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INTRODUCTION

- T2D ranks among the top ten leading causes of mortality, exerting substantial effects on patients' quality of life and imposing a substantial burden on healthcare systems and society at large.
- Vietnam is facing a rapid increase in the prevalence of diabetes, which is similar to other developing countries. The number of individuals with diabetes has significantly risen from 2.5% in 2007 to 6.1% in 2021 (approximately 3.994 million people).
- People with diabetes encounter various challenges in their daily lives, such as engaging in physical activities, and adhering to lifelong medication regimens, while also facing the risk of complications if not well-managed.
- The American Diabetes Association has also emphasized HRQOL as one of the primary treatment goals alongside preventing complications.
- Understanding the predictive factors and identifying risk factors affecting HRQOL is essential for developing comprehensive intervention and treatment strategies for patients with diabetes.

OBJECTIVES

Utilizing Structural Equation Modeling (SEM) to determine the relationships among socio-demographics, health literacy, self-efficacy, self-care activities, and health-related quality of life (HRQOL) in patients with type 2 diabetes (T2D)

METHODS

- HRQOL was evaluated with the EQ-5D-5L questionnaire, which consists of two parts. Part 1 comprises five questions assessing Mobility (MO), Self Care (SC), Usual Activities (UA), Pain/Discomfort (PD), and Anxiety/Depression (AD). Part 2 involves EQ-VAS visual analogue scale, where patients rate their health from 0 (worst) to 100 (best).
- Diabetes self-care activities were assessed using the Summary of Diabetes Self-Care Activities (SDSCA), which measures the frequency of six aspects over the past 7 days: general diet, specific diet, exercise, blood glucose testing, foot care, and smoking. Respondents score their adherence to the self-care activities within the past week, ranging from 0 to 7 days.
- Diabetes management self-efficacy was gauged using The Diabetes Management Self-Efficacy Scale (DMSES), consisting of 20 items across four dimensions: Specific nutrition and Weight control, General nutrition and Medical control, Physical activity, Blood glucose control. Respondents are rated on a 5 point scale ranging from 'can't do at all' to 'certain can do'. DMSES higher scores equate with higher personal expectations of his/her ability to initiate and comply with diabetic self-management.
- Health literacy was evaluated using the Health Literacy Scale, which includes 14 items across Functional health literacy, Communicative health literacy, Critical health literacy. Respondent's options have been changed from a 4-point scale that indicates how often the item happens to them ('never' to 'often').

The SEM analysis utilized the maximum likelihood estimation method to evaluate the goodness of fit of the hypothesized model against multiple criteria, including the chi-square (χ^2) test, goodness-of-fit index (GFI) greater than .90, comparative-fit index (CFI) greater than .90, normed-fit index (NFI) greater than .90, standardized root mean square residual (SRMR) less than .08, and root mean square error of approximation (RMSEA) less than 0.05. The structural relationships among constructs in the final SEM model were examined through regression weights. Variables with a p-value less than 0.05 were excluded from the model. Additionally, standardized regression weights were employed, retaining variables with factor loadings equal to or greater than 0.5.

The statistical analysis of the patient-reported measurements were performed using SPSS software version 20. Additionally, AMOS software version 24 was employed to construct SEM determine the relationships between various factors and HRQOL.

RESULTS

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Figure.1 Structural equation modeling with standardized parameter estimates

CONCLUSION

The study analyzed factors related to the HRQOL of T2D patients at Thong Nhat Hospital through the structural equation modelling. These factors include general characteristics of the patient, pathological characteristics, or behavioral attitudes in lifestyle. There are controllable factors such as physical exercise, diet, weight, and complications. There are effortfully or unalterable factors such as age, gender, education level, marriage, and living situation. Therefore, elderly patients, females, those with low education levels, singles, and lacking support need more attention when implementing T2D management.

		Mobility	Self Care	Usual Activities	Pain/ Discomfort	Anxiety/ Depression
No problem	Level 1	209 (95,9%)	214(98,2%)	213(97,7%)	134(61,5%)	177(81,2%)
Having problem	Level 2	6 (2,8%)	3(1,4%)	4(1,8%)	49(22,5%)	28(12,8%)
	Level 3	1 (0,5%)	0(0,0%)	0(0,0%)	17(7,8%)	11(5,0%)
	Level 4	2 (0,9%)	0(0,0%)	0(0,0%)	15(6,9%)	1(0,5%)
	Level 5	0 (0,0%)	1(0,5%)	1(0,5%)	3(1,4%)	1(0,5%)
	Total	4,1%	1,8%	2,3%	38,5%	18,8%
		Mean (SD)	Median (IQR)	Skewness	Kurtosis	
HRQOL						
VAS		73.92 (12.44)	80	-0.507	0.102	
EQ-5D		0.9218	1.00 (0.084)	-3.094	15.278	
SELF-CARE ACTIVITIES						
Diet	SDSCA_D1	5.53 (2.817)	7.00 (0.00)	-1.448	0.128	
	SDSCA_D2	5.56 (2.791)	7.00 (0.00)	-1.479	0.226	
	SDSCA_D3	2.94 (3.396)	0.00 (7.00)	0.335	-1.869	
	SDSCA_D4	1.79 (2.901)	0.00 (5.00)	1.064	-0.779	
Exercise	SDSCA_E1	4.98 (3.068)	7.00 (7.00)	-0.932	-1.060	
	SDSCA_E2	3.92 (3.380)	7.00 (7.00)	-0.241	-1.907	
Self-monitoring of blood glucose	SDSCA_S1	1.44 (1.139)	1.00 (0.00)	3.054	11.375	
	SDSCA_S2	1.44 (1.139)	1.00 (0.00)	3.054	11.375	
Foot care	SDSCA_F1	2.15 (3.200)	0.00 (7.00)	0.842	-1.281	
	SDSCA_F2	1.72 (2.988)	0.00 (2.00)	1.189	-0.570	
Smoking	SDSCA_S	0.12 (0.330)	0.00 (0.00)	2.300	3.318	
SELF-EFFICACY						
Specific nutrition factor and Weight control factor	DMSES_SN1	3.47 (1.829)	5.00 (4.00)	-0.509	-1.643	
	DMSES_SN2	3.47 (1.829)	5.00 (4.00)	-0.509	-1.643	
	DMSES_SN3	3.47 (1.829)	5.00 (4.00)	-0.509	-1.643	
	DMSES_SN4	3.47 (1.829)	5.00 (4.00)	-0.509	-1.643	
	DMSES_SN5	4.55 (1.168)	5.00 (0.00)	-2.397	4.100	
General nutrition factor and Medical control factor	DMSES_GN1	4.64 (0.941)	5.00 (0.00)	-2.847	7.328	
	DMSES_GN2	3.93 (1.688)	5.00 (3.00)	-1.068	-0.734	
	DMSES_GN3	3.88 (1.749)	5.00 (4.00)	-0.988	-0.966	
	DMSES_GN4	3.61 (1.866)	5.00 (4.00)	-0.654	-1.543	
	DMSES_GN5	3.15 (1.960)	5.00 (4.00)	-0.155	-1.960	
	DMSES_GN6	4.62 (0.953)	5.00 (0.00)	-2.792	7.116	
	DMSES_GN7	4.73 (0.827)	5.00 (0.00)	-3.163	8.983	
	DMSES_GN8	2.52 (1.923)	1.00 (4.00)	0.502	-1.744	
	DMSES_GN9	4.03 (1.678)	5.00 (1.00)	-1.221	-0.459	
Physical activity	DMSES_P1	4.06 (1.673)	5.00 (1.00)	-1.277	-0.341	
	DMSES_P2	1.88 (1.623)	1.00 (0.00)	1.370	-0.072	
	DMSES_P3	3.52 (1.845)	5.00 (4.00)	-0.536	-1.638	
Blood glucose control factor	DMSES_B1	4.32 (1.400)	5.00 (0.00)	-1.780	1.409	
	DMSES_B2	4.31 (1.399)	5.00 (0.00)	-1.773	1.392	
	DMSES_B3	3.78 (1.666)	5.00 (3.00)	-0.864	-1.044	
HEALTH LITERACY						
Functional health literacy	HLS_F1	3.47 (1.108)	4.00 (0.00)	-1.684	0.956	
	HLS_F2	3.41 (1.149)	4.00 (0.00)	-1.510	0.398	
	HLS_F3	3.46 (1.108)	4.00 (0.00)	-1.673	0.930	
	HLS_F4	3.44 (1.131)	4.00 (0.00)	-1.605	0.685	
	HLS_F5	3.46 (1.103)	4.00 (0.00)	-1.650	0.876	
Communicative health literacy	HLS_Co1	2.45 (1.459)	2.00 (3.00)	0.056	-1.961	
	HLS_Co2	2.46 (1.462)	2.00 (3.00)	0.051	-1.965	
	HLS_Co3	2.46 (1.466)	2.00 (3.00)	0.046	-1.970	
	HLS_Co4	2.39 (1.455)	1.00 (3.00)	0.148	-1.941	
	HLS_Co5	2.40 (1.460)	1.00 (3.00)	0.125	-1.952	
Critical health literacy	HLS_Cri1	2.33 (1.469)	1.00 (3.00)	0.223	-1.937	
	HLS_Cri2	2.14 (1.422)	1.00 (3.00)	0.494	-1.720	
	HLS_Cri3	2.23 (1.454)	1.00 (3.00)	0.357	-1.858	
	HLS_Cri4	2.32 (1.462)	1.00 (3.00)	0.233	-1.924	

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