

Quality of Life of Patients with Diabetes Mellitus Receiving Palliative Care

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Abstract

Introduction: In Indonesia, diabetes remains an important health concern that requires attention. According to the 2023 Indonesian Health Survey (SKI), the prevalence of diabetes mellitus among individuals aged ≥ 15 years was 2.2% based on physician diagnosis. In contrast, the prevalence increased to 11.7% when determined through blood glucose testing. This difference suggests that a substantial proportion of individuals may have blood glucose levels consistent with diabetes but have not yet been medically diagnosed. Among patients receiving palliative care, quality of life is an essential component of patient-centered healthcare, with care directed toward addressing patients' individual needs and overall well-being. **Objective:** This study aimed to analyze the quality of life of patients with diabetes mellitus receiving palliative care and examine the relationships between family support, comorbidity, palliative-care stage, and quality of life. **Methods:** This study used a quantitative observational design with a cross-sectional approach. The study included 40 patients with diabetes mellitus receiving palliative care. Data collected included demographic characteristics, duration of diabetes, comorbidity, family support, palliative-care stage, and quality-of-life scores. Data were analyzed using univariate and bivariate analyses with the chi-square test at a significance level of $p < 0.05$. **Results:** The results showed that the mean age of respondents was 60.38 ± 6.33 years, mean duration of diabetes was 9.25 ± 5.14 years, and mean quality-of-life score was 68.00 ± 12.33 . Twenty respondents (50.0%) were male and 20 (50.0%) were female. Most respondents had senior high school education (37.5%), had ≥ 2 comorbidities (40.0%), received moderate family support (50.0%), and were in the early palliative-care stage (65.0%). Low quality of life was found in 4 respondents (10.0%), moderate quality of life in 23 respondents (57.5%), and high quality of life in 13 respondents (32.5%). The chi-square test showed that family support was significantly associated with quality of life ($\chi^2 = 12.097$; $p = 0.017$). The presence of comorbid conditions showed a statistically significant relationship with patients' quality of life ($\chi^2 = 10.947$; $p = 0.027$). In contrast, no statistically significant association was observed between the stage of palliative care and quality of life ($\chi^2 = 3.685$; $p = 0.158$). **Conclusion:** Most patients with diabetes mellitus receiving palliative care had a moderate level of quality of life. Family support and comorbidity were associated with patients' quality of life, whereas palliative-care stage was not significantly associated with quality of life. Therefore, family support and comorbidity management should be considered in the provision of patient-centered palliative care.

Keywords: Diabetes Mellitus, Quality of Life, Palliative Care, Family Support, Comorbidity

1. INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder that has emerged as a major global public health concern. The burden of diabetes has increased substantially over recent decades, with the World Health Organization (WHO) estimating that the number of people living with the condition rose from around 200 million in 1990 to approximately 830 million in 2022. Furthermore, in 2022, diabetes was estimated to affect about 14% of adults aged 18 years and older worldwide. Diabetes mellitus can cause various complications involving the cardiovascular system, kidneys, eyes, nerves, and lower limbs, which may increase long-term treatment burden and adversely affect patients' health-related quality of life^[1]. Indonesia also faces a considerable burden of diabetes mellitus. Findings from the 2023 Indonesian Health Survey (SKI) indicated that among individuals aged 15 years and older, diabetes prevalence was 2.2% when based on a physician's diagnosis, whereas the proportion increased to 11.7% when assessed through blood glucose testing^[2]. The difference between these estimates indicates that a considerable proportion of people with elevated blood glucose may not have a previously recognized diagnosis. Prolonged diabetes and its complications may increase symptom burden, functional limitations, treatment complexity, and healthcare needs, which may subsequently affect patients' quality of life. Quality of life is an important outcome in the management of chronic diseases, particularly among patients experiencing complications, multiple comorbidities, functional limitations, and increased symptom burden. In patients with diabetes mellitus, quality of life may be affected by physical symptoms, psychological conditions, treatment burden, social support, and the presence of diabetes-related complications^[3,4].

Diabetes mellitus requires long-term disease management, including medication use, dietary regulation, monitoring of blood glucose, regular healthcare visits, and management of complications. These requirements may create a substantial burden for patients and influence their daily activities and psychological well-being. Therefore, assessment of quality of life is important not only for evaluating disease management but also for identifying

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DOI : 10.35451/jkf.v9i1.3966

Received : 2026-09-27, Accepted: 2026-10-15, Published: 2026-10-30

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patients' broader physical, psychological, and social needs. Quality of life is a particularly important consideration for individuals receiving palliative care. According to the World Health Organization (WHO), an estimated 56.8 million people worldwide require palliative care annually; however, only around 14% of those in need currently have access to such services^[5]. Palliative care aims to improve quality of life and relieve suffering associated with serious health-related problems through an approach that addresses physical, psychological, social, and spiritual needs. Diabetes mellitus is among the chronic conditions that may require palliative and end-of-life care, particularly when patients experience advanced disease, multiple complications, or a substantial treatment burden^[6]. In people with diabetes mellitus, palliative and end-of-life care may involve individualized management of symptoms, complications, treatment burden, and psychosocial needs. Quality-of-life assessment is therefore important because it provides information about outcomes that matter directly to patients^[7]. Family support is one of the factors that may influence quality of life among patients with diabetes mellitus. Family members can provide emotional support, assistance with treatment, reminders for medication and healthcare visits, assistance with daily activities, and encouragement to maintain healthy behaviors. Previous studies conducted in Indonesia have reported an association between family support and quality of life among patients with diabetes mellitus^[8–11]. Family support may assist patients in maintaining treatment adherence, managing dietary practices, coping with the emotional burden of chronic illness, and adapting to changes associated with long-term disease. In the palliative-care context, family involvement may become increasingly important because patients may require additional physical, emotional, and social support.

Comorbidity is another clinical factor that may influence quality of life. Patients with diabetes mellitus may experience one or more chronic conditions simultaneously, resulting in greater treatment complexity, increased symptom burden, medication burden, functional limitations, and healthcare utilization. Patients with multiple comorbidities may experience greater difficulties in maintaining independence and performing daily activities. Evidence from previous systematic reviews suggests that comorbid conditions, along with various other clinical characteristics, are significantly related to health-related quality of life in individuals with type 2 diabetes mellitus.^[3,4,12] In palliative care, management of comorbidities is particularly important because the accumulation of chronic conditions may increase symptom burden and treatment complexity.

Family support and comorbidity are therefore relevant factors to consider when assessing quality of life among patients with diabetes mellitus receiving palliative care. However, quality of life may also differ according to the stage of palliative care because patients at different stages may experience different levels of symptoms, functional limitations, treatment needs, and psychosocial challenges. Assessment of these factors can provide information for healthcare professionals to develop patient-centered interventions that address not only disease-related outcomes but also patients' overall well-being. Based on these considerations, this study aimed to analyze the quality of life of patients with diabetes mellitus receiving palliative care and to examine the relationships between family support, comorbidity, palliative-care stage, and quality of life.

2. METHOD

This study employed a quantitative observational analytic design using a cross-sectional approach. A total of 40 patients with diabetes mellitus who were receiving palliative care were included in the study. Data were collected on participants' sociodemographic characteristics, including age, sex, educational attainment, and occupation, as well as clinical and care-related variables, including duration of diabetes mellitus, comorbidities, family support, and palliative-care stage. Health-related quality of life was assessed using both a continuous quality-of-life score and a categorical classification of quality of life. These variables were analyzed to examine their potential associations with quality of life among patients with diabetes mellitus receiving palliative care.

Quality of life was assessed as a numerical score and categorized into low, moderate, and high categories. Age, duration of diabetes mellitus, and quality-of-life score were analyzed as numerical variables, while sex, education, occupation, comorbidity, family support, and palliative-care stage were analyzed as categorical variables.

Descriptive analysis was used to present the characteristics of respondents and distributions of the study variables. The chi-square test was used to examine the relationships between family support, comorbidity, palliative-care stage, and quality-of-life category. Statistical significance was determined at $p < 0.05$. This research has also received a certificate of ethical worthiness. With no. 176/KEPK-FIKES/II.AU/F/2025. Ethical clearance stated through attachment form agreement and letter permission research

3. RESULTS

The characteristics of the respondents included in this study are presented in Table 1. The characteristics include sex, education, occupation, comorbidity, family support, palliative-care stage, and quality of life.

3.1 Characteristic

The characteristics of the respondents are presented in Table 1, including sex, educational level, occupation, comorbidity, family support, palliative care stage, and quality of life.

Table 1. Characteristics of Respondents

Characteristic	Category	n	%
Sex	Male	20	50.0
	Female	20	50.0
Education	Elementary school	9	22.5
	Junior high school	10	25.0
	Senior high school	15	37.5
	Higher education	6	15.0
Occupation	Unemployed	12	30.0
	Farmer	11	27.5
	Retired	7	17.5
	Employee	6	15.0
	Self-employed	4	10.0
Comorbidity	None	11	27.5
	1 comorbidity	13	32.5
	≥2 comorbidities	16	40.0
Family support	Poor	8	20.0
	Moderate	20	50.0
	Good	12	30.0
Palliative stage	Early	26	65.0
	Advanced	14	35.0
Quality of life	Low	4	10.0
	Moderate	23	57.5
	High	13	32.5

Table 1. shows that the study included **40 respondents**, with an equal proportion of males and females (50.0% each). Most respondents had senior high school education (37.5%), were unemployed (30.0%), had ≥2 comorbidities (40.0%), received moderate family support (50.0%), and were in the early palliative-care stage (65.0%). Regarding quality of life, most respondents had a **moderate level (57.5%)**, followed by high (32.5%) and low (10.0%).

3.2 Quality-of-Life Scores by Selected Factors

The mean quality-of-life scores according to family support, comorbidity, and palliative-care stage are presented in Table 2.

Table 2. Mean Quality-of-Life Score According to Selected Factors

Variable	Category	n	Mean±SD
Family support	Poor	8	57.50±8.33
	Moderate	20	66.85±11.57
	Good	12	76.92±9.73
Comorbidity	None	11	76.45±11.69
	1 comorbidity	13	70.69±10.83
	≥2 comorbidities	16	60.00±9.14
Palliative stage	Early	26	70.15±11.28
	Advanced	14	64.00±13.61

Table 2 shows that the mean quality-of-life score was highest among respondents with good family support (76.92±9.73) and lowest among those with poor family support (57.50±8.33). Regarding comorbidity, respondents without comorbidity had the highest mean quality-of-life score (76.45±11.69), while those with ≥2 comorbidities had the lowest score (60.00±9.14). Based on palliative-care stage, respondents in the early stage had a higher mean quality-of-life score (70.15±11.28) than those in the advanced stage (64.00±13.61).

3.3 Family Support and Quality of Life

The distribution of quality-of-life categories according to family support and the results of the chi-square analysis are presented in Table 3.

Table 3. Family Support and Quality of Life

Family support	Low n (%)	Moderate n (%)	High n (%)	Total
Poor	2 (25.0)	6 (75.0)	0 (0.0)	8
Moderate	2 (10.0)	13 (65.0)	5 (25.0)	20
Good	0 (0.0)	4 (33.3)	8 (66.7)	12
Total	4 (10.0)	23 (57.5)	13 (32.5)	40

Chi-square analysis showed a significant association between family support and quality of life ($\chi^2=12.097$; $p=0.017$). Respondents with good family support had the largest proportion of high quality of life (66.7%).

3.4 Comorbidity and Quality of Life

The distribution of participants across quality-of-life categories according to comorbidity status, along with the results of the chi-square test, is presented in Table 4.

Table 4. Comorbidity and Quality of Life

Comorbidity	Low n (%)	Moderate n (%)	High n (%)	Total
None	0 (0.0)	4 (36.4)	7 (63.6)	11
1 comorbidity	1 (7.7)	7 (53.8)	5 (38.5)	13
≥ 2 comorbidities	3 (18.8)	12 (75.0)	1 (6.3)	16
Total	4 (10.0)	23 (57.5)	13 (32.5)	40

A statistically significant relationship was observed between comorbidity status and quality of life ($\chi^2 = 10.947$; $p = 0.027$). Participants without comorbid conditions had a higher proportion of good quality of life (63.6%), whereas this proportion was substantially lower among those who had two or more comorbidities (6.3%).

3.5 Palliative-Care Stage and Quality of Life

The distribution of quality-of-life categories according to palliative-care stage and the results of the chi-square analysis are presented in Table 5.

Table 5. Palliative-Care Stage and Quality of Life

Palliative stage	Low n (%)	Moderate n (%)	High n (%)	Total
Early	1 (3.8)	17 (65.4)	8 (30.8)	26
Advanced	3 (21.4)	6 (42.9)	5 (35.7)	14
Total	4 (10.0)	23 (57.5)	13 (32.5)	40

The association between palliative-care stage and quality of life was not statistically significant ($\chi^2=3.685$; $p=0.158$).

4. DISCUSSION

The findings indicate that family support was significantly associated with quality of life. Respondents with good family support had the highest proportion of high quality of life, while none of the respondents with poor family support were categorized as having high quality of life. These results are in line with findings from earlier research, which demonstrated that family support is related to quality of life among individuals with diabetes mellitus. [1,2,3,5,7,9,10].

Family support may contribute to quality of life through practical assistance, emotional support, encouragement to maintain treatment, and support for daily self-management. In palliative care, family involvement may become increasingly important because care extends beyond disease control toward symptom relief, psychosocial support, and patient-centered decision-making [13,21].

Comorbidity was also significantly associated with quality of life. Patients with ≥ 2 comorbidities had the lowest mean quality-of-life score (60.00 ± 9.14), while respondents without comorbidity had the highest mean score (76.45 ± 11.69). This pattern is consistent with evidence that clinical burden and comorbid conditions are important Factors influencing health-related quality of life among individuals with type 2 diabetes mellitus [11,15,16].

The relationship between palliative-care stage and quality of life was not statistically significant in this study. Respondents in the early stage had a mean quality-of-life score of 70.15 ± 11.28 , compared with 64.00 ± 13.61 among respondents in the advanced stage. Although the difference in the observed means suggests variation between groups, the chi-square analysis of categorized quality of life did not demonstrate a statistically significant association ($p=0.158$). This finding should be interpreted in the context of the small sample size and the distribution of quality-of-life categories.

The overall distribution showed that most respondents had moderate quality of life (57.5%). This finding indicates that quality of life in patients with diabetes receiving palliative care is not determined by a single clinical

dimension. The assessment needs to consider family support, comorbidity, symptom burden, functional limitations, and psychosocial needs. Systematic reviews of quality-of-life determinants in diabetes similarly describe multiple interacting factors [11,15,16].

Several limitations need to be considered in interpreting the results of this study. First, the cross-sectional design does not allow temporal relationships to be established and therefore limits causal inference. Second, the relatively small sample size of 40 participants may reduce the statistical precision of the estimates and restrict the generalizability of the findings. Third, converting quality-of-life scores into categorical variables may result in a loss of information compared with analyzing the original continuous scores. These methodological considerations should be taken into account when interpreting the study findings. The findings indicate that family support was significantly associated with quality of life. Respondents with good family support had the highest proportion of high quality of life, while none of the respondents with poor family support were categorized as having high quality of life. This finding is consistent with previous studies reporting an association between family support and quality of life among patients with diabetes mellitus [1,2,3,5,7,9,10].

Family support may contribute to quality of life through practical assistance, emotional support, encouragement to maintain treatment, and support for daily self-management. In palliative care, family involvement may become increasingly important because care extends beyond disease control toward symptom relief, psychosocial support, and patient-centered decision-making [13,21].

Comorbidity was also significantly associated with quality of life. Patients with ≥ 2 comorbidities had the lowest mean quality-of-life score (60.00 ± 9.14), while respondents without comorbidity had the highest mean score (76.45 ± 11.69). This pattern is consistent with evidence that clinical burden and comorbid conditions are important factors associated with health-related quality of life in people with type 2 diabetes [11,15,16]. The relationship between palliative-care stage and quality of life was not statistically significant in this study. Respondents in the early stage had a mean quality-of-life score of 70.15 ± 11.28 , compared with 64.00 ± 13.61 among respondents in the advanced stage. Although the difference in the observed means suggests variation between groups, the chi-square analysis of categorized quality of life did not demonstrate a statistically significant association ($p=0.158$). This finding should be interpreted in the context of the small sample size and the distribution of quality-of-life categories. Overall, more than half of the respondents were classified as having a moderate level of quality of life (57.5%). This finding suggests that the quality of life of patients with diabetes mellitus undergoing palliative care is influenced by multiple dimensions rather than being attributable to a single clinical factor. The assessment needs to consider family support, comorbidity, symptom burden, functional limitations, and psychosocial needs. Systematic reviews of quality-of-life determinants in diabetes similarly describe multiple interacting factors [11,15,16].

Several limitations should be noted. The cross-sectional design limits causal inference, while the small sample of 40 participants may affect precision and generalizability. Categorizing quality-of-life scores may also result in some loss of information.

5. CONCLUSION

Among patients with diabetes mellitus receiving palliative care, most respondents had moderate quality of life. Family support and comorbidities showed significant relationships with quality of life, while palliative-care stage was not significantly related to quality of life. These findings indicate that assessment and strengthening of family support and management of comorbid conditions are relevant components of patient-centered palliative care for patients with diabetes mellitus.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the healthcare facilities and the research site for granting permission and providing the necessary support and facilities for the conduct of this study. The authors also extend their sincere appreciation to all patients with diabetes mellitus receiving palliative care who participated in this study and contributed to the data collection process. The authors further acknowledge all individuals whose assistance, cooperation, and constructive contributions supported the successful completion of this research

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