QUALITY OF LIFE AMONG OUT-PATIENTS WITH TYPE 2 DIABETES MANAGED BY YEN BAI PROVINCIAL ENDOCRINE HOSPITAL IN 2020

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ABSTRACT

Objectives: *To describe quality of life (QOL) and to examine factors related to QOL among patients with type 2 diabetes at Endocrine Hospital of Yen Bai province in 2020.* ***Method:*** *A cross-sectional descriptive study was conducted to collect data from 275 type 2 diabetes patients at outpatient department at Endocrine Hospital of Yen Bai province from September 2019 to May 2020. Data were collected by using self-determination questionnaire, including SF-36 questionnaire (QOL scale).* ***Results:*** *The QOL score was 62.25 ± 0.8 points; and the average QOL scores in the eight health domains of SF-36 ranged from 46.74 to 73.21 points. The study was identifies the factors that negatively affect the quality of care as age (ß = -0.445) when the patient is 1 year older, the QOL decreases by 0.445 points; The HbA1c index (ß = -0.164) increased by 1%, the QOL decreased by 0.164 points. The occurrence of complications, in which foot complications (ß = -0.144) and renal complications (ß = -0.093) QOL were lower than those for hypertension. Female (ß = -0.139) have lower QOL than male. QOL of patients with the other disease were lower than those without. These differences are statistically significant with p <0.05.* ***Conclusion:*** *Using SF-36 questionnaires in this research to describe the current state of QOL and identify factors affecting the physical health and mental health of QOL; In order to improve the QOL for patients with type 2 diabetes, it is necessary to pay attention to help the patients relieve anxiety, sadness and fatigue. In addition, healthcare services needs more attention to the elderly, female, and with kidney and/ or foot complications to increase the level of QOL in this patient group.*

Keywords: *Quality of life, type 2 diabetes.*

1. INTRODUCTION

Diabetes is one of the most common chronic diseases worldwide [1]. The disease is increasing steadily in countries around the world, the most common being type 2 diabetes [2]. In 2014, the rate of people with diabetes in Viet Nam was the largest among Southeast Asian countries with 3.299 million people (about 5.8% of adults aged 20-79 years) [1], [2]. Long-term progressive disease with risk factors and comorbidities often occur in psychological disorders such as depression in patients [3]. Research in developed countries and some Asian countries shows that support from family and society has statistical significance in reducing anxiety, depression, increasing QOL for patients with chronic diseases, including diabetes [4], [5]. Measuring QOL has important implications

in clinical care practice for chronic patients, focusing on factors that affect QOL; is important evidence that helps nurses make appropriate clinical decisions to improve the quality of care; minimizing complications, raising awareness and quality control for patients [6], [7].

In Viet Nam, there were some studies on the QOL of diabetes patients, but mainly to find out relevant factors, but the extent of their impact on QOL [8], [9], [10] has not been determined. Evaluate the current status of QOL in patients with type 2 diabetes at outpatient department at Endocrine hospital of Yen Bai province to evaluate the effects of these factors on the QOL of patients. Measuring the patient's QOL will help provide evidence for improving the quality of care in healthcare system. The research: "Quality of life assessment of patients with type 2 diabetes in outpatient treatment at Yen Bai Endocrine Hospital in 2020" was conducted to describe QOL and to examine factors related to QOL among patients with type 2 diabetes at Endocrine Hospital of Yen Bai province in 2020.

2. RESEARCH METHOD

2.1. Research subjects

Type 2 diabetes patients were at outpatient department at Endocrine Hospital of Yen Bai province in 2020.

- Inclusion criteria

The patients were at the age of 18 years or older.

The patients agree to participate in study and can be able to hear and speak.

- Exclusion criteria

The patients are being treated for comorbid mental illness, severe depression or using drugs that affect mental performance (sedatives, antidepressants...).

The patients did not have the cognitive capacity to meet the research requirements.

The patients with other chronic illnesses or conditions at the time

2.2. Setting and research period

Research period was from September 1, 2019 to May 30, 2020.

Period for data collection was from January 1, 2020 to March 30, 2020.

Setting: Endocrine department, Endocrine Hospital of Yen Bai province.

2.3. Research design

Cross-sectional descriptive study.

2.4. Sample size and sampling method

- Sample size

Sample Size: Apply the formula to estimate a proportion in a population

$n = Z^2 (1- α / 2) pq / \Delta^2$

n: Sample size required

p: The percentage of patients with type 2 diabetes with QOL score below 50 points according to research by Hai Nguyen Thi Bich (2018), p = 23.3% [8].

Δ: Allowable deviation between the rate obtained from the study sample and the rate of the population. Deviation 5%, Δ = 0.05.

Zα / 2: The Z value obtained from the Z table corresponds to the selected α value

α: Significance level with α = 0.05, Z coefficient (1-α / 2) = 1.96

→ n = 275 patients

- Sampling method: Using convenient sampling method.

2.5. Data collection

All data were collected by using self-determination questionnaire.

2.6. Research instruments

The SF-36 scale (Short Form-36) is one of the most commonly used tools for assessing QOL in patients with type 2 diabetes [11]. The questionnaire was translated and used to measure the QOL in patients with type 2 diabetes in Viet Nam including 36 items with 8 subscales of health.

SF-36 divided into 2 parts: physical health and mental health. SF-36 scores were coded for each question and revised, aggregated, and converted into a scale from the worst possible QOL (0 points) to the best possible QOL (100 points). The standardized average scores of the physical health and mental health were 50, with scores above 50 presenting better than normal function and below 50 presenting worse than normal function[12].

Evaluate the reliability of the SF-36 scale: The SF-36 scale was used appropriately for people with type 2 diabetes in Asia. The reliability of SF - 36 was evaluated using Cronbach's α coefficient analysis. The reliability of physical health and mental health were proved to be reliable with coefficients ranging from 0.85 to 0.87 [54]. The researcher had permission by the author for using the instrument in this study.

2.7. Data analysis

The data were synthesized by using SPSS 24.0 software. Appropriate tests were used to check the reliability and correlation and influence of variables on QOL.

Descriptive statistical including mean, percentage, standard deviation were used to describe general factors and QOL of subjects.

Regression, Spearman Test, Mann-Whitney Test, Kruskal – Wallis test was used to determine the relationships between some factors and the QOL.

Multivariate regression was used to determine the factors affecting the QOL.

2.8. Ethical issues

The research proposal was approved by the Ethical Review Board of Nam Dinh University of Nursing. An informed consent was obtained to ensure that the subjects voluntarily participated in this study. Participants have the right to withdraw from the study at any time

The responses would be kept strictly confidential, and their identity will not be revealed, only use for research purposes.

3. RESULTS

3.1. QOL characteristics of research subjects

Table 1. Personal factor of research subjects

Characteristics	Value
Age: ($\overline{X} \pm SD$)	62.11± 11.48
Gender	
Male - n (%)	105 (38.2)
Female - n (%)	170 (61.8)
Education level	
Under primary school - n (%)	3 (1.1)
Primary school - n (%)	39 (14.2)
Secondary school - n (%)	41 (14.9)
High school - n (%)	97 (35.3)
Other - n (%)	95 (34.5)
Occupation	
Farmer - n (%)	63 (22.9)
Officer - n (%)	26 (9.5)
Retire - n (%)	93 (33.8)
Other - n (%)	93 (33.8)
Marital status	
Married - n (%)	231 (84)
Single - n (%)	4 (1.5)
Disvoced - n (%)	2 (0.7)
Widow - n (%)	38 (13.8)
BMI ($\overline{X} \pm SD$)	23.25 ± 0.16
Duration of illness	
≤ 5 years – n (%)	107 (38.9)
> 5 -10 years – n (%)	116 (42.2)
> 10 years - n (%)	52 (18.9)
Complications	
Have complications	246 (89.5)
Uncomplicated	29 (10.6)
Retina - n (%)	99 (29)
Hypertension - n (%)	41 (12)
Kidney - n (%)	22 (6.5)
Foot - n (%)	9 (2.6)
Nervous - n (%)	141 (41.3)

Characteristics	Value
Other diseases	
None – n (%)	24 (8.7)
1 disease – n (%)	121 (44)
2 diseases – n (%)	95 (34.5)
≥ 3 diseases – n (%)	35 (12.7)
Treatments	
No medicin - n (%)	0 (0)
medicine for oral use - n (%)	96 (34.9)
Insulin - n (%)	136 (49.5)
Combined medicine for oral use + insulin - n (%)	43 (15.6)
HbA1C ($\overline{X}$ ± SD)	6.85 ± 0.06
Blood sugar ($\overline{X}$ ± SD)	8.86 ± 0.14

Table 1 showed that the average age of subjects was 62.11 ± 11.48 years old. The majority of the subjects were female (61.8%) and married (84%). Most of the subjects had certificate from high school and above (69.8%). A large number of the patients were retired (33.8%) and had duration of disease from 5 to 10 years (42.2%). Most of the patients had complications (89.5%). The most common complications was neurological (41.3%). The majority of the subjects were treated by using Insuin (49.5%). Mean of blood sugar was 8.86 ± 0.14 mmol / L, HbA1c was 6.85 ± 0.06%.

Table 2. Patients' QoL scores by health domains

Contents $\overline{X}$ ± SD	Domain of health	$\overline{X}$ ± SD	Mode, Range
Physical health 58.98 ± 1.1	Physical health problem	70.14 ± 1,3	75 (0-100)
	Limitations of activities	58.9 0± 1,9	75 (0-100)
	Pain	59.89 ± 1,2	57.5 (22,5- 100)
	General health perceptions	47.00 ± 0,8	45 (15-80)
Mental health 62.55 ± 0.7	Energy and Emotions	46.74 ± 0,5	50 (20-70)
	Social activities	62.45 ± 1,1	62.5 (12.5-100)
	Emotion health problem	73.21 ± 1,7	66.6 (0-100)
	General mental health	67.79 ± 0,5	68 (36-84)
General QOL		60.76 ± 0,8	62.25 (26.6 – 85.9)

Table 2 showed the general QOL was 60.76 ± 0.8. Physical health and mental health had average scores more than 50 points. The scores of physical health (58.98 ± 1.1) were lower than mental health (62.55 ± 0.7). The eight health domains had a mean value from 46.74 (Energy and Emotions) to 73.21 ± 1.7 (Emotion health problem).

3.2. Relationships between QOL and other factors

Table 3. Relationships between QOL and demographic factors (N= 275)

Demographic factors		Physical health	Mental health	General QOL
Age	rho p-value *	-0.576 **<0.05**	-0.345 **<0.05**	-0.537 **<0.05**
Gender	Mean Rank	6298.0	7305.0	6510.5
	p-value **	**<0.05**	**<0.05**	**<0.05**
Education level	Under primary school	49.5 ± 17.3	57.6 ± 7.9	44.7 ± 11.9
	Primary school	45.2 ± 2.9	58.5 ± 1.7	51.89 ± 2.2
	Secondary school	51.3 ± 2.8	59.79 ± 2.2	55.45 ± 2.3
	High school	58.3 ± 1.7	62.37 ± 1.2	61.43 ± 1.3
	Other	68.8 ± 1.4	66.91 ± 1.1	70.97 ± 1.1
	p-value ***	**<0.05**	**<0.05**	**<0.05**
Occupation	Farmer	52.8 ± 2.5	59.37 ± 1.6	58.43 ± 1.9
	Officer	73.0 ± 2.6	71.27 ± 1.8	72.41 ± 1.9
	Retire	58.7 ± 1.6	63.04 ± 1.2	63.02 ± 1.2
	Other	59.4 ± 2.0	63,16 ± 1.3	63.33 ± 1.5
	p-value ***	**<0.05**	>0.05	**<0.05**
Marital status	Married	60.1 ± 1.7	63.62 ± 0.8	63.56 ± 0.8
	Single	76.0 ± 8.6	74.06 ± 8.5	77.78 ± 8.2
	Divorced	65 ± 19.3	58.29 ± 4.8	61.64 ± 12.1
	Widow	49.9 ± 3.2	59.41 ± 2.1	55.15 ± 2.4
	p-value ***	**<0.05**	>0.05	<0.05

*Spearman Test   ** Mann-Whitney Test   *** Kruskal-Wallis Test

QOL was nagetive correlated with age, when increasing 1 year of age, QOL decreased 0.537 points. There are differences in QOL scores of male and femae. The score increased in the group of higher education, the difference was statistically significant ($p < 0.05$) (table 3).

Table 4. Relationships between QOL and characteristics of disease

Characteristics of disease		Physical health	Mental health	General QOL
Duration of illness	≤ 5 years	63.2 ± 1.6	65.0 ± 1.0	66.83 ± 1.2
	> 5-10 years	58.8 ± 1.6	61.52 ± 1.2	60.51 ± 1.3
	> 10 years	50.4 ± 2.8	61.45 ± 1.7	55.86 ± 2.0
	p-value ***	**<0.05**	>0.05	**<0.05**
Retinal complication	Mean Rank	7946.0	7909.0	7836.5
	p-value **	>0.05	>0.05	>0.05
Hypertension complication	Mean Rank	3918.0	3853.5	3762.5
	p-value **	>0.05	**<0.05**	**<0.05**
Kidney complication	Mean Rank	2156.0	2059.0	2017.0
	p-value **	>0.05	<0.05	<0.05
Foot complication	Mean Rank	583.5	493.0	497.0
	p-value **	**<0.05**	**<0.05**	**<0.05**
Nervous complication	Mean Rank	7976.0	9216.0	8583.0
	p-value **	**<0.05**	>0,05	>0,05
Other diseases	None	74.5 ± 2.1	64.41 ± 2.4	70.20 ± 1.9
	1 disease	62.5 ± 1.5	66.79 ± 1.1	64.83 ± 1.2
	2 diseases	53.8 ± 1.8	60.79 ± 1.2	57.31 ± 1.4
	≥ 3 diseases	49.6 ± 3.2	57.54 ± 2.2	54.08 ± 2.5
	p-value ***	**<0.05**	**<0.05**	**<0.05**
Treatments	Medicine for oral use	65.9 ± 1.7	63.5 ± 1.2	67.44 ± 1.3
	Insulin	56.1 ± 1.5	63.7 ± 1.0	61.04 ± 1.2
	medicine for oral use + Insulin	52 ± 2.8	58,75 ± 2.0	54.79 ± 2.0
	p-value ***	**<0.05**	**<0,05**	**<0.05**
BMI rho p-value *		0.016 >0.05	-0.010 >0.05	0.009 >0.05
HbA1c rho p-value *		-0.252 **<0.05**	-0.166 **<0.05**	- 0.239 **<0.05**

*Spearman Test   ** Mann-Whitney Test   *** Kruskal-Wallis Test*

There were difference between QOL with complications. However, only difference between foot complications and QOL were statistically significant. QOL of patients with other diseases was reduced. In addtion, The patients who have treated combine medicine for oral use and insulin had lower QOL than other methods. The HbA1c was negative correlated with the QOL meaning that when the HbA1c increased by 1%, the QOL score decreased by 0.252 points, having statistical significance at p <0.05 (Table 4).

3.3. Effectting factors on the QOL in multi-variate regression analysis

Table 5. Multi-variable regression model of QOL and related factors

Factors		ß	p - value	Evaluate the suitability of the model	
				VIF	
Gender	Female	-0.139	**0.003**	1,115	R² = 0,508
	Male	Ref*			
Education level	Under primary school	-0,046	0,342	1,185	F=11.838
	Primary school	-0,126	0,081	2,631	Sig =0,000<0,005
	Secondary school	-0,117	0,070	2,098	*Ref*:
	High school	-0,094	0,118	1,834	*Dummy*
	Other	Ref*			*variable*
Occupation	Farmer	-0,013	0,816	1,712	*ß:*
	Officer	0,048	0,379	1,509	*Regression*
	Retire	0,124	0,053	2,086	*coefficient*
	Other	Ref*			*standardized*
Marital status	Single	-0,043	0,374	1,171	
	Divorced	0,022	0,628	1,038	
	Widow	-0,007	0,891	1,248	
	Married	Ref*			
Duration of illness	≤ 5 years	0,019	0,778	2,269	
	> 5-10 years	-0,076	0,247	2,200	
	> 10 years	Ref*			
Complications	Kidney complication	-0,093	**0,044**	1,083	
	Foot complication	-0,144	**0,002**	1,110	
	Hypertension complication	Ref*			
Other diseases	1 disease	0,005	0,951	3,671	
	2 diseases	-0,131	0,124	3,698	
	≥ 3 diseases	-0,162	**0,018**	2,362	
	None	Ref*			
Treatments	Medicine for oral use	0,111	0,126	2,676	
	Insulin	0,060	0,372	2,325	
	medicine for oral use + Insulin	Ref*			
Age		-0,445	**0,000**	-,445	
HbA1c		-0,164	**0,001**	-,164	

The factors that negatively affect the QOL are age and the HbA1c index, age is the most influential (ß = -0.445) when the patient is 1 year older, the QOL decreases by 0.445 points; The HbA1c index (ß = -0,164) increased by 1%, the QOL decreased by 0.164 points. The patients' QOL whom had foot complications (ß = -0,144) and renal complications (ß = -0,093) was lower than the patients with hypertention complications . Female (ß = -0,139) had lower QOL than male. Patients' QOL with the other diseases was lower than those without. These differences are statistically significant p <0.05 (Table 5).

4. DISCUSSION

4.1. Patients' QoL score

The results showed that scores of QOL above 50 points. The scores of physical health (58.98 ± 1.1) were lower than mental health (62.55 ± 0.7) (Table 2). This finding is similar to some studies in Viet Nam and other countries such as Son Nguyen Thanh (36.74; 49.96 points), domains'score from general health perceptions (31.43) to Energy and Emotions (51.12) [10]; Luyster (42.93; 51.12 points), domains'score from energy and emotions (56.58) to social activities (81.71) [13]. However, there are differences from the finding of Nguyen Thi Huong (2017) is (59.81; 57.22 points), domains'score from general health perceptions (45.38) to Physical health problem (73.49) [9]. This difference can be explained by the mean age in the different studies. Demographic differences also affect the QOL score. Patients lived in rural and mountainous areas often exercise physical training and social activities more often than those in urban. This shows that the self-care activities affect the patient's QOL [14]. The elderly patients in the world is aware of the role of self-care, so the physical health problem score is high (70.14 points). Due to the characteristics of the disease and the other diseases, the subjective perception of each patient is different. This also explains the similarity with the scores of patient health

areas in Viet Nam and international studies when the physical health score was lower than mental health [9], [13].

4.2. Some factors related to affect the quality of care for patients with diabetes type 2 outpatient treatment

Age is one of the factors that have a linear, nagative relationship and affect the QOL of patients with diabetes type 2; Elderly age reduces QOL. This finding is similar to the study of Hoang Thi Tuyet Nhi (2019) that concluded that age is nagative correlated with the QOL, when increasing 1 year old, the QOL score was decreased by 0.06 points [15]. Zurita-Cruz (2018) analyzed by using multi-variate regression, showing that age is associated with poor QOL in patients with type 2 diabetes with OR = 1.04 (95% CI: 1,0008-1.09; p = 0.017) [16]. Aging and combine other diseases will limit physical activity from severe to moderate, even light activities such as self-care are also limited depending on the severity of the associated diseases. complications of long-term disease will affect the QOL in the physical health quite a lot. In addition, the elderly are susceptible to psychological factors due to changes in their health status related to diseases or lack of attention from relatives and friends, which significantly affects quality of mental health. .

Female had lower QOL than male(table 5). This finding is similar to the study of Hoang Thi Tuyet Nhi (2019), it means that sex correlates and affects the QOL [15]. The study of Jessie N. Zurita-Cruz (2018) is related to QOL (statistically significant p <042) but has not noted the influence on QOL areas in this study [16]. It is possible that female are less dominant than male in aspects including biological structure (body development, changes in female hormones, especially premenopausal period ...) and psychosocial (role of housewife, main caregiver in the family, poor social relationships, social support) through which signs of depression may appear early, this is also one of the

factors that seriously affect important to QOL [17].

Patients' QOL with the other diseases was lower than those without. Research by Hoang Thi Tuyet Nhi (2018) showed the patients with other diseases reduces QOL (with p <0.001 statistically significant). However, they have not evaluated their effects on QOL. Wermeling et al (2012) evaluated 2086 patients with type 2 diabetes in the Netherlands and found that patients with other diseases had significantly lower health status than those without [18]. Along with the disease status and associated diseases increases the uncomfortable fatigue condition in the patient, affecting the operation of organs, causing limited daily physical activities, and reducing the public health and general quality of care.

Complications have a negative effect on QOL in which the presence of complications of the kidneys and foot ($ß$ = - 0.093; $ß$ = -0.14; p <0.05) reduces QOL more than other complications. Compared with the study of Tran Ngoc Hoang (2014), foot complications, cerebrovascular accident and coronary artery disease affect their QOL p <0.05 in 8 domains of QOL (SF-36). Study of Wu (2014), showed the relationship between QOL and kidney complications and foot ulcers was not significant, while the presence of hypertension in patients with type 2 diabetes made their QOL worse than [19]. The presence of complications such as complications such as foot complications, high blood pressure can increase physical discomfort, decrease physical activity affecting self-care. Various complications may made treatment time longer and increasing the cost of treatment, reducing QOL [20]. Complications impaired self-care activities is associated with a reduced prognosis [14].

HbA1c index has a negative effect on QOL of patients with type 2 diabetes. This finding is similar to some studies such as Marte (2019), which studies the effects of metabolic control

factors and QOL shows that The HbA1c index has negative correlation to the QOL domains (rho = -0,205, p <0.05) [21]. The percentage of patients with HbA1c <7% in this study accounted for the majority of 68% (table 3.3). The majority of participants in the study are retired staff, with education from high school or higher, 100% participating in health insurance. Therefore, patients will enjoy maximum health service policies and at the same time communication activities are provided with more knowledge about the disease to help increase self-management and better control of the disease.

5. CONCLUSION

The results provide evidence for clinical nursing practice to improve the QOL for patients with type 2 diabetes. Healthcare system need more attention on this issue. For patients, attention to the elderly, women, with kidney and/or foot complications because this group of patients tended to have a lower QOL compared to other groups.

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