

The Relationship between Long suffering and medication adherence with Quality-of-Life in Patients with Type 2 Diabetes Mellitus

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ABSTRACT

Type 2 diabetes mellitus (T2DM) is a long-term condition that cannot be completely cured, it can affect health and quality of life (QOL). This study aims to determine the relationship between long suffering and medication adherence with quality of life among patients with T2DM. Research design used cross-sectional study, samples are patients with T2DM at Cibereuem and Cigugur Tengah Public Health Center, Cimahi West Java, as many as 115 patients. The independent variables were long suffering measures in years since diagnosis, medication adherence using MMAS-8, while the dependent variable is QOL for diabetes used the Diabetes Quality of Life-Brief Clinical Inventory (DQOL-BCI). Data analysis using chi-square, the p-value was as a significant test, with a significance level (alpha)=0.05. The result of this study showed that the variables were significant with quality-of-life patient T2DM are long suffering (p value= 0.01; OR= 3.54, (5%CI: 1.40-8.92), medication adherence (p value= 0.01; OR= 3.54, (5%CI: 1.40-8.92). The results highlight the importance of addressing long-term illness duration and promoting adherence to medication to enhance patients' quality of life. Interventions targeting patients with T2DM who have been living with the disease for more than five years should focus on improving medication adherence to achieve better QOL outcomes.

Keywords: type 2 diabetes mellitus, long suffering, medication adherence

Introduction

Diabetes mellitus is a metabolic disorder characterized by elevated levels of blood glucose or hyperglychaemia. Over 90% of diabetes mellitus are type 2 diabetes mellitus (T2DM), it is caused by impaired insulin secretion by pancreatic B cells and insulin resistance (Galicia-garcia et al., 2020; Nugrahaeni, 2023). The International Diabetes Federation in 2019 estimated that about 463 million people aged between 20 and 79 years worldwide suffer from type 2 diabetes mellitus. By 2024, this number is expected to rise to 589 million, with a prevalence of 10.6%. The estimated number of type 2 diabetes mellitus sufferers is 700 million by 2045 and 853 by 2050 (Galicia-garcia et al., 2020; International Diabetes Federation, 2024). In Indonesia, the 2018 Basic Health Research (Risikesdas) reported a 10.9% prevalence of type 2 diabetes. A more recent survey, the Indonesian Health Survey (SKI) from 2023, showed the rate had increased to 11.7% (Kementrian Kesehatan Republik Indonesia, 2018), while based on the Indonesian Health Survey (SKI), it was 11.7% in 2023.

Diabetes mellitus can influence and have an impact on a person's life. Having diabetes can reduce the quality of life (QoL), and when it comes with other health problems, the impact becomes even more serious (Tikkalinau et al., 2017). Diabetes is a long-term metabolic condition that can influence psychological challenges and requires major changes in daily habits. People living with diabetes often feel challenged by their disease, this psychological toll, and this can lead to poor self-care, lead to long-term complications, and a condition that can compromise the quality of life (Dasantos & Goddard, 2023; Hossam et al., 2022). For those living with chronic diabetes, there's no complete cure, and the disease can seriously affect their quality of life (Hossam et al., 2022).

Quality of life as an estimation of well-being as well as the measurement of health and the effect of health care. QOL is an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (Tikkalinau et al., 2017). Quality of life is a multidimensional construct individual perception of physical health, psychological well-being and social domain, people with T2DM, have a great chance to treat themselves and have lower QOL than healthy person. Maintaining a good quality of life despite living with a chronic illness is a key goal for healthcare providers. (Azmiardi & Febrinasari, 2025; Jing et al., 2018). Several studies suggest that QOL is an important outcome and considered a patient-report in people who are living with type 2 diabetes mellitus (Dasantos & Goddard, 2023; Wicaksana, 2025).

Treatment for Type 2 DM may influence daily functioning and well-being in patients and it is reported to affect the quality of life. The success of long-term maintenance therapy and metabolic control in patients T2DM depends on their adherence to medication. The lack of compliance in treatment for patient T2DM lead to therapy failure and several vital organ damage and resulting in the following complication, such as in kidneys (diabetic nephropathy), heart and cardiovascular disease, diabetic retinopathy, diabetic neuropathy and cerebrovascular disease (Alfian et al., 2016; Nugrahaeni, 2023).

Identifying several risk factors of QOL in T2DM patients is important and it has been a target for intervention to elevat of QOL (Jing et al., 2018). Risk factors associated with Diabetes Quality of life are demographic factors, like age, gender, psychological factors, medication adherence, duration of disease, and presence comorbidity (Lumanauw et al., 2024). This study aims to determine the relationship between long suffering and medication adherence with quality of life among patients with type 2 diabetes mellitus.

Materials and Methods

This research using a cross-sectional study. The sample in this study were patients with type 2 diabetes mellitus at Cibereuem and Cigugur Tengah Public Health Center (PHC), Cimahi West Java, as much as 115 patient T2DM. The inclusion criteria were Type 2 DM patients who were outpatients at the public health center in the last month and willing to participate in this study. Patients who were unwilling to sign informed consent and who experienced severe complications, psychiatric disorder and decreased consciousness were excluded from this study. The independent variables are demographic data (age, gender, level of education, occupation and marital status), long suffering of T2DM and medication adherence, while variable dependent is diabetes quality of life. Long suffering diabetes mellitus measure in years since diagnosis, this data was obtained from secondary data originating from patient medical records at PHC. Medication adherence measures used MMAS-8 (Morisky Medication Adherence Scale-8). Quality of life using DQoL-BCI (Diabetes Quality of Life with Diabetes Quality of Life- Brief Clinical Inventory). The DQoL-BCI consisted of 15 questions, and these translated into Indonesian, validity and reliability tests have been carried out by Irianti et al (Irianti et al., 2021). The MMAS and DQOL-BCI questionnaires were given to respondents through interviews.

In this study, data collected over the fifth month, from June to October 2025, at Cibereum and Cigugur Tengah Public Health Center, Cimahi. Data analyzed with univariate analysis using frequency distribution and percentages each of a variable. Bivariate analysis to identify relationships between long suffering and medication adherence with DQoL-BCI among people with T2DM using chi-square. The p-value was as a significant test, with a significance level (alpha)=0.05, the Odds Ratio (OR) with 95% Confidence Interval (CI) determined the odds of Quality of Life.

This research was approved by the Health Research Ethics Committee Faculty of Health Science and Technology Jenderal Achmad Yani University with number registration: 133/KEPK/FITKes-Unjani/VI/2025. Participants were informed about this study regarding research objectives, and consent was obtained before data collection. Written informed consent was obtained from all participants.

Results and Discussion

A total of 115 patients with type 2 diabetes mellitus (T2DM) participated in this study. The demographic characteristics of respondents were considered in this study, such as age, gender, level of education, occupation, and marital status.

Table 1. Distribution frequency variable of respondents

Variable		Poor Quality of life		Good Quality of life		Total	Percentage (%)
		n	%	n	%		
Aged	Elderly	40	65.5	21	34.4	61	53
	Midle-age	19	35.2	35	64.8	54	47
Gender	Female	37	48.1	40	51.9	77	67
	Male	22	57.9	16	42.1	38	33
Education	Basic Education	45	57.7	33	42.3	78	67.8
	Middle Education	12	36.4	21	16.1	33	28.7
	Higher Education	2	2.1	2	1.9	4	3.5
Occupation	Unemployed	52	50.5	51	49.5	103	89.6
	Employed	7	58.3	5	41.7	12	10.4
Marital status	Separated	15	62.5	9	37.5	24	20.9
	Married	44	48.8	47	51.6	91	79.1
Total		59	51.3	56	48.7	115	100

Based on the result in table 1, the participants as many as 53% are elderly, aged 60 years or older, and 65.5% of them have a poor quality of life. Most of the participants are female (67%), and 48.1% of them have a poor quality of life. Most respondents have only basic education (67,78%) and 57.7% of them have a poor quality of life Among patients with type 2 diabetes mellitus (T2DM), 89.6% are unemployed, and 50.5% have poor quality of life. Additionally, 20.9% of T2DM patients are separated, and 62.5% of them have a poor quality of life.

Elderly patients with type 2 diabetes have a lower quality of life. This happens because older people have less control over their physical and mental health compared to younger people. Their body functions, like how their organs work and how their chemicals are balanced, also decrease with age. Females with T2DM also have a poor quality of life, this is because of the differences in how women and men are shaped by society, their daily activities, and their hormones. Women with T2DM are more likely to express their feelings and complain about their health conditions, which can make their quality of life worse. Female T2DM patients also get tired more easily when doing everyday tasks, a person's personal traits can affect their quality of life. The level of individual affect the QOL, education helps people understand their illness better, which in turn affects how well they manage their health and their overall quality of life (Huwaiddah et al., 2022).

In this study, it was shown that patients with T2DM have poor quality of life as much as 51.3%. According to research by Sari et al (2024), patient have not good quality of life as

much as 47.1%, Priambodo et al (2023), show that 61% patient have poor quality of life, Paris et al (2023), participant with poor quality of life as much as 53% (Paris et al., 2023; Priambodo et al., 2023; Sari et al., 2025). Diabetes quality of life can be defined as how patients feel about their life, how satisfied they are, and what they care about when managing diabetes (Wicaksana, 2025). Quality of life is a person's view of his position in life related to his life goals, hopes, standards and what they focus on. For people with diabetes, a poor quality of life can happen because they don't feel their condition is getting better, they may feel hopeless, angry, or ashamed, and they might stop trying to improve their health. This can really impact their overall quality of life (Sari et al., 2025).

Table 2. Bivariat analisis long suffering and medication adherence with quality-of-life T2DM

Variable	Quality of Life T2DM				Total	P-value	OR (95%CI)
	Poor		Good				
	n	%	n	%	n	%	
Long Suffering of T2DM							
≥ 5 years	42	64.6	23	35.4	65	56.5	0.002 (1.63-7.69)
<5 years	17	34.0	33	66.0	50	43.5	
Medication adherence							
Lack of Compliance	51	58.6	36	41.4	87	75.7	3.54 (1.40-8.92)
Obedient	8	28.6	20	71.4	28	24.3	
Total	59	51.3	56	48.7	115		

In this study, it was shown that long suffering T2DM ≥ 5 years as many as 56.5%. According to research by Alfian et al (2016), reported that participants with diabetes over 5 years are 56%, Sari et al (2024) participants with long suffering T2DM > 5 years are 27.7%. The longer a person has diabetes mellitus, the more their quality of life tends to get worse. People who have had diabetes for more than 5 years are three times more likely to have a lower quality of life compared to those who have had it for less than 5 years. The time they have had diabetes increases the risk of complications and worsens psychosocial conditions, which leads to a greater decline in their quality of life (Lumanauw et al., 2024).

People who have had long suffering diabetes mellitus ≥ 5 years majority have poor quality of life (64.6%) compared to good quality of life (35.4%). People who have long suffering from T2DM were significantly associated with QOL (p-value= 0.02, with OR= 3.5, 95% CI= 1.63-7.69. It means that patients with T2DM for five years or longer are more likely to experience a poorer quality of life than those who have had it for a shorter time (<5 years). Several studies show that the length of illness diabetes mellitus significantly affects QOL.

According to research by Lumanauw et al. (2025), long suffering T2DM more than 5 years was significant with QOL (p value=0.009), OR=3.27 (95%CI= 1.57-6.76), in indicated that patients with diabetes mellitus for > 5 years are three times more likely to have a poor quality of life compared to those less than 5 years (Lumanauw et al., 2024). Research by Paris et al (2023), show that long suffering T2DM (> 3 years) significantly with QOL (p value= 0.041) (Paris et al., 2023), and research by Priambodo et al (2023), long suffering T2DM (> 10 years) significantly with QOL (p value= 0.001), OR = 5.58 (Priambodo et al., 2023).

Patients with T2DM who have suffered for < 5 years, were found to have a good QOL with a score from moderate to high, while patients with a length of suffering > 10 years had moderate score to poor QOL (Huwaidah et al., 2022). This indicates that the longer a person has diabetes mellitus, the more likely their quality of life tends to decline (Lumanauw et al., 2024). The long duration of suffering resulting in patients being more surrendered and tending to despair in undergoing treatment, and patients feeling tired due several years of consumption of the drug for treatment diabetes mellitus (Huwaidah et al., 2022). Longer disease duration, like a diabetes mellitus can be increases the risk of complications (hypoglycemia, hyperglycemia, macroangiopathy, diabetic retinopathy, nephropathy, dan diabetic neuropathy, and diabetic foot), worsens psychosocial conditions, which impacts the decline in quality of life (Farmaki et al., 2020; Lumanauw et al., 2024).

In this research, lack of compliance in patients with type 2 diabetes mellitus as many as 75,7%. According to research by Alfian et al (2016), show that 49.4% patient T2DM had low adherence medication and 29.7%, Vafopoulou et al (2024), 12% reported had low adherence medication, Sari et al (2024), shows that patients who were lack of compliance medication (52.85%) and research by Ahmed et al (2023), shows that the majority of the participants (74%) had a low level of medication adherence (Ahmed et al., 2023; Alfian et al., 2016; Sari et al., 2025; Vafopoulou et al., 2024). The proportion of diabetes mellitus patients that do not adhere to taking medication ranges from 25 to 91% globally. Taking medicine as prescribed is very important for getting the best possible results from treatment (Khunti et al., 2017). Low medication adherence cannot optimally control blood Diabetes is a condition that needs long-term use of medication. The aim of treating diabetes is not to completely cure it, but to maintain blood glucose levels within a normal range. The biggest problem that stops people with diabetes from managing their blood sugar effectively is not following their medication plan.(Pertiwi et al., 2022).

Patients T2DM with lack of compliance and have poor quality of life are higher (58.6%) compared to good quality of life (41.4%). Medication adherence was found to be significantly

associated with quality of life in people with T2DM (p-value = 0.01, with a OR of 3.54, 95% CI = 1.4 to 8.92). This means that patients with T2DM who lack compliance with their medication are more likely to have a lower quality of life compared to those who take obedient medication.

Based on research by Alfian et al. (2016), found that was a significant association between medication adherence with diabetes specific-QOL (p value =0.009), higher adherence in medication can be improve diabetes specific-QOL and vice versa, and medication adherence found to be significant predictor for QOL in T2DM patients (Alfian et al., 2016). Research by Majeed et al (2021), showed that good QOL in T2DM pateint was significantly associated with treatment adherence (P value= 0.004). Research by Sari et al (2024), shows that patients who were less adherent had a poor quality of life (51.9%) more than those who had a good quality of life (48.1%), although no relationship between adherence to medication use and the quality of life of type 2 DM patients (p value= 0.0059) (Sari et al., 2025).

High adherence to diabetes-prescribed medicine was associated with better QOL and vice versa. These indicated the beneficial effects of the use of anti-diabetic pharmacological therapies by patients, which may have been associated with decreased pain management, reduced disease progression and other diabetes-related complications (Alfian et al., 2016). Medication adherence to diabetes therapy, such as taking insulin or oral drugs and hypoglycemic agents associated with quality of life, can alter the quality of life by controlling blood sugar levels and lowering symptoms of T2DM (Ahmed et al., 2023).

Conclusion

This study found that how long someone has had type 2 diabetes and how well they follow their medication plan are closely linked to their quality of life. It also shows that sticking to medication can help reduce the effects of having diabetes for a long time on a person's quality of life. This highlights how important it is for people to take care of their health on their own, especially when dealing with a long-term illness. For healthcare providers such us Public health center can provide education on the importance of medication adherence for DM patients, encourage, support patients in following their treatment plans, especially those who have had diabetes for a long time,as one of the pillars of DM management to improve their overall health and well-being, thereby improving their quality of life.

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