QUALITY OF LIFE AMONG THE ELDERLY WITH DEMENTIA IN HAI DUONG, VIETNAM

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Dementia seriously threatens the health and quality of life of the elderly and is a burden on families, communities, and society, especially in countries with rapid aging like growing Vietnam. A cross-sectional descriptive study using the EQ-5D-5L quality of life measurement scale on 104 elderly people with dementia was implementend in 6 communes of Thanh Mien district, Hai Duong province. The results showed that the mean score of quality of life is 0.3 ± 0.5. The percentage of dementia subjects who feel extremely difficult is higher than at all, slightly, moderately, severely of mobility, self-care, and usual activities (26.0%, 30.8%, and 32.7%, respectively). The results of the multivariable linear regression analysis showed that the factors related to the quality of life score were: activities of daily living, level of nicotine dependence, depression, and physical activity levels.

Keywords: Quality of life; EQ-5D-5L; Dementia, Elderly.

I. INTRODUCTION

Dementia is a common syndrome in the elderly with impaired memory, thinking, behavior, and ability to perform daily activities, affecting patients and their caregivers' quality of life (QoL). The disease is common worldwide, with 44.35 million people infected in 2013, and this number is expected to increase to 75.62 million by 2030.[1] Vietnam is no exception to the trend. According to global health, population aging in Vietnam is forecast to be the fastest regionally. The proportion of elderly people is expected to increase from 12% in 2016 (11 million people) to about 25% by 2050 (27 million people).[2]

QoL is defined as "an individual's perception of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards, and concerns".[3] Be subjective concept because based on personal feelings, QoL is affected by many factors, such as personality, lifestyle, behavior, environment,... Therefore, evaluating quality and comparing it with other communities requires a standard and uniform measure. Among many QoL assessment scales, EuroQoL-5 dimensions-5 levels (EQ-5D- 5L) is now considered an effective toolkit when applied in both clinical and subclinical, making an important contribution to economic evaluations and health technology assessments.[4] EQ-5D-5L appeared in many studies conducted in countries such as the Japan.[5] Recently, there have been many studies using this tool scale for dementia subjects. In Vietnam, EQ-5D-5L was initially used to evaluate QoL in target groups such as Vietnam residents.[6]

However, there have been no studies done on subjects with dementia in Vietnam. One of the difficult aspects of assessing QoL is the subjectivity of the question itself, and this task becomes significantly more difficult to perform in patients with dementia. Thus, QoL assessment

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has been ever reported by trustees such as family members or caregivers in the past.[7] In particular, QoL assessment is considered an indicator of calculating effective of the health care and medical interventions in the field of dementia.[8] Therefore, we conducted this study with the following objectives:

1. Describe the status of quality of life among the elderly with dementia in 6 communes of Thanh Mien district, Hai Duong province from July to December 2021.

2. Determine the relationship of some factors with quality of life in the elderly with dementia in 6 communes of Thanh Mien district, Hai Duong province from July to December 2021.

II. PARTICIPANT AND METHOD

1. Participant

Selection criteria

The participants of the study were

(i) the elderly (equivalent to the age of 60 years and older);

(ii) living in Thanh Mien district, Hai Duong province;

(iii) those diagnosed with dementia by a doctor of the National Geriatric Hospital using DSM-V diagnostic criteria.[9]

Exclusion criteria

Study subjects were not present in the locality.

Patients and caregivers did not agree to participate in the study.

2. Method

Study design

A cross-sectional descriptive study.

Sample size

The sample size was estimated according to the formula recommended by the World Health Organization for a population mean, as follows:

$$n = \frac{Z^2_{1-\alpha/2}\,\sigma^2}{\varepsilon^2\mu^2}$$

In there:

- n: Is the minimum sample size to choose.

- μ: The estimated population mean of QoL, selected as 0.91 according to the result of the author Long Hoang Nguyen et al (2017).[13]

- σ: The estimated population standard deviation of QoL, selected as 0.5 according to the result of the author Long Hoang Nguyen et al (2017). [13]

- $Z_{1-\alpha/2}$: Reliability coefficient, corresponding to 95% confidence level is = 1.96.

- ε: Relative precision, selected as 0.12.

- Extra 10% sample size

- We have a minimum sample size of 90 patients, applying the above formula.

Time and place of study

Research period: from July 2021 to December 2021.

Research location: conducted in 6 communes of Thanh Mien district, Hai Duong province, Vietnam: Lam Son commune, Le Hong commune, Pham Kha commune, Thanh Tung commune, Chi Lang Bac commune, and Chi Lang Nam commune.

Variable

The EQ-5D-5L questionnaire was used to measure the QoL was validated in Vietnam with Cronbach's alpha = 0.8.[10] The questionaire contained five sub dimensions (Mobility, Self-care, Usual Activities, Pain/Discomfort, Anxiety/Depression), which have five levels of response: from no problems (code 1) to extreme problems (code 5). The five aspects were coded and then summed up to be total score for the QoL of respondents.

Other characteristics

Demographic factors (age, gender,

occupation, education level); medical history; the level of dementia according to the CDR (Clinical Dementia Rating) questionnaire, the level of nicotine dependence according to the FTND (Fagerström test for nicotine dependence) questionnaire, the level of physical activity by the IPAQ - SF (International Physical Activity Questionnaire - Short Form) questionnaire, Sleep quality according to the PSQI (The Pittsburgh Sleep Quality Index PITTSBURGH) Geriatric depression level according to Geriatric Depression Scale 15 (Geriatric Depression Scale-15).[11-15]

Research process

- Step 1: Received the consent of Thanh Mien district, Hai Duong province. Coordinated with local units to communicate research information to families with older adults.

- Step 2: Made a list of all the elderly in Thanh Mien districts.

- Step 3: Staff, who manage the health records of the people in the area, from district health centers and commune health stations, identified and referred people at risk of dementia to the research team.

- Step 4: Then, the National Geriatric Hospital research team invited at-risk people to participate in the combined clinical assessment, which comprised neurologic examination, Mini-Cog cognitive assessment, clinical dementia rating scale (CDR), neuropsychiatric checklist (NPI). We used case analysis to confirm cases of dementia. Face-to-face interviews also collected other information about the participants.

3. *Data analysis*

Data entry: We use data entry and management software Kobotoolbox. Clean, process and analyze data using STATA 15 software. Use c^2 Tests or Fisher Exact Test to determine the difference in the data. qualitative variables, t-test or ANOVA for quantitative variables, with $p < 0.05$ considered statistically significant. Using multivariable linear regression to evaluate the association between the incidence of severe dementia with several factors.

***4.* Research ethics**

Research has been approved by the Ethics Committee of Hanoi Medical University, Vietnam, according to Decision No. 476/GCN-HĐĐNCSYSH-ĐHYHN.

III. RESULT

Our study collected 104 research subjects. Among the 104 participants, the mean age was 84.4 ± 7.8 (Table 1). The proportion of women predominated over men (69.2% and 30.8%). The majority of the patients were under elementary (72.1%) and farmers (74.0%).

Table 1. Socio-demographic characteristics of participants

Characteristics	Frequency (n)	Percentage (%)
Age (Mean ± SD)	84.4 ± 7.8	
Gender		
Male	32	30.8
Female	72	69.2
Education		

Characteristics	Frequency (n)	Percentage (%)
None/ Under elementary	75	72.1
Higher than elementary	29	27.9
Previous occupation		
Civil servants	14	13.5
Farmers	77	74.0
Others (housewives, soldiers, etc.)	13	12.5

When using the EQ-5D-5L scale, the average score of quality of life was 0.3 ± 0.5. Approximately one-third of the subjects indicated having severe problems in mobility, self-care, and usual activities (26.0; 30.8 and 32.7%, respectively; Figure 1). Otherwise, Pain/ Discomfort and Anxiety/Depression dimensions, people having no to slight problems accounted for more than 50%.

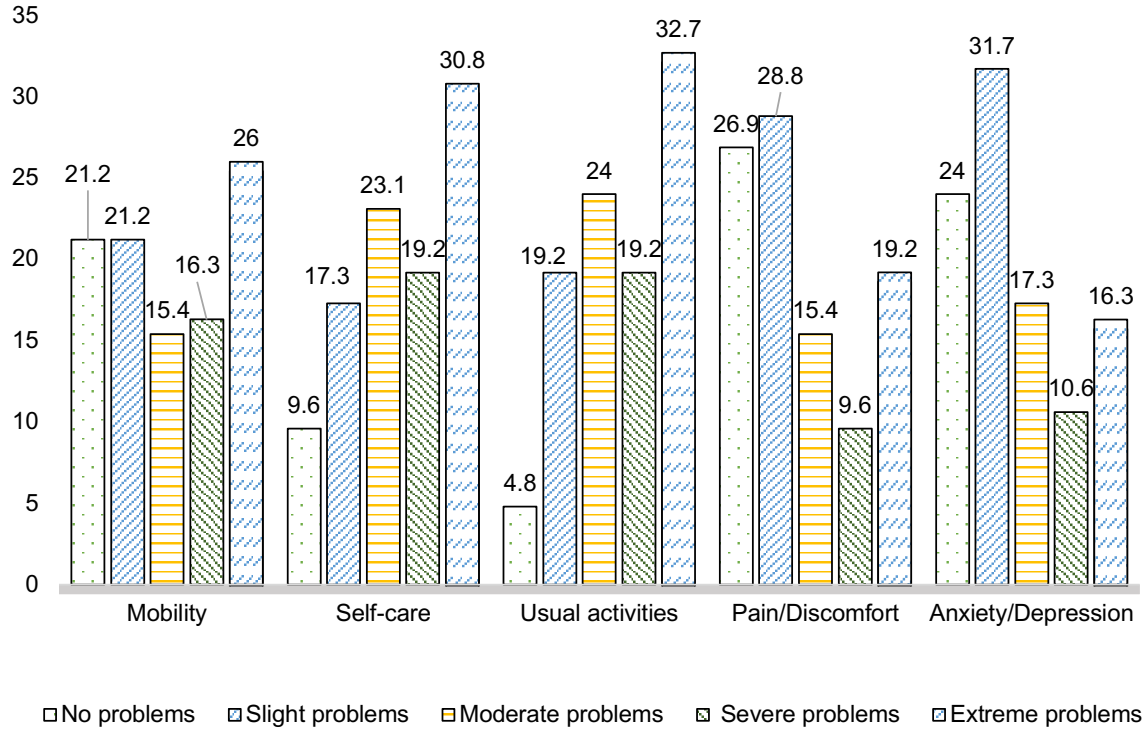

Figure 1. Quality of life of participants (%)

Using multivariate linear regression, some associated factors with QoL were daily activities, nicotine dependence, depression, and physical activity (Table 2). The result estimated that each additional point in activities of daily living score is associated with a 0.07 (95%CI: 0.03 – 0.11) point increase in average QoL point. Patients doing moderate to a high level of physical activity were associated with a 0.26 (95%CI: 0.01 – 0.51) and 0.44 (95%CI: 0.15 – 0.73) increase in average QoL point, compared with those doing low level of physical activity. Those

with no to mild depression were 0.49 (95%CI: 0.26 – 0.63) and 0.28 (95%CI: 0.09 – 0.42) times higher QoL scores compared with those with severe depression. Finally, a higher level of nicotine dependence was associated with lower score of QoL. This multivariate regression model was able to significantly explain 68% of the variance.

Table 2. Associated factors with quality of life

Factors	Frequency (%)	Coef.	95%CI	p-value
Activities of Daily Living (ADL)	2.57 ± 2.16	**0.07**	**0.03 – 0.11**	**0.001**
Clinical Dementia Rating (CDR)	2.25 ± 0.82	-0.07	-0.17 – 0.03	0.131
Fagerstrom Test for Nicotine Dependence (FTND)				
Very low	79 (76.0)	1		
Short	11 (10.6)	**-0.28**	**-0.49 – (-0.07)**	**0.01**
Medium	6 (5.77)	**-0.37**	**-0.65 – (-0.09)**	**0.008**
High	8 (7.69)	**-0.42**	**-0.68 – (-0.15)**	**0.002**
Geriatric Depression Scale (GDS-15)				
Severe Depression	26 (25.0)	1		
Mild Depression	35 (33.7)	**0.28**	**0.09 – 0.42**	**0.003**
No Depression	43 (41.3)	**0.49**	**0.26 – 0.63**	**0.000**
International Physical Activity Questionnaire- Short Form (IPAQ -SF)				
Low Physical Activity	8 (7.69)	1		
Moderate Physical Activity	77 (74.0)	**0.26**	**0.01 – 0.51**	**0.04**
High Physical Activity	19 (18.3)	**0.44**	**0.15 – 0.73**	**0.003**
The Pittsburgh Sleep Quality Index (PSQI)				
No sleep disorder	26 (25.0)	1		
Minor	34 (32.7)	-0.05	-0.22 – 0.12	0.593
Moderate to severe	44 (42.3)	-0.14	-0.36 – 0.03	0.145

$p < 0.001$; $R^2 = 0.68$

IV. DISCUSSION

To our knowledge, this is the first study to provide information on the quality of life of elderly people with dementia in Vietnam. It provides scientific evidence for health care strategies, especially for the elderly population. In our study, the percentage of women dominated compared to men (69.2% and 30.8%). This is similar to studies in Vietnam and around the world. In 2018, Nguyen Thanh Binh reported that the percentage of women obtained in the group of severe dementia patients was 61.6% and 38.4%, respectively.[16]

This difference is explained by the fact that women carry the ApoE 04 gene, which is a risk factor for Alzheimer's disease, and women have hormones, estrogen, and progesterone, that fight nerve cell degeneration. In our study, about 2/3 of dementia patients were not in school/or had not graduated from primary school, this is similar to the study of author Nguyen Ngoc Bich, in 2019, the reported rate was 61.3%.[17] The patient's education level is consistent with the world's research that a low education level is a risk factor for dementia. This is related to the cognitive reserve of the brain, and the study by author Mattalana showed that a high level of education not only reduces the incidence but also slows the onset of dementia.[18]

When using the EQ-5D-5L scale, the mean QoL score of the study subjects was 0.3 ± 0.5. This score is much lower than the QoL of the general Hanoi population of 0.91 ± 0.15.[19] This can be explained by the fact that unemployment, income, chronic diseases, and reduced self-control are more common in the elderly and especially in dementia. However, this result is similar to a study on 284 elderly people with dementia in 20 Australian nursing homes.[20] In which, when asked about the problem of feeling pain/discomfort or anxiety/sadness, the percentage of the subjects who rated it was not even a bit accounted for more than 50%. This can be explained by the behavioral disorders in dementia, apathy is the most common symptom, accounting for 72% of people with dementia. Patients are less emotional, and not interested in activities around.

The result estimated that each additional point in activities of daily living score is associated with a 0.07 (95%CI: 0.03 – 0.11) point increase in average QoL point. People with dementia require increased support in activities of daily living, leading to dependence on caregivers and healthcare workers, which can negatively impact their mental health. Many cognitive improvement interventions are based on exercises that help improve daily functioning, thereby enhancing self-control, thereby improving quality of life.[21] In addition, improving autonomy in daily activities will help reduce the financial burden and medical costs. Therefore, improving daily functioning is an important determinant of improving QoL in different stages of dementia.

Those with low to high levels of nicotine dependence all had QoL scores decreased by 0.28, 0.37 and 0.42 times, respectively. Smoking increases the incidence of chronic diseases, including neuro-cognitive diseases and leads to impaired QoL. Recently, there has been evidence that smoking significantly increases the risk of dementia. On neuroimaging, smokers reported morphological abnormalities in both cortical and subcortical regions, especially the hippocampus, gyrus, which are strongly related to the pathogenesis of the disease Alzheimer's.[22] Secondhand smoke has extremely high concentrations of oxidants, which trigger the release of cytokines that damage peripheral and central neurons. This is thought to be related to the onset of dementia. Thus, smoking not only creates mental dependence but is also a risk factor for chronic diseases, including, leads to the decline of QoL.

For those with possible depression and a low likelihood of depression, their quality of life was 0.28 times lower (95% CI: 0.09 – 0.42) and 0.49 times lower (95 CI %: 0.26 – 0.63) compared to those more likely to be depressed. This is consistent with the results of a systematic review study by author Yata Kubo et al published in 2018, showing that the severity of dementia and cognitive impairment

is proportional to the severity of depression.[23] The hypothesis proposed by Brailean et al: cognitive decline causes increased difficulties in daily living and turn, leads to depression.[24]

For those with moderate to moderate physical activity, their QoL scores were 0.26 times (95% CI: 0.01 – 0.51) and 0.44 times (95% CI: 0.15) – 0.73) higher compared to those with low physical activity. The combined study of the authors K. Kouloutbani, K. Karteroliotis, and A. Politis, published in 2019, showed that physical activity-based interventions provide significant cognitive benefits for patients with dementia.[25] First, physical activity improves cardiovascular risk factors, such as diabetes, hypertension, and dyslipidemia, which are associated with cognitive decline. Second, exercise helps stimulate the production of brain-derived neurotrophic factor (BDNF), which stimulates nerve cell growth and maintenance in an optimal state. Finally, physical activity reduces the risk of falls by about 31%, with falls being one of the most important contributing factors to disability. Therefore, physical activity not only improves cognition and daily functioning but also helps improve QoL for dementia patients.

Our study has both strengths and limitations. This is the first study in Vietnam to publish an assessment of the quality of life of elderly people with dementia. The scales we use are all standardized by Vietnamese people. In particular, this is part of the National Program on "Improving intervention programs for caregivers of dementia patients and research capacity on dementia in Vietnam", this study has received high consensus from the Government, and the health system from the central to the grassroots level. However, we only conducted the study in Hai Duong, so the study results may not be representative of the health status in other localities. In addition, this is a cross-sectional descriptive study, so it does not allow conclusions about causality.

V. CONCLUSION

The EQ-5D-5L scale in Vietnam was used to interview 104 elderly people with dementia in 6 communes in Thanh Mien district, Hai Duong province, with an average quality of life score, is 0.3 ± 0.5. In which, the percentage of dementia subjects who feel extremely difficult is higher than at all, slightly, moderately, severely of mobility, self-care, and usual activities (26.0%, 30.8%, and 32.7%, respectively).

Factors associated with quality of life scores were: activities of daily living, level of nicotine dependence, degree of depression, and level of physical activity.

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