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Original Article

Relationship Between Diabetes Distress and Quality of Life Among Patients with Type II Diabetes Mellitus

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ABSTRACT

Diabetes Mellitus or commonly abbreviated as DM is a chronic disease commonly found in Indonesia, especially among people in urban areas. It is known to be incurable during the sufferer's life span, so it is called a lifelong disease. Long-term Diabetes Mellitus has a psychological impact on the quality of life of patients. This study aims to determine the relationship between diabetes distress and quality of life among patients with type II Diabetes Mellitus in the work area of Tamanlanrea Jaya Community Health Center, Makassar. This was a quantitative analytical study with a cross sectional design. Study samples were selected using consecutive sampling technique which obtained a total sample of 82 patients. Data were collected using a questionnaire and analyzed using the Chi-square test. The results showed that there was a relationship between diabetes distress and quality of life among patients with type II diabetes mellitus with a ρ value of 0.012. It can be concluded that there was a relationship between diabetes distress and quality of life among patients with type II diabetes mellitus in the work area of Tamalanrea Jaya CHC, Makassar. Future researchers are recommended to involve a larger size of samples to determine additional elements that have an impact on the quality of life among people with diabetes mellitus.

Keywords: Diabetes Mellitus, Diabetes Distress, Quality of Life.

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INTRODUCTION

One of the non-communicable diseases with a very high incidence and prevalence worldwide is diabetes mellitus. Based on data derived from the World Health Organization (WHO), there were 422 million people in the world suffering from diabetes mellitus or an increase of around 8.5% among the adult population and it was estimated that there were 2.2 million deaths due to diabetes mellitus that occurs before the age of 70 years, especially in countries with low and middle economic status[1].

Based on data derived from the Organization of the International Diabetes Federation (IDF) in 2019, diabetes sufferers are predicted to continue to increase to reach 578 million in 2030 and 700 million in 2045 with 463 million (9.3%) people aged 20-79 and 111.2 million (19.9%) people aged 65-79 in the world. Indonesia is ranked third in the number of patients

with DM in the Asian Region with a prevalence of 11.3% after China (116.4 million) and India (77 million). Meanwhile in the world, Indonesia is ranked 7th among 10 countries with the highest number of patients with DM, namely 10.7 million people. Indonesia is the only country in Southeast Asia on the list, so it can be estimated that Indonesia's contribution to the prevalence of diabetes cases in Southeast Asia will continue to increase[2].

In South Sulawesi, the prevalence of diabetes diagnosed by a doctor was 1.6 percent. The highest prevalence of diabetes diagnosed by doctors was found in Pinrang Regency (2.8%), Makassar City (2.5%), North Toraja Regency (2.3%) and Palopo City (2.1%). Based on data derived from Non-communicable Disease Surveillance in the P2PL Field of the South Sulawesi Provincial Health Office in 2017, there were 27,470 new cases of Diabetes Mellitus, 66,780 old cases with 747 deaths[3].

Furthermore, based on data obtained from the Tamalanrea Jaya CHC, Makassar, the number of visitors with DM in 2019 was 218 patients, in 2020 it was 128 patients, and in 2021 it was 483 patients. According to a study conducted by Rahmi et al., (2019), the majority of diabetes mellitus patients experienced diabetes distress by 73.3% among female patients and 61.4% among male patients. As many as 52.5% of patients with type 2 diabetes mellitus had diabetes distress accompanied by an increase in HbA1c levels. The finding of another study revealed that 18.0% of patients with diabetes mellitus had diabetes distress accompanied by an increase in HbA1c values compared to 69.2% of 240 patients with type 2 diabetes experienced diabetes distress[4].

A study conducted by (Muntamah & Wulansari, 2022) revealed that the lower a person's stress, the closer the blood glucose levels of type 2 DM patients to normal level[5]. Diabetes distress will result in physiological and psychological changes. Physiologically, distress will activate the Hypothalamic Pituitary Adrenalaxis (HPAaxis) to increase the production of inflammatory cytokines which will interact with pancreatic cell function thereby inducing insulin resistance and triggering an increase in glucose levels. In addition, the psychological burden caused by poor glycemic control can make patients less willing and motivated to adopt healthy habits and achieve the best health outcomes. In turn, poor glycemic control, increased psychological distress, and poor quality of life can occur[6].

This study aims to determine the relationship between diabetes distress and quality of life among patients with type II Diabetes Mellitus in the work area of Tamanlanrea Jaya Community Health Center, Makassar.

METHOD

This was a quantitative analytical study with a cross sectional approach. This study was conducted at Tamalanrea Jaya CHC, Makassar in November 2021. The population in this study involved all patients with Diabetes Mellitus in the work area of Tamalanrea Jaya CHC, Makassar from January to September 2021, as many as 483 people. Study samples were selected using consecutive sampling technique which obtained a total sample of 82 patients.

The assessment instrument applied in this study was an adopted from the Diabetes Quality of Life (DQOL) standard scale and the diabetes distress Scale (DDS) Questionnaire that measure QoL and the level of diabetes distress in DM 2 patients. To apply the assessment instrument based on the characteristics of the study samples, the researchers performed adaptation in terms of language, content, form and number of answer choices. Based on the form of answer choices, DQOL used the Likert model scale. The questionnaire for the dependent variable on quality of life consisted of 22 questions, wherein number 1-4 involved questions on physical health, number 6-13 involved questions on psychological health, number 14-17 involved questions on social relations, number 18-22 involved questions on the environment. The questions had the criteria of 1 for never, 2 for Sometimes, 3 for Often, and 4 for Always with a total score of 22-88.

Assessment using the DQOL questionnaire was devoted to the quality of life of patients with diabetes mellitus. Bivariate analysis was carried out to determine the relationship between the dependent variable and the independent variable. Bivariate analysis applied in this study was the Chi-square test. This study has passed ethical quality based on the letter number 0352/STIKES-NH/KEPK/XII/2021 which was issued on December 10, 2021 at the Nani Hasanuddin College of Health Sciences, Makassar.

RESULTS

Table 1. Frequency Distribution by Characteristics of Respondents.

General Characteristic	n	%
Age		
36-45 years	15	183
46-55 years	30	36.6
56-65 years	28	34.1
>65 years	9	11.0
Gender		
Male	25	30.5
Female	57	69.5
Education		
Did not Graduate from Elementary School	12	14.6
Elementary School	16	19.5
JHS	10	12.2
SHS	34	41.5
Bachelor	10	12.2
Employment Status		
Employed	45	54.9
Unemployed	37	45.1

Based on table 1, it was revealed that among 82 respondents, 30 respondents (36.6%) were in the age group of 46-55 years, and 9 respondents (11.0%) were in the age group of >65 years. Furthermore, the majority of respondents were female as many as 57 respondents (69.5%) and 25 respondents (30.5%) were male. The data obtained regarding level of education showed that the majority of respondents were graduated from senior high school as many as 34 respondents (41.5%). Based on employment status, 45 respondents (54.9%) were employed and 37 respondents (45.1%) were unemployed.

Table 2. Frequency Distribution of Respondents by Diabetes Distress.

Diabetes Distress	Frequency (n)	Percentage (%)
No	27	32.9
Yes	55	67.1
Total	82	100.0

Based on Table 2, it was revealed that out of 82 respondents, there were 27 (32.9%) who did not experience diabetes distress and 55 respondents (67.1%) who experienced diabetes distress.

Table 3. Frequency Distribution of Respondents by Quality of Life.

Quality of Life	Frequency (n)	Percentage (%)
High	37	45.1
Low	45	54.9
Total	82	100.0

Based on Table 3 it was shown that out of 82 respondents, there were 37 respondents (45.1%) with a high Quality of Life and 45 respondents (54.9%) with a low Quality of Life.

Table 4. Relationship between diabetes distress and Quality of Life among Patients with Type II Diabetes Mellitus.

Diabetes Distress	Quality of Life				Total		p
	High		Low				
	n	%	n	%	n	%	
No	18	66.7	9	33.3	27	100.0	0.012
Yes	19	34.5	36	65.5	55	100.0	
Total	37	45.1	45	54.9	82	100.0	

Based on Table 4 it was revealed that there were 27 respondents who did not experience diabetes distress, of which 18 respondents (66.7%) had a high Quality of Life and 9 respondents (33.3%) had a low Quality of Life. Meanwhile, 55 respondents experienced diabetes distress, of which 19 respondents (34.5%) had a high Quality of Life and 36 respondents (65.5%) had a low Quality of Life. The results of the statistical test using Chi-square obtained a ρ value = 0.012 or ρ <α (0.05). It meant that the alternative hypothesis was accepted. It can be interpretated that there was a relationship between diabetes distress and quality of life among patients with type II diabetes mellitus in the work area of Tamalanrea Jaya CHC, Makassar.

DISCUSSION

Based on the study, it was found that 66.7% of respondents who did not experience diabetes distress had a high Quality of Life. Such finding indicated that there was a relationship between diabetes distress and quality of life among patirnts with type II diabetes mellitus in the work area of Tamalanrea Jaya CHC, Makassar.

Although this study revealed a relationship between diabetes distress and quality of life among patients with type II diabetes mellitus, there were 9 respondents who did not experience diabetes distress but had a low quality of life. Such condition can be influenced by the age factor of respondents, most of whom have entered the late elderly. The study finding is in accordance with a study conducted by Leo & Kedo in 2021, which found that a person's quality of life was significantly influenced by age[7]. Increasing age leads to a decrease in body function and anatomy which results in insulin resistance and impaired blood glucose tolerance. Therefore, physical, psychological, and social problems can arise and ability or body function definitely affects the success of diabetes management and results in the emergence of health problems that decrease the quality of life of patients with DM[7].

Diabetes mellitus is a persistent metabolic disorder. Diabetes mellitus can cause a number of problems that can extend the treatment period and increase treatment costs. Acute myocardial infarction, stroke and peripheral arterial disease are examples of macrovascular problems that can be caused by type 2 diabetes mellitus. Meanwhile, diabetic foot, nephropathy and neuropathy are examples of microvascular consequences of it[8]. Patients' quality of life can be affected by certain problems due to its physical and psychological effects. The chronic nature of the disease and difficulties in managing the disease can have a negative impact on mood and self-esteem, resulting in frustration and sadness, dietary restrictions, and sexual behavior patterns, all of which lead to diabetes distress and a decrease in the patient's quality of life[9].

The study finding is in line with a study conducted by (Sasmiyanto, 2019) which suggested that patients with DM who were able to develop positive psychology would have a positive progress in several aspects of health. Glucose levels will remain stable at a healthy level due to positive psychology. Respondents' view of their overall health will improve as a result of stable blood glucose levels, so that they can live a good quality of life[10].

Furthermore, a study conducted by Irawan et al., 2021 also found that the distress experienced by people with diabetes mellitus was due physical and psychological changes[11]. This study also found that there were 19 respondents who experienced diabetes distress but had a high Quality of Life. Such condition can be influenced by family support. Such finding is in accordance with a study conducted by Ratnawati et al., 2019, which found a significant relationship between family support and the quality of life of the elderly. Family has several informational support functions in the

form of information that can lead to positive individual suggestions, assessment support in the form of guidance, instrumental support in the form of attention and emotional support in the form of attention to the elderly with DM[12].

Based on a study conducted at Tamalanrea Jaya CHC, Makassar, it can be seen that many patients experienced diabetes distress with a relatively low quality of life. As for the causes of distress based on most of respondents were changes in health which led to a decrease in psychological condition as well as worries about the disease and feelings of dissatisfaction with their lives which further resulted in a low quality of life.

The results of this study are in line with a study conducted by Abdurrasyid et al., 2018, which found that the most dominant diabetes distress factors were related to the quality of life after long periods of illness, caregivers, and diabetic self-care. Psychological stress will affect a person's perception towqrds life. A state of diabetes distress indicated a sense of fear of the disease, so that patients with type 2 diabetes might have a feeling of dissatisfaction with the life experienced and it led to a low quality of life. In contrast, patients who did not experience diabetes distress would have a good perception of their lives so as to create a high value of quality of life[14].

A study conducted by Maruf & Palupi, 2021 suggested that there was a significant relationship between stress level and the quality of life among DM patients. Living with diabetes mellitus will indirectly become a source of stress. People with Diabetes Mellitus have a high level of stress and anxiety, because it will change a person's habits and lifestyle, following the treatment that must be undertaken and the possibility of serious complications. Stress triggers physical and mental reactions that may reduce quality of life. Long-term disease was found to have a negative relationship with quality of life, which meant that the longer the disease lasted, the lower the quality of life[15].

According to a study conducted by Fisher & Hessler, 2019 applied diabetes distress to describe the anxiety, worry, fear, and threats that arise during the management of difficult chronic conditions such as diabetes from time to time. Such anxiety includes the threat of complications, possible loss of function, and worry about access to care[16]. Diabetes distress is a normal reaction to diabetes. It is not considered a comorbid disorder or condition and does not reflect a psychopathology. This is simply the emotional impact of diabetes. Therefore, it is recommended that diabetes distress should be managed by health professionals as part of comprehensive diabetes care, not as a 'disease' that needs to be directed to others outside the context of diabetes care[17].

Diabetes-related pressures can take many forms and can be influenced by many factors, such as age, gender, culture, type of diabetes, use of insulin, number of complications, and duration of diabetes[18]. Feelings of helplessness and hopelessness, fear of hypoglycemic episodes or consequences, high levels of “burnout” from never-ending management responsibilities, and anger toward healthcare providers are common[19]. These feelings often lead to distrust, hostility, and missed visits. Based on the varying needs characteristics of Type 1 and Type 2 diabetes, the sources of diabetes pressure vary among people with each type. For example, adults with type 1 diabetes may experience fear of hypoglycemia and feelings of helplessness more than adults with type 2 diabetes who take only oral medications[16].

According to a study conducted by (Anita, 2019), there were many disorders related to depression, anxiety, and stress that overlapped with the discomforts of diabetes, and it is difficult to separate them[20]. A condition known as diabetes distress occurs when a person has different emotional problems that are directly related to the pressures and costs that diabetes brings, as well as worry, irritability, and mild tiredness[21]. Diabetes stress is a normal emotional reaction to a potentially fatal disease. Depression and stress are not the same between people. Distress is conceptually the result of emotional adjustment to the challenges in the management of diabetes[22]. Patients often become concerned when there are multiple requests for lifestyle modifications, believe that they have failed to manage their diabetes when the blood glucose levels, worry about possible complications, and become frustrated when they cannot consistently keep their diabetes under control[23].

A study conducted by (Erda et al., 2020) revealed that there was a significant relationship between stress and the quality of life among elderly people with type II diabetes mellitus[24]. Poor quality of life was due to the patient's perception of the disease in terms of recovery. In addition, the patient felt angry, embarrassed, hopeless, and considered no one in his family

cared about their health, thus affecting the quality of life of the patients. Quality of life is very important since it is closely related to the patient's condition, the severity of the disease, the duration of healing and poor quality of life can even worsen the condition of the disease. The study finding is in line with a study conducted by (Rizqillah et al., 2020) which found that stress played an important role in quality of life among patients with diabetes mellitus. The lower the stress, the higher the quality of life[27].

Distress occurs when there are mental, physical, emotional, and spiritual inabilities to deal with threats. It can affect human physical health as self-perception of situations or conditions in the environment. Perceived stress comes from feelings of fear or anger[28]. Under stressful conditions, the body will take two actions, namely fighting and defending from threats or running and avoiding the dangers that confront as a self-defense mechanism against physical threats. The fight response is triggered by anger and the avoidance response is triggered by fear.

A study conducted by (Nurmaguphita & Sugiyanto, 2018) described diabetes distress as the emotional burden caused by pressure during diabetes self-care and the complications that accompanied it. This emotional burden surely had an impact on the patient himself, his family and health care providers involved in diabetes care29. Diabetes distress resulted in a decrease in health-related quality of life in all domains, namely physical, psychological, social relationships and the environment[20].

Nearly a quarter of patients with diabetes had depression or other diabetes distress symptoms, which reflected the high prevalence of psychological comorbidities in this population. Diabetes distress is the concern of patients regarding the management of diabetes, perceived support, emotional burden, and ability to obtain high-quality medical care[30]. Diabetes distress is defined as emotions that lead to loss of belief in positive outcomes, lack of self-confidence, and inability to make necessary lifestyle adjustments. High level of diabetes distress can affect medication adherence and diabetes management, which can further lead to poor glucose control and ultimately impact disease management and a lower quality of life[31].

According to the researchers' assumptions, diabetes distress is a factor associated with a low Quality of Life in people with Diabetes Mellitus, so that respondents who experience diabetes distress tend to have a low Quality of Life. Thus, it can be concluded that the more distress people with Diabetes Mellitus, the lower the quality of life of people with Diabetes Mellitus. Increased diabetes distress in patients with diabetes is associated with increased fear of diabetes-related events such as complications. Impaired quality of life has been recognized as an important psychosocial outcome in chronic disease. Quality of life has been defined as the personal burden felt by patients in terms of satisfaction, impact, and diabetes-related anxiety.

CONCLUSION

Based on the results of the study and discussion, it can be concluded that there wsa a relationship between diabetes distress and quality of life among patients with type II diabetes mellitus in the work area of Tamalanrea Jaya CHC, Makassar with a ρ value of 0.012. It is expected that nurses always motivate families to continue to support the treatment process of Diabetes Mellitus patients at home by actively monitoring their health development. In additiom, healthcare workers should always increase knowledge, skills and good attitudes in providing services to patients with Diabetes Mellitus in order to reduce the risk of low quality of life among patients with Diabetes Mellitus.

CONFLICTS OF INTEREST:
The authors declare no conflict of interest.

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