QUALITY OF LIFE OF TYPE 2 DIABETES MELLITUS PATIENTS AT MY PHUOC HOSPITAL

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ABSTRACT

Objectives: This study evaluated the quality of life and associated factors among patients with diabetes mellitus type 2 in My Phuoc Hospital in 2024. **Subjects and methods:** A cross-sectional study design was conducted, and the Vietnamese Asian Diabetes Quality of Life Version (AsianDQOL) was used for the data collection of 151 participants. **Results:** The mean score of AsianDQOL among respondents was 55.2 (SD 15.4). The majority of respondents have a moderate level of quality of life (60.9%). At the same time, 6.6% of respondents had a good quality of life, while the rate of participants who had a poor quality of life was 32.5%. The average scores of five domains (diet, energy level, memory and cognition, Financial aspect, and Interpersonal relation) are 57.9, 55.8, 61.2, and 63.4, respectively. In this study, the quality of life in patients with diabetes was associated with their occupational status, glucose (blood) level, BMI, and disease duration. **Conclusion**: The quality of life of people living with Type 2 Diabetes at My Phuoc Hospital was generally moderate. The findings suggest that blood glucose control, BMI, and disease duration influence quality of life. Targeted interventions addressing these factors may help improve patients' quality of life.

Keywords: *Quality of life, Type 2 diabetes mellitus, Vietnamese Asian Diabetes Quality of life Version (AsianDQOL)*

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I. INTRODUCTION

Diabetes mellitus (DM) or diabetes is on the rise in developed and developing countries around the world. According to estimates by the International Diabetes Federation (IDF) 2021, there are currently 537 million people with diabetes in the world between the ages of 20 and 79, and this number is expected to increase to 783 million by 2045 [1]. In Vietnam, the number of diabetes patients has been growing, and the majority are Type 2 Diabetes Mellitus (T2DM). The total direct medical cost was USD 435 million, of which 24% was spent on hospitalization, 20% on outpatient care, 7% on emergency care, 36% on non-diabetes-related medication, and 13% on antihyperglycemic medication. About 70% of the total direct medical costs were attributed to diabetes-related complications [2].

The rapid progression and poor control of the disease cause many serious and even life-threatening complications [3]. In Vietnam, 55% of diabetic patients have present complications, which take nearly 70% of total direct care cost [2]. Moreover, living with diabetes for a long time leads to decreased quality of life (QoL). Hence, the goals of treating patients with diabetes are generally to control blood glucose levels, relieve signs and symptoms associated with hyperglycemia, prevent short-term acute complications, and eventually maintain or improve patients' QoL and reduce mortality. Problems such as increased blood glucose,

dietary and exercise limitations, repeated demand for insulin injection, musculoskeletal complications, physical disabilities, sexual dysfunction, and vascular disorders are some examples that negatively affect the lives of patients with DM. These led to decreased patients' quality of life [4]. The poor quality of life among Vietnamese diabetes patients [5], [6].

In Vietnam, the rising prevalence of T2DM has become a significant public health concern. As the disease progresses, patients may experience various challenges, such as frequent hospital visits, changes in lifestyle, and the emotional toll of managing a chronic illness. My Phuoc Hospital, located in the Bình Dương province, provides a critical healthcare service to diabetes patients. Understanding the quality of life among T2DM patients at this institution is essential for assessing the effectiveness of current treatment strategies and improving patient care. The study aims to survey the quality of life among type 2 diabetes mellitus at My Phuoc Hospital.

II. SUBJECTS AND METHODS

2.1 Research subjects

The population of this study is type 2 diabetes patients who were monitored monthly at the outpatient department of My Phuoc hospital. Patients with DM were invited to participate in this study if they met the following inclusion criteria: 1) A diagnosis of diabetes based on the American Diabetes Association's (ADA) 2021 criteria, made at least three months ago; 2) willing to participate; 3) currently not be presenting any acute and serious medical illness.

2.2 Research methods

2.2.1 *Study design*

A descriptive cross-sectional study was carried out from May to June 2024 at the Outpatient Department of My Phuoc hospital

2.2.2 Sample size and sample methods

The sample size for our study was ascertained based on the ratio estimation formula in the cross-sectional study. With 95% confidence, if we cannot estimate p, we can estimate p=0.5, the safest estimate and will give the safest sample size (most significant).

$$n = \left(\frac{z \times \sigma}{E}\right)^2$$

Where,

n is the required sample size.

z is the z-score corresponding to the desired confidence level (with 95% confidence level has a z-score of 1.96).

E is the margin of error (+/-5)

σ is the standard deviation. The standard deviation of QoL among patients with diabetes is 16.99 [7].

The sample size was calculated to be 125 participants. With an anticipated 20% refusal rate, the final sample size for the study was 151 participants.

A purposive sampling technique was used to select samples based on inclusion and exclusion criteria.

2.2.3 Research instrument

The questionnaire consisted of two parts.

Part I of the questionnaire pertains to the social clinical-demographic profile, which consists of 8 questions about the patient's age, gender, highest educational attainment, occupational status, body mass index (BMI), duration of DM diagnosis, medication, and fasting blood glucose level (FBG).

Part II was the questionnaire pertains to diabetes quality of life in five domains: diet, energy level, memory, and cognition;

financial aspects; interpersonal relations, which will be measured through "Vietnamese Asian Diabetes Quality of Life Version (AsianDQOL)" by Huu et al. [8]. This questionnaire includes 21 items on a 5-point Likert scale. The reliability of each questionnaire was tested using Cronbach's α., which was 0.88 [8]. The total score is from 0 to 100 points. The scoring of AsianDQOL is classified as a score of 25 points and below is considered harmful, 26–50 Poor, 51–75 moderate, and above 75 points is good QOL [7].

2.2.4 Data collection

Data was collected using self-administered questionnaires. T2DM patients who meet sampling standards will be invited to participate in the study. Researchers interviewed Participants directly and answered the questions in the prepared questionnaire. Face-to-face interviews will be conducted for about 30 minutes during the interview process.

***2.2.5* Statistical analysis**

Jamovi version 2.5 software was employed to analyze data. Descriptive statistics using frequency and percentage were carried out for categorical variables. A multivariable linear regression model was employed to identify any significant predictive factors of quality of life in respondents. The significant differences in variables were considered if the p-value was less than 0.05.

III. RESULTS

3.1 Baseline characteristics of type 2 diabetes mellitus respondents

Table 1. **Baseline demographic, clinical profile of the participants (n=151)**

Profile		Frequency (%)
Gender	Male	90 (59.6%
	Female	61 (40.4%)
Age (in years)	<59 years	77 (51%)
	≥60 years	74 (49%)
Occupational Status	Unemployed	8 (5.3%)
	Employed	85 (56.3%)
	Retired	58 (38.4%)
Highest Educational Attainment	Primary	34 (22.5%)
	Secondary	95 (62.9%)
	Tertiary	22 (14.6%)
BMI (kg/m$^{2)}$	Underweight (<18)	1 (0.7%)
	Normal (18 – 22.9)	83 (55%)
	Overweight (23 – 24.9)	43 (28.4%)
	Obesity grade 1 (25 – 29.9)	24 (15.9%)
Duration of DM diagnosis	<5 years	15 (9.9%)
	5 – 10 years	102 (67.5%)
	>10 years	34 (22.5%)
Fast blood glucose level (FBG)	4.4 -7.2 mmol/l	74 (49%)
	≥ 7.2 mmol/l	81 (51%)
	Mean ± SD: 7.3± 3.8	
Medication	Oral	145 (96%)
	Insulin	6 (4%)

A total of 151 diabetes patients participated in the study. The result showed that more than half of the participants were males (59.6%). 51% of respondents are less than 59 years old. Most respondents have attained secondary level and above level (77.5%). Of these, 56.3% of respondents have been employed. Nearly half of the participants were overweight or obesity in grade 1 (44.3). Almost all of the participants (91.1%) suffered DM for equal or more than 5 years. The majority of them were treated by oral medication (96%). The average fasting blood glucose levels were 7.3 mmol/l. According to ADA criteria, 49% have good FBG control (FBG: 4.4 –7.2 mmol/l). While a significant proportion of participants are managing their blood glucose levels reasonably well, factors such as obesity, the long duration of the disease, and reliance on oral medication point to improved diabetes management, lifestyle interventions, and better long-term monitoring.

3.2 Quality of life of type 2 diabetes mellitus respondents

Table 2. **Summary of level of quality of life of respondents (n=151)**

Quality of life level	Frequency	Percentage
Good	10	6.6%
Moderate	92	60.9%
Poor	49	32.5%
Mean ±SD:	*55.2 ± 15.4*	

Table 2 summarizes respondents' mean scores, standard deviations, and quality of life. The overall mean is 55.2 (SD: 15.4). Most respondents (60.9%) had a moderate quality of life. 6.6% of respondents had a good quality of life, while 32.5% of participants had a poor quality of life.

Table 3. **Summary of respondents' mean scores of quality of life domains (n=151)**

Statements	Mean ± SD	Level
Diet	47.9 ± 13.4	Moderate
Engergy level	57.7 ± 15.9	Moderate
Memory and cognition	69.8 ± 15.7	Moderate
Financial aspects	75.2 ± 14.8	Good
Interpersonal relation	63.0 ± 13.4	Moderate

Table 3 presents the summary of values showing mean scores of domains regarding the quality of life of respondents. The result showed that the majority of type 2 diabetes mellitus respondents have a good level of quality of life regarding the financial aspect domain, with a mean score of 75.2. The memory, cognition, and interpersonal relation domains are followed by a mean score of 69.8 and 63.0, respectively. This implies that respondents generally feel positive about their social interactions and cognitive functions. This could reflect sound support systems and effective hospital cognitive health management. Meanwhile, diet is one of the domains with the lowest mean score of 47.9. Besides, the energy level had a mean score of 57.7, respectively.

3.3 Predictive factors of quality of life of type 2 diabetes mellitus respondents

Table 4. **Results of multiple linear regression analysis between the social clinical, demographic profile, and quality of life of respondents (n=151)**

Predictors	R2	β	t	p
Age	0.626	0.01	0.14	0.892
Gender: Female – Male		-0.08	-0.74	0.460
Educational level		-0.08	-1.43	0.154
Employment status:				
Employed – Unemployed		0.31	1.472	0.143
Retired – Unemployed		0.62	2.63	0.009*
BMI		-0.16	-2.94	0.004*
Duration of DM		-0.39	-6.96	0.000**
Fast blood glucose level		-0.63	-11.7	0.000**
Medication		0.45	1.57	0.119

Note. * $p < 0.05$; * $p<0.001$

Table 4 also presents that R^2 is 0.626. This means that eight predictors, including diabetes mellitus respondents' age, gender, education level, BMI, duration of diabetes diagnosis, employment status, and fast blood sugar level, explain 63.8% of the variance in the quality of life of diabetes mellitus respondents ($R^2 = 0.638$, F = 63.9, p-value < 0.001). The result of the multiple linear regression model (Table 4) also presents that employed status, BMI, duration of DM, and fast blood glucose level are predictive factors of the quality of life of T2DM respondents. The finding indicates that the time of living with T2DM, FBG, and BMI increases the quality of life in DM patients will decrease with the standardized beta coefficient (β) values were β = -0.39, β =-0.63, β =-0.16, respectively. It means that as the duration of living with diabetes (DM), FBG, and BMI increases, the QoL of patients tends to worsen. Moreover, the study findings also showed that retired DM patients have better QoL than unemployed patients (β = 0.62, p = 0.009). Meanwhile, there is no relationship between QoL and age, gender, educational level, and medication (p>0.05).

IV. DISCUSSION

4.1 Quality of life of diabetes mellitus respondents

The study finding indicated an overall mean of 55.2, and most respondents had a moderate level of QoL (60.9%). The quality of life among diabetes respondents in this study aligns with many previous studies. A study was conducted at Son Tra Hospital, Da Nang City, which indicated that most DM patients had QoL at a moderate level (72.3%), and the mean score of QoL was 59.7. However, the QoL among DM patients in this study is higher than in another study, which reported that 40% of DM patients had a moderate QoL, and 54% had a poor level of QoL [5].

Moreover, the study findings indicated a good quality of life regarding financial aspects and memory cognition domains, while almost all had trouble regarding diet and energy levels. This finding is consistent with a study conducted in Da Nang. It showed that the field of diet was 47.12, equivalent to the poor average quality of patients in this field; the energy level was 55.26, which corresponded to the

average quality of the patients in this field; the memory and cognition were 83.035, which was equivalent to the patient's quality of life in the field of quite a good level; financial sector was 89.65±10.04 equivalent to the quality of life at a good level. However, the personal relationship domain was very low, only 25.12 points, causing the patient's quality of life to decrease only to a poor level. At the same time, this figure in our study is higher, with a mean score of 63.0 [5].

The findings suggest that while diabetes patients generally report moderate QoL, certain domains, such as diet and energy level**,** require more attention. Improving dietary habits, managing energy levels, and providing support in these areas could enhance the overall quality of life for diabetes patients. Additionally, the relatively high financial and memory/cognition scores highlight that addressing these factors could further improve quality of life.

4.2 The associated factors of quality of life of diabetes mellitus respondents

The study findings indicated that employed status, BMI, duration of DM, and fast blood glucose level are predictive factors of the quality of life of T2DM respondents. These factors highlight the importance of managing blood sugar levels and maintaining a healthy body weight to improve QoL. Additionally, the longer a patient has been living with diabetes, the more likely it may impact their quality of life negatively. This finding is consistent with many previous studies. Similarly, Phan et al. indicated that glucose (blood) BMI negatively correlated with the QoL of DM patients [9]. Moreover, according to Moghaddam et al., there were some predictor variables of quality of life among diabetes patients. The variables of duration of diabetes (β=-0.12, p=0.026) were significant predictors of mental health of QoL in patients with type 2 diabetes [3]. A study in Binh Duong also indicated that QoL in DM patients who live with diabetes for a long time leads to a decrease in their quality of life. The time living with diabetes had a negative impact on the QoL of diabetes patients.

The results suggest that interventions aimed at improving blood glucose control, addressing weight management (BMI), and supporting long-term diabetes management may significantly improve the quality of life for these patients. Targeting specific areas such as diet, energy levels, and cognitive support could also be beneficial.

V. CONCLUSION

The study of 151 patients with type 2 diabetes mellitus found that the overall quality of life of the participants was at a moderate level, with an average score of 55.2. Most respondents (60.9%) reported a moderate quality of life, 32.5% had a poor quality of life, and 6.6% reported a good quality of life. The study also indicated that one of the main challenges for diabetes patients is managing their diet. Educational programs should focus on understanding how different foods affect blood glucose levels. Emphasis should be placed on balanced meals, portion control, and the timing of meals to prevent blood sugar spikes. Incorporating these strategies, focusing on diet-related challenges and personalized nutrition plans, can significantly improve the quality of life for diabetes patients, helping them manage their condition more effectively while maintaining a balanced and enjoyable lifestyle and enhancing the quality of life for diabetes patients. Factors such as

employment status, BMI, duration of diabetes, and fasting blood glucose levels were identified as predictive factors influencing the quality of life of type 2 diabetes mellitus patients. These findings highlight the importance of addressing these factors in diabetes management to improve patients' overall well-being.

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