

HEALTH-RELATED QUALITY OF LIFE AND SOME RELATED FACTORS AMONG OLDER PATIENTS WITH KNEE OSTEOARTHRITIS

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SUMMARY

Objectives: To assess health-related quality of life (HRQoL) and associations with some characteristics among older people with knee osteoarthritis (OA). **Subjects and Methods:** A cross-sectional study on 184 older patients with knee OA treated at National Geriatric Hospital from May to August 2022. HRQoL was assessed using the EQ-5D-5L questionnaire. Knee OA characteristics were also collected. **Results:** The proportion of patients with difficulties in aspects such as mobility was 88%; self-care was 68.9%; usual activities was 66.1%; pain/discomfort was 90.8% and anxiety/depression was 66.1%. The results showed that HRQoL in older age was significantly lower than in the younger in terms of mobilities and usual activities ($p < 0.05$). Patients who had the lower KOA stage had better HRQoL, especially in mobility and pain dimensions. The smaller the VAS score, the better the HRQoL. About the subclinical tests of KOA patients, the thickening synovial membrane had a significant difference with HRQoL in mobility, usual activities, and pain/discomfort dimensions. Patients with bone spurs had significant differences with HRQoL, only except mobility dimension. All negative correlation coefficients showed that this is the opposite correlation, the higher WOMAC pain, stiffness, and function patients got, the worse QoL patients experienced. **Conclusion:** More than two-thirds of the participants self-reported as having problems with one of the aspects of HRQoL among older patients with knee OA. Our results highlighted that aspects of the EQ-5D-5L are related to age, severe knee OA stages, severe VAS pain, and WOMAC scores.

Keywords: Health-related quality of life, elderly, knee osteoarthritis

1. INTRODUCTION

Osteoarthritis (OA), also known as degenerative joint disease, is a leading cause of disability in worldwide [1]. It is typically a progressive disease that may eventually lead to increased physical limitations, pain, and functionality restriction. The intensity of the clinical symptoms may vary for each individual. However, they typically become more severe, more frequent, and more debilitating over time.

Knee osteoarthritis (KOA), also known as degenerative joint disease of the knee, is typically the result of

wear and tear and progressive loss of articular cartilage. It is most common in the elderly [2]. In Vietnam, roughly 8.5% of people between age 40 and 49 had knee osteoarthritis, compared with 30% between age 50 and 59, and 61% over the age of 60 [3].

Health-related quality of life (HRQoL) is defined by the World Health Organization 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". These individuals with knee OA suffer from

progressive increased impact on their activities of daily living, which leads to losses in labor relations, leisure, social life, and sleeping quality, leading also to an important decrease in their quality of life [4].

Exploring the HRQoL and its associated factors among older patients with knee OA can develop interventions to promote the HRQoL as much as possible. However, data about HRQoL are lacking regarding the older population with knee OA in Vietnam. Thus, the aims of this study were to assess HRQoL and some related factors among older people with knee OA examined and treated at the National Geriatric Hospital.

2. SUBJECTS AND METHODS

2.1. Subjects

Osteoarthritis of knee patients aged 60 years old and older was being treated at the National Geriatric Hospital from May to October 2022.

- Inclusion criteria: Patients aged 60 years old and older were diagnosed by doctors with ACR 1991 (American College of Rheumatology); and had the physical and cognitive abilities to do a face-to-face interview.

- Exclusion criteria: Patients with an inability to communicate or subjects who have severe or acute diseases or are unable to answer questions.

2.2. Study design

- A cross-sectional descriptive study

- The sample was selected according to the convenience sampling method

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

$p = 0.13$ (Health-related quality of life in patients with knee osteoarthritis

attending two primary care clinics in Malaysia) [5].

From the formula, the estimated sample size was 174 KOA patients

The number of KOA patients in our study was 184 patients

2.3. Variables

- General information: age, gender, weight, height, body mass index (BMI).
- Knee OA characteristics: stage (according to knee X-ray Kellgren and Lawrence classification), knee ultrasound features, pain intensity (VAS score), and WOMAC score.
- **Health-related quality of life (HRQoL):** The European Quality of Life-5 Dimensions-5 Level scale (EQ-5D-5L) Questionnaire has two components: EQ-5D-5L descriptive system and the EQ visual analog scale (EQ-VAS) [6].

The descriptive system comprises 5 dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression), and each dimension has 5 levels: "1 = extreme problems", "2 = severe problems", "3 = moderate problems", "4 = mild problems" and "5 = no problems".

Evaluation: The levels of problems in each dimension were classified into 2 groups: 1-4: Problems and 5: No problems.

The EQ visual analog scale (EQ-VAS) records the patient's self-rated health status of the interviewed day on a 20 cm vertical analog scale with 2 endpoints "0 = The worst health

you can imagine” and “100 = The best health you can imagine”.

- **Visual Analog Scale (VAS)** was used to measure knee pain intensity [7]. The corresponding 0 line is no pain = 0 points, the maximum 10 line is the most intense pain = 10 points. The range of VAS scores is divided into 3 levels: 0-3.4 (mild); 3.5-7.4 (moderate); ≥ 7.5 (severe).
 - **Western Ontario and McMaster Universities Arthritis Index (WOMAC)** [8] is a self-administered questionnaire consisting of 24 items divided into 3 subscales:
 - Pain (5 items): during walking, using stairs, in bed, sitting or lying, and standing upright.
 - Stiffness (2 items): after first waking and later in the day.
 - Physical Function (17 items): using stairs, rising from sitting, standing, bending, walking, getting in/out of a car, shopping, putting on taking off socks, rising from bed, lying in bed, getting in/out of bath, sitting, getting on/off toilet, heavy domestic duties, light domestic duties.
- Evaluation: Calculating the average of WOMAC scores with each knee.

2.4. Tools and data collection method

Data were collected by using a research questionnaire through interviews, diagnosis tests, and medical records at the National Geriatric Hospital.

2.5. Data processing and data analysis

Data coding, entry into REDCap, and analysis were done using Statistical Package for Social Science (SPSS) software (version 22.0). Descriptive statistics were adopted to examine characteristic data: frequency, percentage, mean. Inferential statistics was done to perform comparisons between groups, using χ^2 and ANOVA. Statistical significance was accepted at the 95% confidence level ($p < 0.05$).

3. RESULTS

3.1. General characteristics

In the total 184 older patients with knee OA, the mean age of the patient was 73.6 ± 8.3 years with a minimum of 60 and a maximum of 94. They are evenly distributed into 3 age groups, 60-69 patients (35.9%), 70-79 patients (38%), and patients over 80 years old (26.1%). The majority of study participants were females, accounting for 83.7%. 42.9% of people surveyed had normal BMI. The mean BMI is 23.1 ± 3.1 (kg/m^2).

3.2. Health-related Quality of Life of older knee osteoarthritis patients

Table 1. EQ-5D-5L characteristics of older KOA patients (n=184)

	Mobility		Self-care		Usual Activities		Pain/Discomfort		Anxiety/Depression	
	n	%	n	%	n	%	n	%	n	%
No problems	22	12	57	31	44	23.9	17	9.2	44	23.9
Mild problems	77	41.8	76	41.3	80	43.5	81	44	104	56.5
Moderate problems	66	35.9	40	21.7	52	28.3	72	39.1	26	14.1
Severe problems	17	9.2	8	4.3	5	2.7	12	5.6	10	5.4
Extreme problems	2	1.1	3	1.6	3	1.6	2	1.1	0	0
EQ-VAS	63.2±15.8									

The proportion of participants who reported moderate or severe problems in the dimension of mobility, self-care, usual activities, pain/discomfort, and anxiety/depression were 45.1%; 26.0%; 31.0%; 44.7%, and 19.5%, respectively. Besides that, there are a few patients who reported that they have extreme

problems in the dimension of mobility (1.1%), self-care (1.6%), usual activities (1.6%), and pain/discomfort (1.1%). The Mean±SD EQ-VAS score was 63.2±15.8.

3.3. Association between HRQoL and age, KOA characteristics

Table 2. Association between HRQoL and age groups (n=184)

EQ-5D DIMENSION		60-69 years		70-79 years		≥80 years		p-value
		n	%	n	%	n	%	
Mobility	No problems	10	15.2	7	10	5	10.4	<0.01
	Problems	56	84.8	63	90	43	89.6	
Self-care	No problems	25	37.9	24	34.3	8	16.7	>0.05
	Problems	41	62.1	46	65.7	40	83.3	
Usual activities	No problems	21	31.8	16	22.9	7	14.6	<0.05
	Problems	45	68.2	54	77.1	41	85.4	
Pain/Discomfort	No problems	8	12.1	6	8.6	3	6.2	>0.05

	Problems	58	87.9	64	91.4	45	93.8	
Anxiety/Depression	No problems	20	30.3	15	21.4	9	18.8	>0.05
	Problems	46	69.7	55	78.6	36	81.2	
EQ-VAS Score		64.2±16.2		63.6±14.6		61.1±17.0		>0.05

The result of data analysis revealed statistically significant differences in the perception of HRQoL between age groups. Increasing age is related to a high frequency of reporting difficulty in daily life, such as mobility and usual activities.

Table 3. Associated to EQ-5D by clinical characteristics of KOA patients (n=184)

	n	% responding with a problem (moderate or extreme)					EQ-VAS Score Mean ± SD
		Mobility	Self-care	UA	Pain	Anxiety	
KOA Stages							
1	36	3.8	4.1	4.1	3.8	3.9	65.1±15.8
2	82	3.6	3.9	3.9	3.6	4.0	63.7±16.1
3	52	3.2	3.8	3.6	3.3	3.8	60.3±15.0
4	14	3.0^b	3.7	3.5	3.0^b	3.9	65.7±16.9
VAS							
Mild	48	4.0	4.3	4.3	3.9	4.2	68.2±17.6
Moderate	117	3.4	3.9	3.7	3.5	4.0	63.7±13.0
Severe	19	3.1^a	3.6^b	3.6^a	2.8^b	3.8^b	47.9±18.4^c
Ultrasound							
Thickening synovial membrane							
No	126	3.6	4.0	3.9	3.6	4.0	64.5±14.8
Yes	58	3.2^b	3.7	3.6^a	3.2^b	3.9	60.4±17.6
Bone spurs							
No	60	3.5	4.1	4.1	3.7	4.2	66.4 ±12.8
Yes	124	3.5	3.8^a	3.7^b	3.4^a	3.8^b	61.6±16.9
Baker cysts							
No	143	3.6	4.0	3.9	3.6	4.0	63.5±15.5
Yes	41	3.2	3.6	3.6	3.2	3.8	61.9±16.9

Duration							
< 1year	77	3.7	4.1	3.9	3.6	4.1	65.0±14.0
1-5 years	79	3.5	3.9	3.9	3.5	3.9	61.6±18.0
>10 years	28	3.5	3.9	3.8	3.5	4.0	63.0±13.8

a: χ^2 , $p < 0.05$; b: χ^2 , $p < 0.01$; c: Kruskal Wallis, $p < 0.05$

Patients who had the lower KOA stage had better HRQoL than those who had a higher stage of KOA, especially in mobility and pain dimensions. The VAS score had a significant difference in HRQoL, the smaller the VAS score, the better HRQoL. About the subclinical

tests of KOA patients, the thickening synovial membrane had a significant difference with HRQoL in mobility, usual activities, and pain/discomfort dimensions. Patients with bone spurs had significant differences with HRQoL, only except mobility dimension.

Table 4. Spearman correlation coefficients between EQ-5D and WOMAC

	WOMAC pain	WOMAC stiffness	WOMAC function
<i>Mobility</i>	-0.442**	-0.187*	-0.413**
<i>Self-care</i>	-0.270**	-0.339**	-0.302**
<i>Usual activities</i>	-0.349**	-0.317**	-0.355**
<i>Pain/Discomfort</i>	-0.400**	-0.192**	-0.362**
<i>Anxiety/Depression</i>	-0.206**	-0.360**	-0.191**
<i>EQVAS</i>	-0.169*	-0.177*	-0.185*

**Correlation is significant at the 0.01 level (2-tailed).*

Correlation is significant at the 0.05 level (2-tailed).

All 5 dimensions of QoL in the EQ-5D-5L scale had moderate significant differences with WOMAC pain, stiffness, and function. The WOMAC pain and function scores best correlated with the mobility dimension in the EQ-5D-5L scale. All negative correlation coefficients showed that this is the opposite correlation, the higher WOMAC pain, stiffness, and function patients got, the worse QoL patients experienced.

4. DISCUSSION

Our study showed the characteristics of HRQoL and its associations with age and knee OA features among older patients with knee OA at the National Geriatric Hospital. We showed that the participant reported “mild or moderate problems” in a range

of 21.7%-56.5% with highest rates for mobility, self-care, usual activities, pain and lowest rate for anxiety and pain dimension was 9.2% and 14.1%. The proportion of severe and extremely problems in 5 dimensions QoL was so small: range from 0 to 9.2%.

The results showed that increased age was associated with lower HRQoL. To be more specific, patient aged from 70 to 79 years had more problems in mobility and usual activities than those aged from 60 to 69 years ($p < 0.01$, $p < 0.05$). This can be explained that getting older the patients have to face with functional impairment. The study of Zainal and his colleagues also showed that: there was a significant negative correlation between physical functioning and age [5].

Overall, there was no significant difference between HRQoL and disease duration, also the side of KOA. This is so difference with the study of Gordana Nikolic, in this study, duration of disease significantly correlated with all scores, except for EQ-5D-5L mobility score [9]. Another study showed that the association with other medical characteristics showed negative correlation between duration of knee pain and all the HRQoL domains (except Role-Emotional) with significant negative correlation was found in the RP (Role-Physical) domain ($r_s = -0.287$, $p < 0.005$) [5]. This difference may be due to the sample size is not enough and the difference between 2 research subjects.

This study showed that patients who had the lower KOA stage, had better HRQoL than those who had higher stage of KOA, especially it is a significant difference in mobility and pain dimensions ($p < 0.05$). The VAS score had significant difference in HRQoL, smaller VAS score, better QoL ($p < 0.05$). Study conducted in Japan indicated that the EQ-5D-5L utility scores were not significantly associated with the KL grade of the knee after adjustment for age, BMI, and grip strength [10]. This difference may be due to the sample size is not enough and the difference between 2 research subjects.

About the subclinical tests of KOA patients, thickening synovial membrane had significant difference with HRQoL in mobility, usual activities and pain/discomfort dimensions. Patients with bone spurs had significant difference with HRQoL, only except mobility dimension. And patients with Baker cysts had no significant difference with HRQoL. This result showed that

subclinical results of KOA had certain effects on patients HRQoL.

In this study, all 5 dimensions of HRQoL in EQ-5D-5L scale had significant difference with WOMAC pain, stiffness and function ($p < 0.05$, $p < 0.01$). The WOMAC pain and function scores best correlated with the mobility dimension in the EQ-5D-5L scale ($|r| = 0.442$, $|r| = 0.442$). All negative correlation coefficients showed that this is opposite correlation, the higher WOMAC pain, stiffness and function patients got, the worse HRQoL patients experienced. The correlations between the WOMAC and EQ-5D-5L scales in our study were satisfactory, although the stiffness component on the WOMAC scale had the lowest correlation with the EQ-5D-5L, which is in accordance with other study [11].

5. CONCLUSIONS

More than two-thirds of the participants self-rated as having problems with one of the aspects of HRQoL among older patients with knee OA. Our results highlighted that aspects of the EQ-5D-5L are related to age, severe knee OA stages, severe VAS pain and WOMAC scores among this population.

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