Correlation between self-efficacy and health status of Type 2 Diabetes Mellitus patients in primary health care

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Abstract

The health status of Type 2 Diabetes Mellitus (T2DM) patients is observed to decrease simultaneously along with the length of time. Despite the various treatment management offered in primary care, a decrease in health status is also observed among patients in Indonesia as shown by the low self-care ability. Therefore, this research aimed to analyze the relationship between self-efficacy and the health status of patients in primary care in Indonesia to provide evidence for the development of care management interventions for T2DM patients. The research used a descriptive analytical method with a cross-sectional design, including 327 T2DM patients in primary health care selected through cluster random sampling. Data collection used the Indonesian version of the Diabetes Management Self-Efficacy Scale (DMSES) and Short Form 12 (SF-12) questionnaires which had been tested for validity and reliability. The data obtained were analyzed using the Pearson Product Moment test with a significance value of 0.01. The results obtained an r-value of 0.485 with a p-value of 0.00, showing a significant relationship between self-efficacy and health status in T2DM patients (0.00<0.01; CI 99%). In conclusion, this study highlights a significant correlation between self-efficacy and the health status of individuals diagnosed with T2DM. The findings emphasize the pivotal role of self-efficacy in shaping the health outcomes of patients with T2DM.

Introduction

Type 2 Diabetes Mellitus (T2DM) is a non-communicable disease (NCD with the second largest prevalence in the world after heart disease, significantly affecting public health.[1] The International Diabetes Federation (IDF) estimates that 425 million people suffered from diabetes worldwide in 2017, with a projected increase to 627 million in 2045.[2] In 2021, the IDF stated that Indonesia was in 5th position with 19.47 million patients at a prevalence rate of 10.6%.[3] The results of the 2018 Riskesdas showed that the prevalence of diabetes patients aged ≥ 15 years was 2%, indicating an increase compared to the 2013 Riskesdas of 1.5.[4] However, the prevalence of diabetes mellitus (DM) based on blood sugar examination results increased from 6.9% in 2013 to 8.5% in 2018, showing that only 25% of patients are aware of their condition.[1]

Generally, T2DM is a chronic disease that requires long-term care due to the effect of reducing the quality of life,[5] including physical and mental health status.[6] Long-term physical impacts include fluctuating blood sugar levels,[7] fatigue and helplessness,[8] weight loss,[9] diabetic retinopathy, nephropathy, and neuropathy.[10] Furthermore, the risk of complications that are often experienced is the occurrence of diabetic ulcers and amputation.[11] Recent research conducted in 2018 showed that the most chronic complications in T2DM patients were microvascular complications (57%), diabetic neuropathy (45.6%), diabetic nephropathy (33.7%), and diabetic retinopathy. Other long-term impacts on mental health status include anxiety, anger, grief, shame, guilt, loss of hope, depression, loneliness, and helplessness.[12-14]

Health status is the dynamic state of a person's health in the healthy-ill range, influenced by various factors such as development, socio-cultural, past experiences, expectations, heredity, environment, and services.[15] Moreover, the health status of T2DM patients requires measurement, serving as the main objective in treating chronic and incurable diseases. The results of previous research showed that health status of T2DM patients was less than optimal, where 58% had HbA1c >7.0, 45% had BMI >30, 28% experienced microalbuminuria, 8% had clinical proteinuria. and 42% were rated fair or poor.[16] Health status is an indicator describing the patient's adherence to care and high self-efficacy to stay healthy, supported by family and health services. Furthermore, positive perceptions of patients' self-efficacy can improve self-management and quality of life.[17] Self-efficacy in patients with T2DM is essential, serving as the strongest predictor of behavioral change in self-management.[18]

Previous studies have indicated that various factors play a role in the health status of patients with Type 2 Diabetes Mellitus (T2DM), including their knowledge about diabetes, psychological insulin resistance, support from family members, self-care behaviours, and haemoglobin A1c levels.[19] Notably, self-efficacy in managing diabetes has been recognized as a significant indirect influencer of health status.[20] Subsequent research has underscored the substantial impact of self-efficacy as a predictor of diabetic patients' adherence to self-monitoring of blood glucose levels and dietary control.[21] Despite these findings, there remains a research gap concerning the specific association between self-efficacy and

Significance for public health

This research offers a novel perspective on managing patients with type 2 diabetes by emphasizing self-efficacy. The analysis focuses on patients' understanding of their condition and ability to find solutions to health problems, aiming to enhance health status. Patients self-efficacy plays a crucial role in facilitating resilience in chronic disease care, contributing to the improvement of health outcomes in society

the health status of T2DM patients in primary healthcare settings, such as "Puskesmas" in Indonesia. This study aims to fill this gap by investigating the correlation between self-efficacy and health status among T2DM patients in primary healthcare facilities (Puskesmas) in Indonesia. The insights we anticipate uncovering have the potential to significantly impact the practice of nurses and healthcare professionals in these settings, empowering them to better identify and utilize self-efficacy as a predictive factor for the health status of T2DM patients. This research is a crucial step towards enhancing the effectiveness of interventions in primary healthcare settings.

Materials and Methods

This research used an analytical observational method with a cross-sectional design, including the concurrent measurement and observation of data to determine the relationship between self-efficacy and health status of T2DM patients. The population included T2DM patients who had been diagnosed by doctors in primary health care in the Malang City area. The sample size was calculated using the Slovin formula and obtained 327 patients. The inclusion criteria were patients only suffering from T2DM, participants of "prolanis" program (health program activities for managing chronic diseases), ability to read, and independence. Meanwhile, the exclusion criteria were patients who had cataracts, disabilities, and three consecutive absences attended Prolanis activities.

The data were collected using cluster random sampling of 16 primary health care in Malang City. Initially, the number of samples for each primary health care was determined by calculating the proportion based on T2DM patients who participated in Prolanis program. Data were collected using the Diabetes Management Self-Efficacy Scale (DMSES) and Short Form 12 (SF-12) questionnaires. The original version of the DMSES was a self-administered scale containing 20 items, assessing respondents' confidence in managing their blood sugar, diet, treatment, foot care, and level of exercise. Responses were rated on a 5-point scale ranging from ''can not do at all'' to ''certain can do'' (1, 5), with higher scores indicating greater self-efficacy in performing DSMES activities. The SF-12 served as a general health questionnaire consisting of 12 questions that investigate patients health status through 8 different dimensions. These include general health perception, physical health, limited physical role function, physical pain, vitality, mental health, limited emotional role function, and social functioning, where a higher score correlates with improved health status. Both instruments were tested for validity and reliability before application, with r arithmetic value of 0.46 – 0.89 (> 0.44) and a Cronbach Alpha coefficient of 0.832 > 0.600 for DMSES, and a r arithmetic of 0.466 – 0.721 (> 0.44) and a Cronbach Alpha coefficient of 0.909 > 0.600 for SF-12. Subsequently, data analysis was carried out using the Pearson Product Moment with a 99% confidence interval (CI; 99%). The respondents were given informed consent before participating and ethical approval was received from the Health Ethic Committee, Faculty of Medicine, Brawijaya University with clearance number 06/EC/KEPK/01/2020.

Results and Discussion

Table 1 shows that 207 (63.3%) of T2DM patients were aged between 45-65 years, 317 (96.9%) were Muslim, female 263 (80.4%) , 169 (51.7%) graduated from elementary school/equivalent, 225 (68.8%) did not work, 159 (48.6%) suffered from 1-5 years, and 284 (86.9%) had a last blood sugar result exceeding 125 mg/dL. The results presented in Table 2 showed that in the self-efficacy component in managing diabetes diet, the majority of (59%) patients are in the high category. In managing the sports component, the proportion between the high and low categories is 49% and 51%, respectively. Meanwhile, in managing blood glucose, 77% of respondents were in the high category. Approximately 64% of respondents were in the high category in treatment management, while 68% in managing foot care were in the high category. Table 3 shows that there are 8 dimensions in the health status variable. Based on the results, 182 (55.7%) respondents were in the well category regarding general health perception, while physical health dimensions in the well category had 310 (94.8%) respondents. In limited physical role function, 279 (85.3%) respondents were in the well category, while the physical pain dimensions had 296 (90.5%), limited emotional role function had 301 (92%), vitality had 230 (70.3%), and social function was well with 321 (98.2%) respondents. Table 4 shows that T2DM patients with high self-efficacy were 212 (65%), while 115 (35%) were in the low category and 297 (90.8%) had good health status. Based on Table 5, the results of an analysis of 327 respondents showed a 99% confidence interval (CI; 99%), a p-value of 0.000, and a correlation r-value of 0.485. This showed a fairly strong relationship between self-efficacy and the health status of T2DM patients.

Table 1. Distribution of sociodemographic respondents.

Sociodemography	Frequency (f)	Percentage (%)
Age		
<45 Years old	7	2.1
45-65 Years old	207	63.3
>65 Years old	113	34.6
Religion		
Islam	317	96.9
Christian	7	2.1
Catholic	3	0.9
Gender		
Male	64	19.6
Female	263	80.4
Education		
No School	2	0.6
Elementary school	169	51.7
Middle school	76	23.2
High school	65	19.9
Undergraduate	15	4.6
Occupation		
Not employed	225	68.8
Labor	3	0.9
Civil servants	3	0.9
Army	1	0.3
Entrepreneur	95	29.1
Older suffer (years)		
<1 Tahun	36	11
1-5 Tahun	159	48.6
>5 Tahun	132	40.4
The last result of blood glucose (mg/dL)		
80-109 mg/dL	9	2.8
110-125 mg/dL	34	10.4
>125 mg/dL	284	86.9

The results showed that T2DM patients had high levels of self-efficacy, as evidenced by the ability to maintain blood sugar within the normal range, adhere to medication schedules, proactively prevent foot injuries, and promptly seek healthcare services. Generally, patients with chronic disease require strong self-efficacy to navigate the uncertainties associated with health concerns. This is because self-efficacy plays a crucial role in enabling T2DM patients to manage and control blood sugar levels through regular monitoring, consistent adherence to prescribed medications as advised by healthcare professionals, and continuous compliance with healthcare services.[22] Furthermore, self-efficacy can help alleviate concern about foot injuries, disrupting social interactions, reducing personal independence, and lowering quality of life.[3] Self-efficacy is built on self-assurance facilitated by knowledge, which enhances people to make informed decisions and consistently adhere to healthcare goal. Previous research has shown that there is a relationship between self-efficacy among T2DM patients as well as the ability to effectively manage blood sugar levels and adhere to prescribed treatments.[24]

The research showed that T2DM had a good health status, as evidenced by their positive social interaction, mental well-being, physical health, and emotional control. Generally, health status is an indicator measuring patients' perception of total well-being, serving as a guide for making appropriate intervention decisions and identifying their specific needs.[25]

A positive perception of good health status motivates patients to seek information and access optimal care, thereby maintaining a positive outlook and improved health.[26] The social aspect of health status is characterized by patients' interaction with family members, neighbors, and the community. Positive social interactions can enhance self-confidence, facilitating a sense of acceptance by others and maintaining productivity, leading to an improved quality of life.[13] The psychological aspect of health status is a critical indicator when dealing with T2DM patients who often experience stress, feelings of helplessness, and hopelessness, which significantly impact their quality of life.[27]

The research showed a significant relationship between self-efficacy and the health status of T2DM patients. Based on the results, patients receiving treatment for chronic diseases in primary care settings in Indonesia showed high levels of self-efficacy, due to the substantial family support.[28] Self-efficacy is the product of cognitive processes including decisions, beliefs, and assessments regarding the perceived ability to perform specific tasks or actions necessary to achieve desired outcomes.[29] Specifically, self-efficacy of patients plays a significant role in shaping their actions and decisions, to attain specific goals as well as address potential future situations.[30]

The results showed self-efficacy had a positive influence on both psychological and social aspects of health status. Moreover, self-efficacy is associated with effective self-management and positive psychological outcomes, which plays a mediating role in the relationship between social support and psychological well-being of T2DM patients.[31] The results also emphasize that self-efficacy plays a significant role in enhancing physical health status due to the ability to adopt and maintain long-term health habits.[24] These habits include dietary, regular exercise, foot care, consistent medication administration, insulin injections, and diligent blood glucose monitoring. The adoption of these habits requires the ability, self-assurance, and determination of patients based on their self-assessment.[32] Therefore, this research showed that when disseminating diabetes education, educators should impart knowledge as a foundation for behavioral change, along with appropriate beliefs and attitudes to enhance patients self-efficacy.[33] These factors are essential in enhancing the transformation and effective implementation of self-management practice.

The practice of primary healthcare services in Indonesia, particularly through the Non-Communicable Diseases (NCD) program known as Posbindu PTM, aims to enhance community engagement in NCD risk factor prevention, early detection, and continuous care.[34] In this context, nursing practices focus on increasing knowledge, positive attitudes, and promoting healthier behaviors. However, a prevalent challenge when providing care for T2DM patients in primary healthcare settings is related to the perception of diabetes.[35] Many people believe that T2DM is not a severe issue requiring immediate response but fail to realize the long-term consequences and complications associated with diabetes. The majority of patients only understand the effect of this disease after experiencing a stroke, foot injuries, amputations, heart failure, or kidney failure.[36] This underscores the importance of enhancing self-efficacy through the provision of information,

Table 2. Distribution of respondents' self-efficacy components.

Self-Efficacy Components	High		Low	
	f	%	f	%
Manage diet	194	59	133	41
Manage exercise	160	49	167	51
Manage blood sugar	252	77	75	23
Manage treatment	209	64	118	36
Manage foot care	221	68	106	32

Table 3. Distribution of dimensions health status respondents.

Dimensions health status	Sufficient		Well	
	f	%	f	%
General health perception	145	44.3	182	55.7
Physical health	17	5.2	310	94.8
Limited physical role function	48	14.7	279	85.3
Physical pain	31	9.5	296	90.5
Limited emotional role function	26	8	301	92
Mental health	4	1.2	323	98.8
Vitality	97	29.7	230	70.3
Social functioning	6	1.8	321	98.2

Table 4. Distribution of self-efficacy and health status categories.

Self-efficacy	Frequency (f)	Percentage (%)
High	212	65
Low	115	35
Health status		
Good	297	90.8
Poor	30	9.2

Table 5. Results of self-efficacy analysis and health status.

n	Alpha	p-value	r-correlation
327	0.01	0.000	0.485

educational training, continuous monitoring, and home visits, as part of the Posbindu PTM and Prolanis initiatives in primary health care in Indonesia. By increasing self-efficacy, people tend to take their condition seriously, adhere to recommended practices, and effectively manage diabetes.[34,37]

Conclusions

In conclusion, this research explored the relationship between self-efficacy and health status in T2DM patients. The results showed the significance of self-efficacy as an essential factor in influencing the health status of patients to better comprehend their health conditions and proactively seek effective solutions. The positive correlation observed between self-efficacy and health status emphasized the potential impact of interventions to enhance patients' belief in the ability to manage their condition. These results contributed to the broader understanding of effective strategies in chronic disease care, with implications for interventions designed to develop self-efficacy aimed at improving the health status of T2DM patients. Therefore, recognizing and incorporating the role of self-efficacy in healthcare practices could lead to more targeted and successful methods for supporting T2DM patients to improve health status and well-being.

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