A Cross-sectional Study of Factors Affecting Quality of Life of People with Type 2 Diabetes

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Abstract: Diabetes is a chronic illness that negatively impacts quality of life. However, the quality of life of people with type 2 diabetes could be improved with sufficient literacy and abilities to perform self-management, such as managing blood glucose, maintaining a healthy diet, and proper exercise. This descriptive cross-sectional study aimed to describe the relationships among health literacy, self-management, and quality of life and to determine the predictors of quality of life of people with type 2 diabetes. Data were collected through purposive sampling from 218 individuals with type 2 diabetes in Manado City, Indonesia, between July and October 2021. We used the European Health Literacy Survey Questionnaire, Diabetes Self-management Questionnaire, and Diabetes Quality of Life Questionnaire. Data were analyzed using descriptive statistics, Pearson's product-moment correlation, and hierarchical regression analysis.

The study revealed that health literacy was significantly associated with self-management and quality of life. Furthermore, age, occupation, health literacy, and self-management were significant predictors and collectively explained 25.3% of the variance in quality of life. Hence, higher health literacy and improved self-management practices were linked to a higher quality of life for people with type 2 diabetes. Since the explained variance of quality of life in this study is only 25.3%, further studies should include other factors such as social and family support and communication with health care providers to predict quality of life. Nevertheless, nurses can use this study to design interventions to improve self-care management skills and health literacy levels, which may enhance quality of life. However, testing the effectiveness is needed.

Keywords: Health Literacy, Indonesia, Quality of Life, Self-care, Type 2 Diabetes.

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Introduction

Diabetes mellitus (DM) is a chronic metabolic disease characterized by increased blood glucose (or blood sugar), which causes serious damage to the heart, blood vessels, eyes, kidneys, and nerves.[1] International Diabetes Federation (IDF) shows that

the prevalence of people with DM in 2021 was 537 million people worldwide and is predicted to reach 783 million in 2045.[2] Indonesia is one of the ten countries with the highest number of diabetics in the world, and ranks seventh with 10 million people.[2] Manado City, where this research was carried out, also occupies the seventh position with 3,919 people with diabetes.[3] The Indonesian Ministry of Health states that DM is known as the silent killer because when it is known, life-threatening complications have already occurred. People with DM may experience these complications, which may negatively affect their quality of life, ability to work, disability, or even their death.[4]

Effective management of the challenges faced by individuals with type 2 DM (T2DM) can be achieved through adequate knowledge and the ability to control the disease, with self-care being a crucial aspect. In the case of DM, self-care management includes meal planning, physical exercise, medication taking (insulin or oral hypoglycemic agents), and self-monitoring of blood glucose.[5] However, the success of a chronic disease management program cannot be separated from an individual's ability to acquire and appropriately translate knowledge and information to maintain and improve their health, which is known as health literacy.[6] Limited health literacy poses a significant barrier to self-care behaviors among individuals with chronic diseases, consequently impacting their active participation in managing their care.[7]

A study revealed that patients with DM exhibited a persistently low level of health literacy.[8] Specifically, the findings indicated low levels in functional, communicative, and critical health literacy domains. Low health literacy levels also may lead to inadequate decision-making processes related to health management.[9] Low health literacy levels result in individuals being unable to effectively interpret health information and manage their health care, which leads to increased hospitalization rates and the development of more diseases.[10] Inadequate health literacy level and low self-management can lead to poor quality of life, such as decreased physical function, psychological disorders, and decreased quality of social relationships and the environment for people with diabetes. A decline in quality of life is linked to both the disregard for self-care and the potential incapacity of the patient to engage in self-care.[11]

Quality of life (QoL) encompasses an individual's subjective evaluation of their present situation, considering their cultural and value system while aligning with personal goals, expectations, standards, and priorities.[12] An Iranian study[13] provided evidence that self-care behaviors, specifically nutrition or diet and glycemic control, played a vital role in predicting the QoL of people with DM. Another research study further reinforced this finding,[14] indicating that enhanced self-management among people with T2DM correlated with an improved QoL.

Health literacy is a relatively new concept in health promotion research. Research and publications on health literacy in Indonesia are still rare. Few studies showed that the level of health literacy was still low.[8,15,16] To improve the QoL of people with DM, this study aimed to determine the impact of health literacy, self-management, and other demographic data on the QoL of people with DM.

Conceptual Framework and Review of Literature

Health literacy, self-management, the QoL concept, and knowledge from related literature guided this study. Health literacy is one domain in a conceptual model of health promotion[17] developed by the National Library of Medicine. Health literacy pertains to an individual's ability to acquire, analyze, and comprehend fundamental health information and resources for making informed health-related choices.[18] It encompasses the cognitive and social skills determining a person's motivation and ability to access, understand, and use information to promote and maintain good health. Several factors contributing to health literacy can directly impact an individual's level of health literacy:

education, socio-economic status, language and culture, age, and health.[19] Health literacy is integral to the proper handling of chronic conditions.[20] Lack of health literacy may cause difficulty understanding health information, struggle to follow treatment plans and medication schedules or adopt healthy lifestyle behaviors. This lack of literacy can result in poor health status, poor disease management, higher hospitalization rates,[21] and poor QoL For individuals with diabetes, a chronic disease requiring daily self-management, it is critical to assess limited literacy and numeracy skills and tailor interventions accordingly. Conversely, individuals with good health literacy are more likely to engage in effective self-management practices, such as medication adherence, blood glucose monitoring, and maintaining a healthy lifestyle.[22] Consequently, health literacy facilitates self-management, resulting in improved health outcomes.[23] Although health literacy has been associated with many health behaviors, evidence from people with diabetes remains scarce. A study among people with DM revealed that a health education program increased self-care, including diet, glucose management, and foot care, especially in those with low health literacy.[24] Possibly, this may be linked to the baseline status of diabetes education since a greater number of patients in the limited literacy group had previously been educated about diabetes. The findings implied that education increased health literacy, which could result in self-management behaviors.

Self-management, a core concept in nursing research, refers to the tasks that individuals must undertake to live with one or more chronic conditions, encompassing the confidence to handle medical management, role management, and emotional management of their conditions.[25] Factors that contribute to self-management in chronic disease can include various aspects: knowledge, self-efficacy, and other contributing factors include support from healthcare professionals, access to resources and tools, such as educational materials and technologies, social support from family and friends, and having a proactive mindset.[26] Diabetes self-care centers on various aspects, including adopting a nutritious diet, engaging in regular physical activity, quitting tobacco smoking, managing weight, adhering to medication regimens, monitoring blood glucose levels, checking blood pressure and foot health, and scheduling regular screenings for eye and kidney complications.[2] Self-management strategies empower individuals to take an active role in their healthcare, improve their health, and prevent complications. Consequences of effective self-management can be positive and can lead to better health outcomes, including improvement in self-management behavior and QoL.[27]

According to the WHO, QoL refers to an individual's overall well-being and satisfaction in various aspects of their life.[12] Understanding and assessing QoL in chronic disease is important to provide holistic care and support to patients, as it goes beyond medical management. QoL assessments enable healthcare professionals to evaluate the impact of the disease on an individual's day-to-day life, identify areas of concern, and develop interventions to improve their overall well-being. Several factors contribute to the QoL specifically in people with diabetes. Previous studies identified variables such as diabetes self-management and the presence of diabetes complications as significant determinants of QoL.[28]

A study involving health literacy and self-care behavior on QoL among Iranians with T2DM indicated that lower health literacy and self-care behaviors were associated with worse QoL.[29] Health literacy and self-management are important predictors of health outcomes, such as QoL, indicating a positive finding that effective self-management is pivotal in understanding the link between health literacy and QoL. However, studies examining the association between health literacy, self-management, and QoL among people with diabetes in Indonesia remain limited.

Aim

This study aimed to describe the relationships among health literacy, self-management, and QoL and to determine the predictors of QoL among people with T2DM.

Methods

Design

We conducted a descriptive cross-sectional study. This report follows the STROBE statement as the standard for reporting observational studies.

Sample and Setting: A total sample of 196 participants was required based on the G*Power 3.1 software package.[30] The sample was increased to 218 to account for dropouts. This study was conducted at seven health centers and two clinics in Manado City, the capital of North Sulawesi, Indonesia. Manado City is situated on the northern tip of Sulawesi Island and is known for its unique blend of cultural, geographic, and climatic characteristics.

Participants with T2DM interested in participating in this study were recruited using purposive and snowball sampling to access the participants during the COVID-19 pandemic conveniently. Inclusion criteria were people living with T2DM, aged over 18 years, under treatment for diabetes (oral medication or insulin injection), and willing to participate. Exclusion criteria were people with type 1 DM (T1DM) and those who experienced deafness and illiteracy.

Ethical Considerations: This study adhered to the Declaration of Helsinki's principles and received approval from the Institutional Review Board at St. Luke's International University, Tokyo, Japan (approval number 21-A002) and by the Governmental District Health Office (approval number SDK-LIT/VII/2021), health centers and clinics of Manado City, Indonesia. Participation in the research was voluntary. Important information related to this research was provided to each participant. All data were handled by the researchers so that the participants could not be identified. Data were only used in this study, not for other purposes. Participants could withdraw from the study at any time. Refusal to participate in this study would not result in any penalty or loss of benefits.

Instruments: Four instruments were used in this study as follows:

The Demographic Questionnaire, developed by the researchers, included gender, age, religion, marital status, occupation, level of education, monthly income, and length of illness.

Health literacy was measured using the *European Health Literacy Survey Questionnaire* (HLS-EU-Q16), consisting of 16 items with four response options: (1) very difficult, (2) fairly difficult, (3) fairly easy, (4) very easy. One of the questionnaire's items specifically inquired about the ease of finding information; "On a scale from very easy to very difficult, how easy would you say it is to find information on treatments of illnesses that concern you?" The questionnaire was sourced from the Asian Health Literacy Association (AHLA) Indonesia as the official license holder of the questionnaire, and we used the Indonesian version by Nurjanah and Rachmani.[31] In the reliability test, this measurement achieved item correlations between 0.490 and 0.886, a Cronbach's alpha of 0.947,[15] and a Cronbach's alpha of 0.918 in the current study. The assessment was calculated by adding up the total score obtained and was included in the category of health literacy. The score ranges from 16-64, with a higher score indicating higher health literacy.[31]

Self-management was measured using the *Diabetes Self-management Questionnaire* (DSMQ), developed by Diabetes Academy Mergentheim,[32] which consists of 16 items with four sub-components: blood glucose (5 items), dietary (4 items), physical activity (3 items), healthcare facility use (3 items), and one item that summarizes the overall self-management scale contained in the last question. In a previous study,[15] the translation procedure was carried out with the original instrument being translated into Indonesian. This process involved three licensed translators, one of whom specialized in nursing, working to translate the original content. Subsequently, a synthesis process was undertaken by one translator to ensure clarity and comprehensibility in the translated version. To assess the fidelity of the translation, the translated questionnaire

was back-translated into English by a native speaker, allowing a comparison with the original questionnaire. Data from this questionnaire were treated as continuous data. Each item is rated on a 4-point scale, where (4) applies very much, (3) applies to a considerable degree, (2) applies to some degree, and (1) does not apply. One of the questionnaire items specifically assessed one's ability to maintain ideal blood glucose levels; "The food I choose to eat makes it easy to achieve optimal blood sugar levels." The score ranges from 16-64, with a higher score indicating higher self-management.[15] The reliability of this measurement achieved item correlations between 0.349 and 0.661, a Cronbach's alpha of 0.789 in a previous study,[15] and a Cronbach's alpha of 0.459 in the current study.

Diabetes Quality of Life (DQoL), developed by Burroughs et al.,[33] was used to measure QoL. Purwansyah[34] modified this instrument into 12 items, which are divided into two scales. First, perceived satisfaction about the disease and treatment (7 items), with five response options: (5) very satisfied, (4) moderately satisfied, (3) neither, (2) moderately dissatisfied, and (1) very dissatisfied. Second, the impact it had as perceived by the patient as a result of the disease (5 items), with five response options: (5) never, (4) very seldom, (3) sometimes, (2) often, and (1) all the time. This questionnaire has been translated into Indonesian, tested for reliability, and achieved item correlations between 0.134 and 0.564 and a Cronbach's alpha of 0.676 in a previous study,[35] and a Cronbach's alpha of 0.810 in the current study. The score ranges from 12-60, with a higher score indicating higher QoL.

Data Collection: People with T2DM who came for check-ups or treatment at health centers where the study was conducted and met the eligibility criteria were approached by nurses, research assistants, or staff working at each health center. After obtaining the informed consent, a set of questionnaires were distributed to the participants. They were required to complete all the survey questionnaires, which took approximately

15 minutes. The staff was present to assist the participants while they completed, ensuring that no questions were skipped without any form of pressure.

Data Analysis: Statistical analysis was completed using IBM SPSS version 28 for Mac OS. Continuous variables were analyzed using a t-test, while categorical variables were examined using the chi-square test. For bivariate analysis, Pearson's product-moment correlation was run to assess the strength and direction of the correlation between health literacy, self-management, and QoL. Correlation coefficients (r) between 0.10 and 0.29, 0.30 and 0.49, and 0.50 and 1.0 indicate small, moderate, and large strengths of association, respectively. Finally, a hierarchical regression model was used to determine the factors predicting QoL. The demographic variables that may confound the results were entered first, followed by health literacy and diabetes self-management. The significance level was determined at a p-value of less than 0.05, and the results were shown with 95% confidence intervals (CI).

Results

Demographic data

In this study, 218 individuals were included. Most participants were women aged below 60, with an average age of 59.4 years. Most participants were married, approximately three-quarters identified as Christian, and had completed at least senior high school or pursued higher education at a university or college. Most were unemployed, and more than half earned less than 2.8 million rupiahs per month (USD 195.27). The mean duration (±SD) of having DM was 6.61±5.43 years, with a higher number of those having DM for more than five years. The study also revealed the following mean scores: health literacy at 53.62±6.32, self-management at 43.17±3.86, and QoL at 46.86±6.05 (**Table 1**).

Table 1. Demographic characteristics of people with T2DM (n = 218)

Characteristics	n (%)	Mean ± SD
Gender		
Female	132 (60.6)	
Male	86 (39.4)	
Age (in years)		59.40 ± 9.85
< 60	114 (52.3)	
≥ 60	104 (47.7)	
Marital Status		
Married	199 (91.3)	
Unmarried	19 (8.7)	
Religion		
Christian	166 (76.1)	
Non-Christian	52 (23.9)	
Education		
Senior high to college	159 (72.9)	
Elementary to junior high	59 (27.1)	
Occupation		
Unemployed	137 (62.8)	
Employed	81 (37.2)	
Monthly Income (million rupiahs)[a]		
< 2.8 (< 200 USD)	118 (54.1)	
≥ 2.8 (≥ 200 USD)	100 (45.9)	
Length of illness (years)		6.61 ± 5.43
≥ 5	95 (43.6)	
4 – 5	60 (27.5)	
1 – 3	63 (28.9)	
Health literacy		53.62 ± 6.32
Self-management		43.17 ± 3.86
Quality of life		46.86 ± 6.05

Note. SD = Standard deviation, USD = United States dollar

a cut-off point based on standard salary of Indonesia

Bivariate Correlations

Table 2 shows the bivariate correlations between demographic variables, health literacy, diabetes self-management (DSM), and QoL. A significant and positive association with QoL was found in two variables, including health literacy and DSM. One variable, monthly income, was significantly and negatively associated with QoL. Although a weak correlation existed between health literacy and self-management, the association between the two variables remained statistically significant.

Table 2. Bivariate correlations between health literacy, self-care management, and QoL

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Gender (1= female, 2 = male)	1.00										
2. Age	-0.092	1.00									
3. Marital status (1= married, 2=unmarried)	0.174*	0.200**	1.00								
4. Religion (1 = Christian, 2 = others)	-0.068	-0.027	0.078	1.00							
5. Education (1 = elementary-junior high, 2=senior high-college)	-0.173*	-0.277**	-0.101	0.076	1.00						
6. Occupation (1= employed, 2 = unemployed)	-0.345**	0.355**	-0.038	-0.069	-0.207**	1.00					
7. Monthly income (1= less than 2.8 million rupiah, 2= more than 2.8 million rupiah)	-0.274**	-0.0250**	-0.047	0.143*	0.486**	-0.223**	1.00				
8. Length of illness	-0.098	0.206**	0.168*	0.323**	0.128	0.081	0.083	1.00			
9. Health literacy	-0.044	-0.147**	-0.168*	0.004	0.086	0.026	0.040	0.020	1.00		
10. DSM	-0.007	-0.033	-0.002	0.031	-0.064	-0.046	-0.032	-0.044	0.238***	1.00	
11. QoL	0.026	-0.109	-0.040	0.049	-0.096	0.128	-0.161*	-0.038	0.534**	0.327***	1.00

Note. DSM = Diabetes self-management; QoL = Quality of life

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Predictors of QoL

Table 3 shows the predictors of QoL. In the first model, potential confounders, including gender, age, religion, marital status, occupation, education, monthly income, and length of illness, were included. This set of variables could explain 11.3% of the variance in QoL. In the second model, health literacy was introduced and found to be a significant predictor of changes ($p < .001$), albeit accounting for only a 6% variation in QoL. Following this, the third model was constructed by incorporating the DSM score. This inclusion contributed to a cumulative explanation of 8% of the variability. Within this model, DSM was shown as a significant predictor of QoL. All variables included in the regression model collectively explained a substantial portion, specifically 25.3% of the variation observed in the QoL of people with T2DM.

Table 3. Hierarchical regression of predictors of QoL

Model	Predictor	Unstandardized B	95% CI (Lower-Upper)		t	p-value
1	(Constant)	52.758	46.179	59.337	15.81	<.001
	Sex	-0.667	-2.383	1.050	-0.766	0.445
	Age	-0.125	-0.216	-0.034	-2.709	0.007
	Religion	1.929	0.039	3.819	2.012	0.045
	Marital status	0.042	-2.846	2.931	0.029	0.977
	Occupation	3.764	1.340	6.187	3.061	0.002
	Education	-0.26	-2.291	1.770	-0.253	0.801

Table 3. Hierarchical regression of predictors of QoL (Cont.)

Model	Predictor	Unstandardized B	95% CI (Lower–Upper)		t	p-value
	Monthly income	−0.333	−2.695	2.030	−0.277	0.782
	Length of illness	0.001	−0.156	0.158	0.013	0.989
R= 0.336, R^2 = 0.113, R^2 adjusted = 0.079, Std. error = 5.809, R^2 change = 0.113, Sig. F change = 0.001						
2	(Constant)	53.075	46.706	59.443	16.43	<.001
	Sex	−0.55	−2.212	1.112	−0.652	0.515
	Age	−0.127	−0.215	−0.038	−2.829	0.005
	Religion	1.926	0.097	3.755	2.076	0.039
	Marital	0.838	−1.986	3.662	0.585	0.559
	Occupation	3.994	1.646	6.343	3.353	<.001
	Education	0.172	−1.805	2.149	0.171	0.864
	Monthly income	−0.464	−2.752	1.824	−0.4	0.69
	Length of illness	−0.009	−0.161	0.142	−0.122	0.903
	Health literacy	−4.404	−6.632	−2.176	−3.896	<.001
R = 0.416, R^2 = 0.173, R^2 adjusted = 0.138, Std. error = 5.621, R^2 change = 0.06, Sig. F change = <.001						
3	(Constant)	33.070	22.721	43.420	6.300	<.001
	Sex	−0.418	−2.003	1.166	−0.520	0.603
	Age	−0.115	−0.199	−0.030	−2.685	0.008
	Religion	1.706	−0.039	3.451	1.927	0.055
	Marital status	0.710	−1.981	3.402	0.520	0.603
	Occupation	3.739	1.499	5.979	3.291	0.001
	Education	−0.199	−2.089	1.692	−0.207	0.836
	Monthly income	−0.537	−2.717	1.643	−0.485	0.628
	Length of illness	0.002	−0.143	0.147	0.027	0.979
	Health literacy	−4.028	−6.157	−1.899	−3.730	<.001
	DSM	0.447	0.260	0.635	4.704	<.001
R = 0.503, R^2 = 0.253, R^2 adjusted = 0.217, Std. error = 5.356, R^2 change = 0.08, Sig. F change = <.001						

Note. DSM = Diabetes self-management, CI = Confidence interval

Discussion

To our knowledge, this is the first study that reported the association between health literacy, self-management, and QoL among patients with T2DM in Indonesia. In this study, health literacy among individuals with T2DM was notably high; however, self-management levels were relatively low. The QoL was found to be relatively high. This finding aligns with a previous study,[34] that utilized the same instrument and revealed a high QoL among individuals with T2DM. This observation could be attributed to the high health literacy levels exhibited by the participants, thereby aligning with the underpinning conceptual framework. The results regarding monthly income showed a significant negative association with QoL. This finding means there is

a slight tendency for people with higher incomes to report slightly lower QoL, and this relationship is statistically significant. Analyzing participant characteristics, we observed that more participants earned less than 2.8 million rupiahs per month (approximately 200 USD) compared to those earning above this threshold. Our study exclusively assessed individual income, possibly overlooking additional family members' contributions. Even when participants earned above the standard, their income might be the sole source for the family, making it impossible to assess the family's socio-economic status. Despite its association with QoL, this variable could not predict it.

The findings also indicated that health literacy had a significant association with self-management. Health literacy is said to increase health knowledge and help individuals/communities in making the right decisions about their health.[18] Individuals who possess a strong grasp of prescription labels can interpret blood glucose readings and medication dosages, calculate carbohydrate intake, follow post-treatment care instructions, utilize healthcare resources, and extract or evaluate health information are more prone to have confidence in their capability to engage in successful health-related actions related to diabetes.[36]

Adequate health literacy had a significantly great association with QoL. This finding is supported by previous studies'[37] which found that inadequate health literacy was independently associated with lower and worsening QoL. The assessment of health literacy is carried out by looking at a person's ability to seek, understand, and evaluate health information and whether it can be trusted. Additionally, health literacy encompasses the capability to follow healthcare providers' instructions diligently and to safeguard one's well-being by using information from media sources to prevent illnesses. Moreover, health literacy impacts a person's motivation to perform health care, affecting the QoL.

Furthermore, we found that overall self-management had a moderate and significant association with QoL. A study conducted in Iran,[29] found that reduced health literacy and self-management were linked to a decline in QoL, explaining an additional 13.6% variation in QoL.

In terms of QoL predictors, our study found that age, occupation, health literacy, and DSM collectively explained 25.3% of the variance in QoL in people with T2DM. Our study demonstrated that age is one of the predictors of QoL. As individuals get older, their QoL tends to decrease. Occupation is also one of the predictors of QoL of people with T2DM. These findings are supported by a previous study,[38] stating that age and employment status were related to QoL.

Regarding health literacy, the finding aligns with the conceptual framework of this study, which is that individuals with adequate health literacy are capable of improving and maintaining their health with self-management. Although health literacy only accounted for 6% of the variance in QoL after controlling for the contribution of demographic variables, our findings are consistent with previous studies,[39] which have concluded that health literacy is a significant predictor of QoL and adequate health literacy plays a vital role in improving patients' QoL. Based on these results, interventions should be targeted toward improving health literacy among people with T2DM to improve health outcomes.

Furthermore, our findings indicate that better self-management is associated with higher QoL, as outlined in the conceptual framework in this study. The inclusion of DSM explained 8% of the variance in QoL. Our findings are supported by a previous study on people with diabetes, indicating the impact of self-management on health-related QoL.[40] The current study found that diabetes self-management significantly predicted the QoL. While our study revealed a tendency towards low self-management levels, this observation can be attributed to various influencing factors, including psychosocial elements.[41] Participants may face psychological barriers such as lack of motivation, self-efficacy, or emotional challenges that hinder their ability to engage in self-management practices. Investigating the specific barriers to self-management

for this group of participants may require further research into the psychological and social factors influencing their self-management practices. Identifying these barriers can inform interventions and support strategies to enhance self-management and improve the overall QoL for individuals with T2DM. In addition, it is worth noting that the reliability score in the current study is lower than in a prior study.[15] This difference can be attributed to various factors, which may impact the perception of self-management among individuals living with diabetes. Low reliability in an instrument signifies its inconsistency in capturing consistent data across multiple assessments. Within the domain of diabetes self-management, such inconsistency could result in erratic and untrustworthy feedback concerning one's self-management practices, possibly leading to confusion and a loss of confidence. Furthermore, it is important to underscore that this study boasts a larger sample size. It is essential to recognize that an increased sample size can exert an influence on reliability. Specifically, a larger sample size may introduce heightened response variability, potentially affecting internal consistency.

Limitations

This study has the following limitations. First, enhancing the generalizability to a broader context could have been achieved by enlisting participants from hospitals within Manado City. However, due to the impact of COVID-19, hospitals suspended all research endeavors conducted by the research team from various institutions. Consequently, the sampling strategy had to be adjusted to encompass health centers and clinics while employing snowball technique to augment the pool of eligible participants. Second, one of the instruments used, the DSMQ, possessed a low reliability score due to the scarcity of relevant research conducting reliability assessments. Third, since this study used a cross-sectional design, it was impossible to infer a causal relationship between health literacy, self-management, and QoL.

Conclusions and Implications for Nursing Practice

This study showed a significant association between health literacy, self-management, and QoL in patients with T2DM in Manado City, Indonesia. Higher health literacy and improved self-management were associated with a higher QoL of patients with T2DM. Health workers, including nurses, are expected to play an active role in providing health education, especially to patients with low literacy, on how to keep blood sugar levels stable by doing physical activity, controlling diet, and using other health facilities. Since the explained variance of QoL in this study is only 25.3%, further study should include other factors, such as social and family support and communication with health care providers, to predict QoL. Nevertheless, nurses can use our findings to design interventions and strategies to increase health literacy and empower individuals to effectively manage their health in chronic conditions such as T2DM to have better QoL.

Acknowledgements

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การศึกษาภาคตัดขวางของปัจจัยที่ส่งผลต่อคุณภาพชีวิตของผู้ที่เป็นเบาหวานชนิดที่ 2

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บทคัดย่อ: โรคเบาหวานเป็นโรคเรื้อรังที่ส่งผลทางลบต่อคุณภาพชีวิต อย่างไรก็ตาม คุณภาพชีวิต
ของผู้ที่เป็นเบาหวานชนิดที่ 2 สามารถดีขึ้นได้ด้วยการมีความรอบรู้และความสามารถในการจัดการตนเอง
ที่เพียงพอ เช่น การจัดการระดับน้ำตาลในเลือด การรับประทานอาหารที่ส่งเสริมสุขภาพ และการ
ออกกำลังกายที่เหมาะสม การศึกษาเชิงพรรณนาภาคตัดขวางนี้ มีวัตถุประสงค์เพื่ออธิบายความสัมพันธ์
ระหว่างความรอบรู้ด้านสุขภาพ การจัดการตนเอง และคุณภาพชีวิต และเพื่อศึกษาปัจจัยทำนายคุณภาพชีวิต
ของผู้ที่เป็นเบาหวานชนิดที่ 2 เก็บรวบรวมข้อมูลโดยการสุ่มตัวอย่างแบบเจาะจงจากผู้ที่เป็นเบาหวาน
ชนิดที่ 2 จำนวน 218 รายในเมืองมานาโด ประเทศอินโดนีเซีย ระหว่างเดือนกรกฎาคมถึงตุลาคม พ.ศ. 2564
ผู้วิจัยใช้แบบสำรวจความรอบรู้ด้านสุขภาพของยุโรป แบบสอบถามการจัดการตนเองในโรคเบาหวาน
และแบบสอบถามคุณภาพชีวิตของผู้ที่เป็นโรคเบาหวาน วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา สถิติ
สหสัมพันธ์แบบเพียร์สัน และการวิเคราะห์การถดถอยแบบลำดับชั้น

การศึกษาพบว่าความรอบรู้ด้านสุขภาพมีความสัมพันธ์กับการจัดการตนเองและคุณภาพชีวิต
อย่างมีนัยสำคัญ นอกจากนี้ อายุ อาชีพ ความรอบรู้ด้านสุขภาพ และการจัดการตนเอง เป็นตัวทำนาย
ที่มีนัยสำคัญ และร่วมอธิบายความแปรปรวนของคุณภาพชีวิตได้ร้อยละ 25.3 ดังนั้น ความรอบรู้ด้าน
สุขภาพที่มากและการจัดการตนเองที่ดีมีความสัมพันธ์กับคุณภาพชีวิตที่ดีของผู้ที่เป็นเบาหวานชนิดที่ 2
แต่เนื่องจากตัวแปรในการศึกษาครั้งนี้อธิบายความแปรปรวนของคุณภาพชีวิตเพียงร้อยละ 25.3 ใน
การศึกษาครั้งต่อไปควรมีการเพิ่มเติมปัจจัยอื่นๆ เช่น การสนับสนุนทางสังคม การสนับสนุนจากครอบครัว
และการสื่อสารกับผู้ให้บริการด้านสุขภาพในการทำนายคุณภาพชีวิต พยาบาลสามารถใช้การศึกษานี้
เป็นข้อมูลในการออกแบบแนวทางการดูแลเพื่อพัฒนาทักษะการจัดการดูแลตนเองและระดับความรอบรู้
ด้านสุขภาพ ซึ่งอาจช่วยส่งเสริมคุณภาพชีวิตได้ อย่างไรก็ตาม การทดสอบประสิทธิผลยังเป็นสิ่งจำเป็น
ก่อนนำไปใช้

คำสำคัญ: ความรอบรู้ด้านสุขภาพ อินโดนีเซีย คุณภาพชีวิต การดูแลตนเอง เบาหวานชนิดที่ 2

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