

## Research Article

# The Assessment of Health-Related Quality of Life and Knowledge, Attitudes and Practices of Type 2 Diabetics After Participating in Health Education Programme: A Study in The Local of Vietnam

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### Abstract:

**Introduction:** The proper awareness and education programme improves patient's knowledge, while changing attitude, leading good practices and improving health-related quality of life. This study purposes evaluated the health education programme results for type 2 diabetes on the health-related quality of life, knowledge, attitude, and practices.

**Method:** 85 type 2 diabetes diagnosed over six months and aged 35-65 were included the study. Vietnamese Diabetes Quality of Life and Knowledge, Attitude, and Practices questionnaires were used to assess the health-related quality of life and knowledge, attitude, and practices of type 2 diabetes. The education tool was a brochure containing the information diabetes. Descriptive statistics were used for the quantitative data. Qualitative data displayed in numbers and percentages. The changes of the programme results tested by Pair Sample T-test.

**Results:** 85 patients had an average age of  $57.14 \pm 6.413$  years. All participants had little type 2 diabetic knowledge  $37.882 \pm 12.639$  points. Meanwhile, the patient's attitude toward disease was average  $65.971 \pm 19.488$  points. However, the patient's practices were low  $52.120 \pm 14.150$  points. Moreover, their health-related quality of life was low  $51.216 \pm 19.125$  points, however, it improved significantly after 6 months -34.518. Also, there has been significant improvement of the knowledge (6,212), attitude (9.494) and practices (4.771).

**Conclusion:** The health-related quality of life of type 2 diabetes lowed level, but it changed significantly after participating programme. The patient's knowledge lowed, the attitude toward disease moderated and the self-care practice lowed, but these problems changed markedly after attending education.

**Key words:** Knowledge, Attitude, Practice; Health-related quality of life; Quality of life; Diabetes; Health education programme.

### Introduction

Type 2 Diabetes Mellitus (T2DM) is the most regular metabolic confusion that patients bear with hyperglycaemic symptoms and diabetic complications (1). However, these complications can be prevented, such as blindness, amputation, neurological diseases, retinopathy, and cardiovascular disease (1) (2) (3). Indeed, by means of medical care and education, acute and chronic complications can be interfered (1). In addition, surpassed metabolic surveillance through diet and exercise, physical activity, blood glucose monitoring, feet care, and periodic physical examination, with anti-diabetic medicines, can successfully slash the complication risks (4).

Moreover, several studies have shown that patient education was always considered an essential element of T2DM management (5) (6) and health-related quality of life (HRQOL) of diabetic patients (7) (8). In fact, the main goals of the diabetes health education programmes were to permit individuals to avoid short-term and long-term complications associated with the disease as well as uphold and ameliorate the HRQOL (9). Furthermore, the accurate apprehension and instruction programmes can upgrade patients' knowledge and fluctuate

their attitudes (10). As a result, they can practice better in managing diabetes themselves and improve HRQOL (10).

Meanwhile, the incidence of T2DM has been rapidly increasing and becoming the most important public health problems worldwide (11). Especially in Vietnam, the rate of this disease in the community is also increasing very fast due to the increased life expectancy and lifestyle changes of the people (12). Therefore, proper awareness and education programs need to be developed to improve patient knowledge while changing attitudes, leading to good self-control practices, and improving the HRQOL (10).

The purposes of this study were to evaluate the results of health education programs for type 2 diabetic patients on the health-related quality of life, knowledge, attitude toward illness, and self-control practices.

### Materials and Methods

#### The participants

85 participants who lived in seventeen communes (five patients per commune) of Tam Binh District, Vinh Long Province, Vietnam, were attended the health education programme. Selection criteria included participants with type 2 diabetes

diagnosed more than half a year ago; and participants 35 to 65 were selected for the study. Exclusion criteria included participants with any other chronic condition requiring the patient to be hospitalized more than two weeks ago, gestational diabetes, or unable to communicate due to physical or mental disabilities.

**The questionnaires**

The Vietnamese Diabetes Quality of Life (VNDQOL) questionnaire was used to assess the health-related quality of life of type 2 diabetes patients in Tam Binh district (supplementation 1). The Knowledge, Attitude, and Practices (KAP) Questionnaire was used to assess their knowledge, attitudes, and practices (supplementation 2). These two questionnaires were used to collect data before and after six months attending a health education programme.

**Health education programme contents**

The study used a comprehensive document containing the concept of diabetes, classifications, risk factors, symptoms, complications and prevention of complications, hypoglycaemic and foot ulcer complications control (supplementation 3).

**Data Collection**

Participants were first asked to complete the VNDQOL and KAP questionnaires to assess their HRQOL and diabetic knowledge, attitudes toward diabetes, and management practices. Next, they were educated about diabetes knowledge by brochure and the trainer provided more information about the disease by a face-to-face method. This was due to the differences in culture and living habits of Vietnamese who disliked the others knowing their illnesses, so we had to switch from group discussion to face-to-face methods. Finally, the effectiveness of the training program evaluated with the VNDQOL and KAP questionnaires after six months.

**Statistical Analysis**

All collected data were analysed using IBM SPSS software version 22. Descriptive statistics including frequency, mean, and standard deviation were used for the participant characteristics, VNDQOL and KAP score. The scores were divided into 3 levels: low level (less than 60 per cent of total points), moderate level (60-79 per cent of total points), and high level (80 and above per cent of total points). Qualitative data was displayed in numbers and percentages. Comparison of changes in HRQOL and KAP between before and after the program tested by Pair Sample T-test in SPSS. The significant level for all test was fixed at  $p < 0.05$ .

**Results**

**Participant Demographic Data**

85 patients were selected for the health intervention study with an average age of  $57.14 \pm 6.413$  years. Specifically, the proportion of women (75.3%) accounted for more than 2/3 of men (24.7%). Moreover, the majority was Kinh 97.6%, the rest was Khmer (2.4%). Most of the participants were 98.8% married, only 1 widower, and most of them live in a 1 - 2

generation family (72.9%). The results also showed that up to 76.5% of patients had full-time or part-time jobs, 16.5% were retired and the remaining 7.1% were unemployed. Furthermore, 81.2% of participants have high monthly income, 11.8% of average income, 7.1% of low income.

The average duration of type 2 diabetes of patients was  $4,771 \pm 4,793$  years, of which, the shortest duration of the disease was 0.5 years, and the longest was 22 years. During this period, 48 people received information about diabetes, accounting for 48.5%. As many as 92.9% of patients with other medical problems related to diabetes included 62.4% with hypertension, 60% with neurological problems, 31.8% with lipid disorders, visual problems 29.4%, kidney problems 18%, sexual disease 4.7%, heart disease 3.5%. The patient's average blood sugar was  $9.736 \pm 3.782$  mmol/L, the lowest 4.6 mmol/L, the highest 23.8 mmol/L; and the average HbA1C was  $7.432 \pm 2.363\%$ , minimum 4.6%, the highest 13.3%.

**Table 1: The demography of participants**

No.	Characteristics	Participants (n=85)
	Age (mean, SD, range (year))	$57.14 \pm 6.413$
	Gender (n, %)	
	Male	21 (24.7%)
	Female	64 (75.3%)
	Education level (n, %)	
	Illiterate	6 (7.1%)
	Primary	26 (30.6%)
	Secondary	26 (30.6%)
	Tertiary and above	27 (31.8%)
	Ethnicity (n, %)	
	Kinh	83 (97.6%)
	Khmer	2 (2.4%)
	Marital status (n, %)	
	Married	84 (98.8%)
	Widowed/Widower	1 (1.2%)
	Type of family (n, %)	
	Small (1 - 2 generations)	62 (72.9%)
	Big ( $\geq 3$ generations)	23 (27.1%)
	Employment status (n, %)	
	Working (full-time)	47 (55.3%)
	Working (part-time)	18 (21.2%)
	Unemployed/Not working	6 (7.1%)
	Retired	14 (16.5%)
	Income monthly (n, %)	
	Low	6 (7.1%)
	Medium	10 (11.8%)
	High	69 (81.2%)
	Diabetic duration (n, SD, range)	$4,771 \pm 4,793$ (0.5 - 22)
	Diabetes-related information (n, %)	
	Yes	48 (56.5%)
	No	37 (43.5%)
	Other medical problems (n, %)	
	Hypertension	27 (31.8%)
	High cholesterol	3 (3.5%)

Heart disease/heart block	25 (29.4%)
Visual problems	51 (60%)
Nerve problems	4 (4.7%)
Poor sexual desire	16 (18%)
Renal problems	
Glycaemia level (mean, SD, range (mmol/L))	9.736 ± 3.782 (4.6 – 23.8)
HbA1C (mean, SD, range (%))	7.432 ± 2.363 (4.6 – 13.3)
Diabetic management organization (n, %)	81 (95.3%)
Government	4 (4.7%)
clinic/hospital	
Private clinic/hospital	
Treatment method	
Diet therapy only	2 (2.4%)
Oral medications only	70 (84.2%)
Insulin only	7 (8.2%)
Not on any treatment	6 (7.1%)
Hypo-glycaemia (n, %)	
Never once/few months	29 (34.1%)
One/week	17 (20%)
2-3 times/week	30 (35.3%)
Daily	9 (10.6%)
Smoking	
Yes	14 (16.5%)
No	71 (83.5%)
Drinking	
Yes	18 (21.2%)
No	67 (78.8%)

All patients had blood sugar testing with 95.3% at commune health stations and district health centrals, only 4.7% at private clinics. Most patients were treated the T2DM by oral medication (84.2%), insulin injection by 8.2%, dietary modification by 2.4%, and no treatment by 7.1%. The majority

**Table 3: The domain scores of the health-related quality of life**

	N		Mean	SD	Minimum	Maximum
	Valid	Missing				
General health	85	0	39.804	20.987	0	91.67
Activity limitation	85	0	51.226	23.960	0	100
Physical endurance	85	0	75.588	22.950	12.5	100
Diet and eating habits	85	0	39.510	23.391	4.17	100
Treatment	85	0	44.485	21.248	6.25	100
Symptom burden	85	0	62.255	21.692	16.67	100
Financial aspects	85	0	67.000	24.967	0	100
Emotional/mental health	85	0	46.471	20.175	0	95
Inter-personal relationship	85	0	34.608	16.392	8.33	66.67

**The change in knowledge, attitude, practices, and HRQOL**

The VNDQOL score of T2DM patients was low before attending a health education program (Table 2). However, this score has improved significantly after 6 months from the end of the program with another index of -34.518 (p = 0.000). Indeed, each domain's score also increased markedly with p = 0.000. Specifically, the general health increased to 2.918 points. At the same time, the active limit component has grown to 5.353 points. Similarly, the composition of physical strength increased to a statistically significant level with a score of 2.847 (p = 0.000). In addition, the field of diet and dietary habits was higher than before being educated with

of patients had symptoms of hypoglycaemia 1 time per week (20%), 2-3 times 1 week (35.3%), and daily (10.6%). The proportion of patients smoking and drinking alcohol was low, respectively 16.5% and 21.2%.

**Knowledge, attitude, practice and HRQOL before joining a health education program**

**Table 2: Knowledge, attitude, practice and HRQOL**

		Knowledge	Attitude	Practice	VNDQOL
N	Valid	85	85	85	85
	Missing	0	0	0	0
Mean		37.882	65.971	52.120	51.216
Std. Deviation		12.639	19.488	14.150	19.125
Minimum		10	0	20	9.91
Maximum		80	100	80	93.89

All study participants had little knowledge of T2DM with an average score of 37.882 ± 12.639 points. Meanwhile, the patient's attitude toward the disease was average with a score of 65.971 ± 19.488 points. However, the actual ability of the patient was still low with a score of 52.120 ± 14.150 points. In addition, the HRQOL of type 2 diabetes in Tam Binh District was low 51.216 ± 19.125 points (table 2).

**The initial scores of the VNDQOL domains**

The inter-personal relationship domain had lowest score with an average of 34.608 points as can be seen in table 3. In analysing, the highest score was detected for the physical endurance domain with 75.588 points. Six fields had the HRQOL score less than 60 points as general health (39.804), activity limitation (51.226), diet and eating habits (39.510), treatment (44.485), emotional/mental health (46.471), inter-personal relationship (34.608). The three components with moderate scores included physical endurance (75.588), symptom burden (62.255), financial aspect (67).

a difference of 5.447. The treatment composition also showed a significant increase in scores with a difference of 3.965 (p=0.000). Even the component of the symptom burden showed a significant improvement with a difference of 2.482. Besides, the financial aspects domain has improved significantly p = 0.000 with a difference of 3.706. Furthermore, the variable emotional/mental health has got markedly better after attending the program with a difference of 4.8 (p = 0.000). In particular, the value of Inter-personal relationship has also risen significantly with a difference of 3.

**Table 4: The variation of knowledge, attitude, practices, and HRQOL**

	Paired Differences					t	Sig.
	Mean	SD	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		
Knowledge	-6.212	1.264	0.137	-6.484	-5.939	-45.311	0.000
Attitude	-9.494	6.378	0.692	-10.870	-8.118	-13.724	0.000
Practice	-4.471	1.296	0.141	-4.750	-4.191	-31.793	0.000
General health	-2.918	0.517	0.056	-3.029	-2.806	-52.063	0.000
Activity limitation	-5.353	1.882	.204	-5.759	-4.947	-26.228	0.000
Physical endurance	-2.847	2.146	0.233	-3.310	-2.384	-12.229	0.000
Diet and eating habits	-5.447	1.855	0.201	-5.847	-5.047	-27.074	0.000
Treatment	-3.965	1.200	0.130	-4.223	-3.706	-30.469	0.000
Symptom burden	-2.482	0.934	0.101	-2.684	-2.281	-24.512	0.000
Financial aspects	-3.706	1.882	0.204	-4.112	-3.300	-18.151	0.000
Emotional/mental health	-4.800	0.613	0.067	-4.932	-4.668	-72.152	0.000
Inter-personal relationship	-3.000	0.267	0.029	-3.058	-2.942	-103.489	0.000
VNDQOL	-34.518	8.443	0.916	-36.339	-32.697	-37.694	0.000

In addition, the score of knowledge, attitude towards disease, and self-care practice of patients with type 2 diabetes in the study were low (knowledge and practice) to moderate (attitude) before joining the health education program (table 2). There has been significant improvement in scores 6 months after the program ended (p=0.000). Specifically, patient knowledge was more advanced with a difference of 6,212. The patient's attitude also improved with a positive level of 9.494. The patient's self-control practice also significantly increased with the level of 4.771.

**Discussion**

T2DM patients were required to manage the disease themselves and fight for life to maintain and enhance HRQOL (1). Therefore, health education was an important factor for diabetes people so that they got the necessary knowledge, proper awareness, and good self-control skills for the disease, thereby improving their HRQOL (13). In fact, patient education has become an integral part of the treatment of chronic disease in general and diabetes in particular, which was considered a core therapeutic means (14).

**Characteristics of T2DM participants**

This study showed that the average age of patients with type 2 diabetes was 57.14 ± 6,413 years old. Similarly, the study of Erva C. Magbanua et al. (2017) patients had an average age of 59.09 years (15). Moreover, research by Lamis R. Karaoui et al. (2018) reported an average patient age of 60.29 ± 14.04 years (16). This was consistent with the age range common in type 2 diabetics mentioned in the literature of author Robert H. Eckel (17). However, a study in Bangladesh by Farzana Saleh et al (2012) found that the average age of diabetes patients was 45.0 ± 9.5 years (18). This difference was due to the author selecting new patients with diabetes.

More than 2/3 of the patients were female (75.3%). Fatma Al-Maskari et al. (2013) also reported a higher proportion of women than men (19). This was further reinforced by the

research of Shooka Mohammadi et al (2015) on the population of type 2 diabetes in Iran with 61% of the patients being female (20). In addition, a study in Thailand by Saruta Saengtibovorn et al (2014) had more than half of female participants (21). Tam Binh district was predominantly Kinh, so our study had 97.6% of Kinh people participating in the study. Most participants got married and separated from the big family to live in a 1 - 2 generation family. Moreover, Alzahrani Salem et al (2018) also found that the marriage rate accounted for more than half of the sample (22).

Furthermore, Alzahrani Salem et al (2018) also reported that the patients in his study were highly educated from high school and above (22). Simultaneously, the study of Saruta Saengtibovorn et al (2014) reported 76.5% finished primary school (21). Similarly, this study found that most patients had primary or higher education (93%). Nevertheless, a study in Iran by Shooka Mohammadi et al (2015) found that nearly 27 illiterate patients, but the majority (41%) of the study participants were not attending primary school (20). Low levels of education were also found in the study of Fatma Al-Maskari et al (2013) with 46% illiteracy (19).

Most patients had a job, so their income was high. Concurrently, a study by Saruta Saengtibovorn et al (2014) showed that 37.1% earned less than 1,500 baht per month. (21). In addition, a study by Shooka Mohammadi et al (2015) found that only 27% of patients had jobs and their monthly income was lower than 8,000,000 Rials (20). The average duration of

diabetes in Fatma Al-Maskari et al (2013) was 9 years (19). Kh. Shafiur Rahaman et al (2017) also showed that the average duration of diabetes was  $9.16 \pm 6.03$  years (23). However, patients in this study had a significantly lower duration of type 2 diabetes than the previous two studies ( $4,771 \pm 4,793$ ). More than half of patients have received information about diabetes. However, Kh. Shafiur Rahaman et al (2017) reported that only 38.6% of patients participated in a diabetes-related education program (23). About one quarter (26%) of the patients in the study of Erva C. Magbanua et al. (2017) participated the diabetes education (15).

Most patients had at least one other condition related to diabetes (92.9%) such as hypertension, hypercholesterolemia, heart disease, vision problems, neurological problems, poor sexual desire sex, kidney problems. These issues were also found in the study of Shooka Mohammadi et al (2015) in Iran (20). Participants' blood sugar and HbA1C levels were quite high. High levels of HbA1C were also found in Fatma Al-Maskari et al (2013) (19) and Kh. Shafiur Rahaman et al (2017) (23). Kh. Shafiur Rahaman et al (2017) also showed that blood glucose levels were also high, although participants tested their own blood glucose levels at home and in the hospital (23). However, patients in this study did not self-test their blood glucose and HbA1C, most of them checked at government hospitals and a few did not at private clinics. Moreover, the results of this study showed that patients with poor glycemic control have a relatively high rate of hypoglycemia (65.9%).

Similar to research by Lamis R. Karaoui et al (2018) (16), most patients have used oral medications to control the disease. In addition, this result was similar to Alzahrani Salem et al (2018) (22) with high smoking denial rates. Similar results were found in the study of Saruta Saengtupbovorn et al (2014) with the rate of never smokers up to 87.1% (21). In contrast, Lamis R. Karaoui et al. (2018) reported that more than half of smoking patients participated in the study (16). Correspondingly, the drinking rate in this study was low.

### **The knowledge, attitude, practice and health-related quality of life**

Alzahrani Salem et al (2018) reported that diabetics in their study were actually quite knowledgeable (75 points) (22). Similarly, patients in the Saruta Saengtupbovorn et al (2014) study also had a high knowledge score (7.1 scores) (21). Despite this, this study has shown that patients with little knowledge of type 2 diabetes. This result was similar to the research result of Fatma Al-Maskari et al (2013) (19). Besides, the attitude towards the disease of patients in this study (table 2) and Fatma Al-Maskari et al (19) was quite positive. This was in contrast to the two studies of Saruta Saengtupbovorn et al (2014) (21) and Alzahrani Salem et al (2018) (22). Moreover, the research of Alzahrani Salem et al (2018) (22) had a low practical score similar to this one.

The HRQOL of type 2 diabetics in Tam Binh district was still low. This result was seen in the study of M.H. Baghianimoghadam et al (2009) with a quality of life (QOL) score 52.1 (1). Moreover, the study of Shahram Baraz et al (2017) also showed that the QOL of diabetics was low  $59.09 \pm$

10.29 (8). Similar to our study, Shahram Baraz et al (2017) reported that most components of QOL were low (except physical function (63.5) and emotional roles (81.95)) (8).

### **The changes of knowledge, attitude, practice and HRQOL after six months**

The knowledge, attitude and practice

The use of self-management programs in chronic disease was relatively well known, and some of these programs were beginning to show success (24). Indeed, the patient's knowledge, attitude and initial behavior were at a low average level. This was even more evident with diabetes self-care practices that were closely related to patients' knowledge and attitudes. Similar to the study of Fatma Al-Maskari et al (2013), it showed that type 2 diabetics were less knowledgeable and had positive attitudes about the disease but had poor self-care habits (19). This was also evident in the study of Alzahrani Salem et al (2018) with diabetic patients with poor knowledge, positive attitude but poor self-control diabetes practices (22). However, the patient's knowledge, attitude and behavior have improved significantly after 6 months of participating in health education programs.

The health-related quality of life

HRQOL was an issue outcome for T2DM persons and has been used to evaluate the influence of the disease and its treatment on individuals and health care finance (25). Indeed, the questionnaire we built VNQOL to evaluate HRQOL of type 2 diabetes patients includes 9 elements such as general health, activity limitation, physical endurance, diet and eating habits, treatment, symptom burden, financial aspects, emotional/mental health, inter-personal relationship. It has been rated a reliability and validity questionnaire by experts and through pilot research results. The results of the study showed that HRQOL was moderate among patients, while 5 areas such as general health, diet and eating habits, treatment, emotional/mental health, and relationship between individuals with low scores, in addition to the financial aspects to be average and the only physical endurance domain to have high score. However, Fahad S. Al-Shehri (2014) has shown that less than a quarter of diabetics had good QOL, so most diabetics had a ADDQOL negative score which was nearly half of all diabetics to have scores from very bad to extremely bad (25). Meanwhile, research by Anumol Mathew et al (2014) showed that the majority of the subjects (57%) had moderate QOL, followed by good QOL for 38%, followed by very good QOL for 4%, and only 1 % of the subject had poor QOL (26).

In order to control the disease, DM patients must understand the power of medication and diet and be aware of how to modify according to exercise routines. Therefore, self-management diabetes education was an essential element of diabetes care (27). The results show that HRQOL of type 2 diabetic patients has been significantly improved after 6 months of participating in health education program for patients with diabetes. The results showed that HRQOL of type 2 diabetic patients has been significantly improved after 6 months of participating in health education program for patients with diabetes. Moreover, M.H. Baghianimoghadam et al (2009) showed that all dimensions of

SF-20 were significantly improved after health education interventions (1). In addition, Marzieh Kargar Jahromi et al (2015) also showed a clear difference in the QOL between the intervention and control groups and self-control education programs (28).

## Conclusion

Diabetes could affect individual health-related quality of life from pathways associated with weakness and disease progression, lifelong disease requiring lifestyle restrictions and medical therapies that apply side effects and burden of possible treatment. Results showed that some characteristics of patients with type 2 diabetes were closely related to health-related quality of life, knowledge, attitudes and self-control practices of patients. Moreover, the health-related quality of life of these patients was an average level and there has been a significant change after participating in health education programs. At the same time, research shows that the patient's knowledge was low, the attitude toward the disease was moderate and the practice of self-care was low, but these problems have changed markedly after attending health education.

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## Conflicts of interest

None conflicts.

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