L essentially consists of 2 pages: the EQ-5D descriptive system and the EQ visual analog scale (EQ VAS). Includes five dimensions on the following areas: Mobility, self-care, usual activities, pain/discomfort, anxiety/depression. Each aspect has 5 levels of influence caused by the disease condition: Level 1: No effect; Level 2: Slight effect; Level 3: Moderate effect; Level 4: Severe effect; Level 5: Extreme Affected / Impossible to do. Patients self-assessed the overall health of the body at the time of the survey according to EQ-VAS on a scale of 0-100, marking an X on the scale to indicate with perfectly healthy is 100 points, the worst is 0 points

Level of quality of life

Levels	Total score	Classify
1	21 – 25	Very high
2	16 – 20	High
3	11 – 15	Average
4	6 – 10	Poor
5	5	Very poor

2.5. Data processing and data analysis

The process of data coding, entry into Redcap, and analysis was done by using Statistical Package for Social Science (SPSS) software (version 20). Descriptive statistics were adopted to examine characteristic data: frequency, percentage, and mean.

3. RESULTS

A total number of 141 older osteoporosis patients were selected for this study. After completing the data analysis, the demographic and baseline characteristics of the participants were shown below.

Table 1: General information (n=141)

Characteristics		Frequency (n)	Percentage (%)
Gender	Male	8	5.7
	Female	133	94.3
Aged group	60-74	85	60.3
	≥75	56	39.7
	Mean age ± SD	**73.12 ± 8.62**	
Education level	Did not go to school/ Primary school/ Secondary school	100	70.9
	High school	16	11.3
	College/ University/ Postgraduate	25	17.7

Characteristics		Frequency (n)	Percentage (%)
Marital status	Married	118	83.7
	Single/widowed/divorced	23	16.3
Living status	With family	132	93.6
	Alone/others	9	6.4
Living area	Urban	71	50.4
	Rural	70	49.6
Occupation	Retired	117	83.0
	Still working	24	17.0
Smoking	Yes	5	3.5
	No	136	96.5
Driking alcohol	Yes	9	6.4
	No	132	93.6
Mean BMI±SD		21.92 ± 2.96	

Demographic details of patients in this study are shown in table 3.1. Among 141 participants, the percentage of females (94.3%) was higher than that of males (5.7%). The mean age of the patients was 73.12±8.62 with a minimum of 60 and a maximum of 97. The age was separated into two groups: 85 people (60.3%) from 60 to 74 and 56 people (39.7%) more than 75 years old. There were 100 people (70.9%) who did not graduate from high school, 16 others graduated (11.3%), some continued to study at a higher level (17.7%). (**Table 1**).

Table 2: The characteristic of osteoporosis patients (n=141)

Characteristics		Frequency (n)	Percentage (%)
Duration	<1 year	72	51.1
	1-4 years	57	40.4
	≥ 5 years	12	8.5
	Mean ± SD	**1.70 ± 2.67**	
Reason of admission	Arthralgia	81	57.4
	Others	60	42.6
History of family	Yes	11	7.8
	No	130	92.2
History of fracture	Yes	9	6.4
	No	132	93.6

Characteristics		Frequency (n)	Percentage (%)
Symptoms of osteoporosis	Yes	135	95.7
	No	6	4.3
Number of pain locations	0-1	102	72.3
	2	26	18.4
	≥ 3	13	9.2
Treatment of pain	Yes	82	58.2
	No	59	41.8

Of the 141 survey participants, more than half (51.1%) were newly diagnosed with osteoporosis less than a year ago. There are 12 people with osteoporosis for at least five years (8.5%), the remaining 40.4% of people are diagnosed between 1 year and 4 years. The reason for admission was divided into two groups: arthralgia and other reasons, the two groups had a rate of 57.4% and 42.6% respectively. There were 132 people (92.2%) who had family members with no history of osteoporosis.

Table 3: Frequency and proportion of 5 levels by dimension of quality of life

EQ-5D dimension	Mobility		Self-care		Usual activities		Pain/ Discomfort		Anxiety/ Depression	
	n	%	n	%	n	%	n	%	n	%
Level 1 No problems	29	20.6	45	31.9	33	23.4	31	22.0	31	22.0
Level 2 Slight problems	52	36.9	38	27.0	46	32.6	60	42.6	60	42.6
Level 3 Moderate problems	50	35.5	42	29.8	43	30.5	56	39.7	36	25.5
Level 4 Severe problems	10	7.1	16	11.3	17	12.1	15	10.6	12	8.5
Level 5 Extreme problems	0	0	0	0	2	1.4	2	1.4	2	1.4
VAS score	**Mean: 64.57 ± 12.57**									

In the dimension of mobility, the ratio of slight problems (36.9%) and moderate problems (35.5%) did not differ much, none of the patients considered extreme problems. Regarding self-care, the highest rate is no problems (31.9%), decreasing to moderate problems (29.8%), slight problems (27.0%), severe problems (11.3%), and no one thinks extreme problems. The proportion of people with slight problems was highest in the dimensions of usual activities, discomfort/pain, and anxiety/depression, with 32.6%, 42.6%, and 42.6%, respectively. The mean ± SD VAS score was 64.57 ± 12.57

Table 4: The average of variables in EQ-5D-5L questionnaire (n=141)

Variable	Mean	SD
EQ-5D-5L score	18.30	3.79
Mobility	3.71	0.87
Self-care	3.79	1.01
Usual activities	3.65	1.01
Pain/Discomfort	3.40	0.81
Anxiety/Depression	3.75	0.94

This mean of the total EQ-5D-5L score was 18.30 ± 3.79. This value was considered an average on a 25-point scale.

4. DISCUSSION

This study was conducted on 141 people from 60 to 97 years old. Most of the people belonged to the age group 60-79 years with 60.3%. The mean age of participants was 73.12 ± 8.62. This finding closely agrees with other studies such as Ivana Tadic (2012) found the mean age was 71.87 ± 8.57 and 71.9 ± 11.1 years in the study of Ramirez Perez (2007) [9]. This result is similar to Dolan, P., Torgerson, D., & Kumar Kakarlapudi, T. (1999), the average age of the 50 patients was 71.46 years with a standard deviation of 8.39 [10]. This result is higher than the study of Si, Lei; Tu, Liudan; Xie, Ya (2020) (mean age $\pm$ SD = 63.4 ± 10.1) but lower than the study of Barbara Jahelka when the average age was 79.3 ± 85 [11] and study of Schmidt K, Hübscher M, Vogt L, et al. (mean age $\pm$ SD = 74 ± 8.3 years). This difference in result could be from the difference in sample size between studies.

The result showed that out of 141 participants, there were 8 male patients, which accounted for 8.7% of the research population, and 133 females with 94.3%. Our research was higher than the study of Si, Lei; Tu, Liudan; Xie, Ya (% women: 82.05). Besides, the difference in the male/female ratio of our study is higher than that of Lee, Hye-Ok; Lee, and Jeong-Sook in 2010, the study was the proportion Male/female (52/46). There was such a difference because, in Vietnam, the proportion of female patients with osteoporosis is higher than that of males.

Out of a total of 141 participants, the patient's BMI was 21.92 ± 2.96 kg/m2. Most of the patients had a normal BMI of 48.9%, the number of obese and overweight was 37.6%, and the rest 13.5% of patients were underweight. The mean of the study was close to the study of Young-Kyun Lee (2019) 22.6 ± 4.2 kg/m2 but lower than the study of Oliveira Ferreira (2013) 25.5 ± 3.4 kg/m2. Nguyen Ngoc Phuong et al. (2001) [9] when the study related the rate of osteoporosis with body mass index also showed that underweight people have a higher risk of osteoporosis than normal people. Most of the studies have similar results. Toth E et al [10] also showed that bone density was positively correlated with BMI with $r = 0.412$ with $p<0.01$. Thus, our study subjects are mostly normal, so we can see that our results are consistent with most patients with osteoporosis.

The traditional EQ-5D descriptive system is composed of five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression) [10]. According to the EQ-5D-5L scale, we showed the result below:

Regarding mobility, the majority of patients reported mild problems (36.9%) and moderate problems (35.5%), followed by 20.6% for no problems, a few considered severe problems (7.1%), and no patients reported extreme problems. The mean ± SD of mobility is 18.30 ± 3.79.

In terms of self-care, there is a slight variation from mobility, with the largest being no problems at 31.9%, slight problems and moderate problems having roughly equal proportions at 29.8% and 27.0%, respectively, less severe problems at 11.3%, similar to mobility, in the self-care section, there are no patients who reported extreme problems.

About usual activities, accounted for the majority of slight problems with 32.6%. Moderate problems, no problems, severe problems, and extreme problems have rates of 30.5%, 23.4%, 12.1%, and 1.4%, respectively.

In pain/discomfort and anxiety/depression dimensions, the number of patients who reported slight problems is 42.6% and is the highest ratio, these two dimensions both have a decreasing ratio of moderate problems, no problems, severe problems, and extreme problems.

5. CONCLUSION

The proportion of patients with osteoporosis who have decreased quality of life is still increasing so the quality of life. It needs to be studied throughout the course of the disease, in order to develop counseling, support, and treatment interventions.

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