MEDIA INFORMASI
Center for Research and Community Service
Health Polytechnic of the Ministry of Health Tasikmalaya
https://ejurnal2.poltekkestasikmalaya.ac.id/index.php/bmi

Factors Associated with Quality of Life of Type II DM Patients

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Article Info
Submitted 06 09 2025
Revised 31 10 2025
Published 31 10 2025

Keywords:
Type II Diabetes Mellitus, quality of life, duration of suffering, knowledge, family support, dietary compliance.

P-ISSN : 2086-3292
E-ISSN : 2655-9900

National Accreditation:
Sinta 4

Abstract
Background: Type II diabetes mellitus (DM) is a chronic metabolic disease whose prevalence continues to rise globally. According to WHO (2023) in Mariang (2023), Type II DM is a major cause of morbidity and mortality. The International Diabetes Federation (2021) reported that Indonesia had 19.5 million diabetic patients in 2021, projected to reach 28.6 million by 2045. This condition affects both physical health and quality of life. The Indonesian Ministry of Health (2022) emphasizes that diabetes management should aim to improve not only glycemic control but also patients' overall quality of life. **Objectives:** This study analyzed factors related to the quality of life of Type II DM patients at the Burnay Mulya Community Health Center, focusing on duration of illness, knowledge, family support, and dietary adherence. **Methods:** A quantitative cross-sectional design was used with 67 randomly selected respondents. Data were collected using questionnaires assessing quality of life, knowledge, family support, and dietary adherence. Analysis used the Chi-Square test with a 0.05 significance level. **Results:** Significant relationships were found between quality of life and duration of illness (p=0.031), knowledge (p=0.036), family support (p=0.008), and dietary adherence (p=0.024). Patients with shorter illness duration, better knowledge, supportive families, and good dietary adherence had higher quality of life. **Conclusion:** Quality of life among Type II DM patients is influenced by disease duration, knowledge, family support, and dietary adherence. Strengthened education and family involvement are essential to improve outcomes.

INTRODUCTION

Diabetes Mellitus is a chronic metabolic disease which is often referred to as a silent killer or*(silent killer)* (Al-Sabah, Al-Haddad, Al-Youha, Jamal, & Almazeedi, 2020; Hardianto, 2021; Shaheen et al., 2018; Yusnita, Hi. A. Djafar, & Tuharea, 2021).Most people are unaware that they have this disease, so treatment is often delayed and can lead to various complications (Hazni et al., 2021). Diabetes Mellitus (DM) is a global health problem. DM is a metabolic disease characterized by elevated blood sugar levels caused by decreased insulin function or an inability to produce insulin (Putri, Rosadi, & Arif, 2025). Type II diabetes mellitus is the most common, accounting for 90-95% of cases and causing 70% of diabetes-related deaths globally (WHO, 2023) (Mariang, 2023) .

According to *International Diabetes Federation*(IDF), the highest prevalence of diabetes in the world is in China (116.4 million cases), India (77 million), the United States (31 million), Pakistan (19.4 million), Brazil (16.8 million), Mexico (12.8 million), and Indonesia is ranked seventh with 10.7 million cases (Novita, 2023). Globally, the number of sufferers is estimated to increase from 537 million (2021) to 643 million (2030) and 783 million (2045), an increase of approximately 46%. Indonesia is estimated to experience an increase in cases from 19.5 million (2021) to 28.6 million in 2045 (IDF, 2021; (Fauziyyah, 2024)

In 2021, Indonesia ranked fifth in the world with 19.5 million cases of diabetes (Atlas IDF Diabetes, 2021).. This condition indicates that the health system is not optimal in preventing and

treating diabetes. The 2023 Indonesian Health Survey and the 2018 Basic Health Research (Riskesdas) recorded an increasing trend in diabetes prevalence, with 28.6 million sufferers aged 20-79 years and a prevalence of 10.6% in 2021, a significant increase from 2% (doctor's diagnosis) and 8.5% (blood glucose) in 2018 (Cinta, 2025). Data from the Central Statistics Agency (BPS) of South Sumatra province showed that in 2020 there were 172,044 diabetes sufferers, in 2021 there was another increase of 279,345 sufferers, in 2023 there was another significant increase of 605,570 (Dinkes Provinsi Sumsel, 2024).

The prevalence of diabetes mellitus (DM) diagnosed by doctors in East Ogan Komering Ulu Regency reached 29,529 in 2021, and then increased significantly to 43,060 in 2023, according to the East OKU Regency Health Office. There has been no significant decline in the number of DM sufferers in East Ogan Komering Ulu Regency, and this number is likely to continue to increase from year to year (Dinkes kabupaten OKU Timur, 2024)

The prevalence of type II diabetes mellitus (DM) at the Burnay Mulya Community Health Center in East Semendawai increased from 1,271 patients in 2023 to 1,589 in 2024. Data from January to March 2025 showed 202 new patients. A survey of 13 patients revealed that the primary causes are an unhealthy lifestyle and lack of exercise. If left untreated, DM can lead to serious complications such as nerve damage, vision impairment, kidney failure, and kidney failure.

Heart disease (Burnay Mulya Community Health Center, 2025). Diabetes can damage organs such as the heart, brain, kidneys, and eyes, and lead to serious complications such as heart disease, stroke, foot ulcers, and diabetic retinopathy. The main causes of complications are uncontrolled blood sugar, an unhealthy lifestyle, and a lack of discipline in diet and exercise. Metabolic syndrome, with an excessive waist circumference, is also common and increases the risk of serious illness (Yusnita et al., 2021).

Quality of life refers to how a person assesses their position in life, which is influenced by the cultural and environmental context and the value system in which they live and live in relation to their goals, expectations, standards and desires(jamaruddin,2022)**.** The need to improveQuality of life in diabetes patients is strongly linked to disease response, disease progression, and even the risk of death from diabetes. The poorer the quality of life, the greater the risk of pain and even death (Mugi, 2023)..

Long-term diabetes mellitus negatively impacts quality of life, especially after five years, leading to decreased independence and self-esteem, leading to a lack of self-care and the risk of complications (Melinda, 2024). The longer a person lives with diabetes, the more damage to pancreatic beta cells and the cardiovascular system becomes, leading to uncontrolled blood sugar levels, which can lead to atherosclerosis, high blood pressure, and impaired blood flow, triggering various complications (Hariani, Abd. Hady, Nuraeni Jalil, & Surya Arya Putra, 2020)..

Family support is a lifelong process, with the forms and types of support varying according to the stage of the life cycle. Support can come from both internal and external social environments, depending on various influencing factors (Alfatih, Faishal, & Irawan, 2021). Family support plays a crucial role in the management and adaptation of adult patients with type II diabetes mellitus. 67.7% of patients without family support experienced a decreased quality of life due to stress, while 32.3% maintained a good quality of life due to personal motivation. Conversely, 31.2% of patients with family support continued to have a poor quality of life due to high levels of stress and anxiety. Meanwhile, 68.8% of patients with family support demonstrated a good quality of life thanks to assistance*.financial*, support for daily activities, and motivation provided by the family (Yuni, 2023).

Knowledge is key to changing health behaviors. According to the Thought and Feeling theory, knowledge is gained from experience, both directly and from others. For example, people with diabetes mellitus who have been practicing self-care for a long time typically have better knowledge and are better able to control their blood sugar. Conversely, a lack of knowledge can hinder the management of this disease (Alfatih et al., 2021). Compliance with a diet is a form of positive behavioral change that aims to to maintain normal blood sugar levels. People with diabetes mellitus are strongly advised to follow the recommended diet, whether as part of insulin treatment or other therapies. Consistency in diet is essential, including calorie counts, food types, and regular meal schedules. In general, dietary management for individuals with diabetes mellitus aims to maintain

optimal health optimally so they can continue their daily activities. Diet is also an important first step in controlling diabetes (Sijabat et al., 2023)

The number of sufferers is always increasing every year, from the results of a preliminary survey conducted by researchers at the Burnay Mulya Community Health Center through direct interviews with 13 DM patients at the research site based on the results of a survey of 13 patients with DM according to information from patients suffering from the disease is influenced by an unhealthy lifestyle and lack of activity and exercise. With the high number of DM sufferers at the Burnay Mulya Community Health Center, East Semendawai District, if the disease is not immediately treated, it can cause further complications such as nerve damage, visual impairment, kidney failure, and heart disease.

METHOD

Study design and participants

This quantitative study employed a cross-sectional design. The study population comprised all registered patients diagnosed with type II DM attending the Burnay Mulya Community Health Center. Inclusion criteria were: (1) age ≥ 20 years, (2) diagnosed with type II DM for at least six months, (3) able to read and understand Indonesian and (4) willing to provide informed consent. Exclusion criteria included severe cognitive impairment or acute complications requiring hospitalisation. A sample size of 67 participants was calculated based on a prevalence of 50 %, 95 % confidence level, and 10 % margin of error. Participants were selected using simple random sampling from the health centre's electronic registry.

Data collection instruments

Four structured instruments were administered:

1. Quality of Life: The Indonesian version of the WHOQOL-BREF was used to measure quality of life across physical, psychological, social, and environmental domains. Each item is rated on a 5-point Likert scale, with higher scores indicating a better quality of life. Domain scores were transformed and categorised into "low," "moderate," and "high" quality of life based on WHO guidelines.
2. Knowledge: Diabetes knowledge was assessed with a 20-item questionnaire adapted from the Michigan Diabetes Knowledge Test and validated in prior Indonesian studies. Correct answers were summed and categorised as low (< 70 % accurate), moderate (70–85 %) or high (> 85 %). Cronbach's alpha in this study was 0.83.
3. Family support: Family support was measured using a 12-item scale covering emotional, informational, instrumental, and appraisal support. Items were rated on a 4-point scale (1 = never to 4 = always). Total scores were categorised into low, adequate or high support based on terciles. Cronbach's alpha was 0.86.
4. Dietary adherence: Adherence to dietary recommendations was assessed with a 15-item checklist examining frequency of consuming recommended portions, avoiding excessive sugar and fats, and regular meal timing. Responses were categorised into low, moderate, and high adherence. Cronbach's alpha was 0.79.

Additional data on age, sex, occupation, educational level, and duration of illness were extracted from medical records or self-reports.

Ethical considerations

The study protocol was reviewed and approved by the Research Ethics Committee of Universitas Kader Bangsa (Approval No. [placeholder]). Participants were informed about the study's purpose, procedures, potential risks and benefits. Written informed consent was obtained prior to data collection. Data were anonymised to protect participant confidentiality.

Statistical analysis

Data were entered into and analysed using SPSS version 26. Descriptive statistics (mean, standard deviation, and frequency distributions) characterised the sample. The chi-square test of independence was used to examine associations between quality of life categories and each explanatory variable (duration of illness, knowledge level, family support, and dietary adherence). A p-value < 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

Table 1 Frequency Distribution of Characteristics of Age, Gender, Duration of Suffering, Knowledge and Family Support (Respondent 67).

Respondent characteristics	frequency	Percentage
Age		
< 30 years	13	19,4
30-60 years	48	71,6
>60 years	6	9,0
Total	67	100,0
Gender		
Man	29	43,3
Woman	38	56,7
Total	67	100,0
Long suffering		
< 5 years	24	35,8
6-10 years	24	35,8
>10 years	19	28,4
Total	67	100,0
Knowledge		
Low	30	44,8
High	37	55,2
Total	67	100,0
Family support		
Does not support	28	41,8
Support	39	58,2
Total	67	100,0
Diet compliance		
High	23	34,3
Currently	23	34,3
Low	21	31,3
Total	67	100,0
Quality of life		
Not enough	15	22,4
Enough	16	23,9
Good	36	53,7
Total	67	100,0

Based on the frequency distribution in the table above, the average age of respondents is 30-60 years, as many as 48 respondents (71.6%), the majority of respondents are female, as many as 38 respondents (56.7%), the majority of the duration of suffering is <5 years and 6-10 years, both numbering as many as 24 respondents (35.8%), the majority of highly knowledgeable as many as 37 respondents (55.2%), the majority of family support is supportive as many as 39 respondents (58.2%), the majority of high and moderate dietary compliance as many as 23 respondents (34.3%) and the majority of respondents' quality of life is good as many as 36 respondents (53.7%)

Table 2 Relationship between Duration of Suffering and Quality of Life of Type II DM Patients at Burnay Mulya Community Health Center.

Long suffering	Quality of life								
	Not enough		Enough		Good		Total		
	F	%	F	%	F	%	F	%	*P-value*
< 5 tahun	3	4.5	11	16.4	10	14.9	24	35.8	
6-10 tahun	3	4.5	6	9.0	15	22.4	24	35.8	0.031
>10 tahun	8	11.9	2	3.0	9	13.4	19	28.4	
Total	14	20.9	19	28.4	34	50.7	67	100.0	

Table 2 based on Test*Chi-square statistics*obtained value*p*= 0.031 <0.05, it can be concluded that there is a significant relationship between the duration of suffering and the quality of life of type II DM patients at the Burnay Mulya Community Health Center

Table 3 Relationship between Knowledge and Quality of Life of Type II DM Patients at Burnay Mulya Community Health Center

knowledge	Quality of life								*P-value*
	Not enough		Enough		Good		Total		
	F	%	F	%	F	%	F	%	
Low	11	16.4	5	7.5	14	20.9	30	44.8	
High	4	6.0	11	16.4	22	32.8	37	55.2	0.036
Total	15	22.4	16	23.9	36	53.7	67	100.0	

Table 3 based on Statistical Test*chi-square*obtained value*p*= 0.036 <0.05, it can be concluded that there is a significant relationship between knowledge and the quality of life of type II DM patients at the Burnay Mulya Community Health Center

Table 4 Relationship between Family Support and Quality of Life of Type II DM Patients at Burnay Mulya Community Health Center.

Family support	Not enough		Enough		Good		Total		*P-value*
	F	%	F	%	F	%	F	%	
Does not support	2	3.0	6	9.0	20	29.9	28	41.8	
Support	13	19.4	12	17.9	14	20.9	39	58.2	0.008
Total	15	22.4	18	26.9	34	50.8	67	100.0	

Table 4 based on Statistical Test*chi-square*obtained value*p*=0.008 <0.05, it can be concluded that there is a significant relationship between family support and the quality of life of type II DM patients at Burnay Mulya Community Health Center

Table 5 Relationship between Diet Compliance and Quality of Life of Type II DM Patients at Burnay Mulya Community Health Center

Dietary compliance	Not enough		Enough		Good		Total		*p- value*
	F	%	F	%	F	%	F	%	
Low	6	9.0	3	4.5	12	17.9	21	31.3	
Currently	8	11.9	10	14.9	5	7.5	23	34.3	0.024
High	2	3.0	7	10.4	14	20.9	23	34.3	
Total	16	23.9	20	29.8	31	46.3	67	100.0	

Table 5 based on Statistical Test*chi-square*obtained value*p*= 0.024 <0.05, it can be concluded that there is a significant relationship between dietary compliance and the quality of life of type II DM patients at the Burnay Mulya Community Health Center

The results of the analysis of the duration of suffering with quality of life based on Table 2 show that of the 67 type II diabetes mellitus (DM) patients at the Burnay Mulya Health Center, Most respondents who have suffered for less than 10 years have a good quality of life, with a duration of suffering for less than 5 years, as many as 10 people (14.9%) have a good quality of life as well, while the 6–10 year group also shows the same figure, namely 15 people (22.4%) with a good quality of life. On the other hand, in the group of patients who have suffered for more than 10 years, only 9 people (13.4%) have a good quality of life, and as many as 8 people (11.9%) actually have a poor quality of life. Other research results also obtained a p-value (0.000) < 0.05. There is a relationship between the duration of suffering and the quality of life of diabetes mellitus sufferers at the Babakan Sari Community Health Center (Alfatih et al., 2021).

The results of the analysis of knowledge with quality of life based on table 3 show that of the 67 type II diabetes mellitus (DM) patients at the Burnay Mulya Community Health Center, most respondents had a high level of knowledge, namely 37 people (55.2%), while 30 respondents (44.8%) had a low level of knowledge. In the group with low knowledge, 11 respondents (16.4%) had a poor quality of life, 5 respondents (7.5%) had a fair quality of life, and 14 respondents (20.9%) had a good quality of life. Meanwhile, in the group with high knowledge, 4 respondents (6.0%) had a poor quality of life, 11 respondents (16.4%) had a fair quality of life, and 22 respondents (32.8%) had a good quality of life. In line with research conducted by (Alfatih et al., 2021), the relationship between knowledge and quality of life of type II Diabetes Mellitus sufferers was statistically proven with a p-value of*value*(0.000 < 0.05) 45 respondents (40.9%) had insufficient knowledge, 13 respondents (11.8%) had sufficient knowledge, and 52 respondents (47.3%) had good knowledge.

The results of the analysis of family support with quality of life based on Table 4 show that of the 67 type II diabetes mellitus (DM) patients at the Burnay Mulya Community Health Center, the majority of respondents who received support from their families had a good quality of life, namely 14 people (20.9%). In contrast, of the patients who did not receive family support, only 6 people (9.0%) had a quality of life in the sufficient category, and 2 people (3.0%) showed a poor quality of life.

Also supported by research (Zanzibar, 2023) found a relationship between family support and the quality of life of type II DM patients with a p-value of 0.02. This finding indicates a relationship between family support and the quality of life of type II DM patients, which is also in line with the results of research conducted by (Erda, Harefa, Yulia, & Yunaspi, 2020) with a p-value (p-value = 0.000 <0.05) indicating a significant relationship between family support and the level of quality of life of type II Diabetes Mellitus patients in the working area of the Sekupang Community Health Center, Batam City, in 2020.

The analysis of dietary compliance with quality of life based on Table 5 shows that of the 67 type II diabetes mellitus (DM) patients at the Burnay Mulya Community Health Center, most respondents with moderate and high levels of dietary compliance had a good quality of life. In the moderate dietary compliance category, 5 patients (7.5%) had a good quality of life, while in the high compliance category, 14 patients (20.9%) also showed a good quality of life. Conversely, in the low compliance category, only 12 patients (17.9%) had a good quality of life. In line with the research conducted (Saputra, 2024)the p value = 0.003 (p< 0.05) shows that there is a significant relationship between dietary compliance and quality of life in Diabetes Mellitus patients at the Lut Tawar Community Health Center, Lut Tawar District, Central Aceh Regency. at the Lut Tawar Community Health Center, Lut Tawar District, Central Aceh Regency

CONCLUSIONS AND RECOMMENDATIONS

Based on data analysis and discussion of the results of this study, there is a significant relationship between the duration of suffering with a p value = 0.031, knowledge with a p value = 0.036, family support with a p value = 0.008, and dietary compliance with a p value = 0.024 with the quality of life of Type II DM patients at the Burnay Mulya Community Health Center.

Suggestions from health workers are needed to improve health education and counseling for patients and their families, so that the quality of life of DM patients can be improved through increased knowledge, support, and dietary compliance

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