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Medication Adherence and Quality of Life Among Patients With Type 2 Diabetes Mellitus: A Cross-Sectional Study

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Abstract

Background

Diabetes mellitus is a chronic metabolic disorder that requires lifelong management and is associated with significant morbidity and reduced quality of life. Medication adherence is an important component of effective diabetes management; however, adherence to long-term therapy remains suboptimal in many patients.

Objective

To assess medication adherence and quality of life among patients with type 2 diabetes mellitus and to examine the associations of medication adherence and quality of life with selected sociodemographic and clinical factors.

Methods

This cross-sectional study was conducted among 330 patients with type 2 diabetes mellitus attending a tertiary care teaching hospital in Puducherry, India, over a period of eight months from June 2025 to January 2026. Medication adherence was assessed using the Medication Adherence Report Scale (MARS), and quality of life was evaluated using the WHOQOL-BREF questionnaire. Data were analyzed using SPSS version 24 (IBM Corp., Armonk, NY, USA). Descriptive and inferential statistics were used, with a p-value of <0.05 considered statistically significant.

Results

Among the 330 participants, 218 (66.1%) were adherent to their medications, while 112 (33.9%) were nonadherent. The psychological domain had the highest mean quality-of-life score (67.10 ± 10.13), whereas the social domain had the lowest (51.36 ± 18.66). Patients with good glycemic control had significantly higher quality-of-life scores in several domains. Those with fasting blood glucose <126 mg/dL had higher physical-domain scores than those with elevated levels (61.46 ± 9.69 vs. 58.44 ± 9.12; $p = 0.005$). Similarly, patients with postprandial blood glucose <200 mg/dL had higher physical, psychological, and social domain scores and overall perception of health. Patients with HbA1c <6.5% had higher physical and social domain scores and overall perception of health. Medication adherence was significantly associated with higher environmental-domain quality-of-life scores (65.17 ± 13.03 vs. 61.72 ± 13.72; $p = 0.026$).

Conclusion

Medication adherence and better glycemic control were associated with higher quality-of-life scores among patients with type 2 diabetes mellitus. Improving medication adherence and glycemic control may contribute to better quality of life in patients with type 2 diabetes mellitus.

Categories: Pharmacology
Keywords: glycemic control, medication adherence, quality of life, type 2 diabetes mellitus, whoqol-bref

Introduction

Diabetes mellitus is a chronic metabolic disorder that has emerged as a major public health problem worldwide. The World Health Organization has identified diabetes as one of the priority noncommunicable diseases due to its increasing prevalence and long-term complications [1]. According to the International Diabetes Federation (IDF) Diabetes Atlas, 11th edition, 2024, approximately 589 million people aged 20-79 years are living with diabetes, and this number is expected to rise to 853 million by 2050 [2].

In addition to its impact on mortality and morbidity, diabetes significantly affects the day-to-day lives of patients. The need for lifelong medication, dietary restrictions, regular monitoring, and frequent healthcare visits can affect both physical and psychological well-being. Furthermore, chronic complications such as neuropathy, retinopathy, nephropathy, and cardiovascular diseases contribute to a decline in quality of life [3]. Optimal glycemic control is essential to delay or prevent these complications. Achieving this requires consistent adherence to prescribed medications along with lifestyle modifications. However, medication adherence in chronic diseases such as diabetes remains a major challenge. An international systematic review and meta-analysis involving 69,366 patients across 26 studies reported a pooled prevalence of adherence to oral antidiabetic drugs of 55.53% (95% CI: 44.22%-66.85%), highlighting the substantial burden of medication non-adherence worldwide [4]. Similarly, a systematic review and meta-analysis of studies conducted in India reported that medication non-adherence ranged from 11% to 68% across the included studies. Among the four studies using the eight-item Morisky Medication Adherence Scale (MMAS-8), the pooled prevalence of non-adherence was 48% (95% CI: 18%-79%) [5].

Medication adherence is therefore a crucial component of effective diabetes management. Poor adherence not only affects clinical outcomes but also increases healthcare utilization and costs [6]. Medication adherence is influenced by a complex interplay of patient-, treatment-, and healthcare system-related factors. In recent years, there has been increasing emphasis on patient-centered outcomes such as quality of life. Quality of life provides a broader perspective on the impact of the disease and its treatment beyond conventional clinical parameters. It encompasses physical health, psychological well-being, social relationships, and environmental factors.

Understanding the relationship between medication adherence and quality of life is important for improving overall diabetes care. While good adherence may lead to better disease control and improved quality of life, poor quality of life may also negatively influence adherence behavior. With this background, the present study was undertaken to assess medication adherence and quality of life among patients with type 2 diabetes mellitus and to examine their association with sociodemographic and clinical characteristics.

Materials And Methods

Study design and setting

This cross-sectional study was conducted in the outpatient and inpatient departments of Sri Manakula Vinayagar Medical College and Hospital, Puducherry, India. The study was carried out over a period of eight months, from June 2025 to January 2026.

Sampling method

Participants were recruited using a non-probability convenience sampling method during the study period.

Sample size

The sample size was calculated using the single-proportion formula, assuming an anticipated nonadherence proportion of 31.2%, based on a previous study by Kassahun et al. [7]. With a 5% absolute precision and a 95% confidence level, the calculated minimum sample size was 330 participants [8].

Inclusion criteria

Patients aged 18 years and above, of either gender, with a confirmed diagnosis of type 2 diabetes mellitus and receiving treatment for at least six months were included in the study.

Exclusion criteria

Patients who were critically ill, had a diagnosed psychiatric illness or cognitive impairment, or were unable to respond to the questionnaire were excluded from the study.

Data collection procedure

Eligible patients were approached during their hospital visits. The purpose and procedures of the study were explained to each participant, and written informed consent was obtained before data collection. Data were collected using a structured questionnaire covering sociodemographic and clinical characteristics, medication adherence, and quality of life. Medication adherence was assessed using the Medication Adherence Report Scale (MARS-10), while quality of life was assessed using the WHOQOL-BREF questionnaire (26 items). Both questionnaires were administered in the local language. Participants who were able to read and understand the questions completed the questionnaires independently. For participants requiring assistance, the principal investigator or their attenders helped read and explain the questions; however, responses were provided by the participants themselves. Clarifications were provided when necessary without influencing participants' responses. Completed questionnaires were checked for completeness at the time of collection. Each data collection session lasted approximately 15-20 minutes.

Study tools

Medication Adherence

Medication adherence was assessed using the 10-item Medication Adherence Rating Scale (MARS-10) developed by Thompson et al. [9]. Permission to use the scale was obtained from the copyright holder. The scale consists of 10 items assessing medication-taking behavior. In the present study, participants with a total score >5 were considered adherent, whereas those with a score ⩽5 were categorized as nonadherent.

Quality of Life

Quality of life was assessed using the WHOQOL-BREF questionnaire developed by the World Health Organization [10]. It consists of 26 items covering four domains: physical, psychological, social, and environmental. Two additional items assess overall quality of life and overall health. Domain scores were calculated as per standard WHO guidelines [11]. Each domain score is transformed to a scale of 0-100, with higher scores indicating better quality of life. Permission to use the questionnaire was obtained from the WHO Permissions Team.

Clinical Parameters

Relevant clinical details, including duration of diabetes, fasting blood glucose (FBG), postprandial blood glucose (PPBG), and HbA1c values, were recorded from patient records. For the purpose of data analysis, patients were categorized as having good glycemic control or poor glycemic control based on their FBG, PPBG, and HbA1c cutoffs of 130 mg/dL, 180 mg/dL, and 7%, respectively in accordance with the American Diabetes Association (ADA) Standards of Care in Diabetes-2026 [12].

Statistical analysis

Data were entered into Microsoft Excel (Microsoft Corp., Redmond, WA, USA) and analysed using IBM SPSS Statistics version 24 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarise the study variables. Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. The independent-samples t-test was used to compare mean WHOQOL-BREF domain scores between two groups, while one-way analysis of variance (ANOVA) was used for comparisons involving more than two groups. Multivariable logistic regression analysis was performed to identify factors independently associated with medication adherence. The results were expressed as adjusted odds ratios (AORs) with 95% confidence intervals (CIs). A p-value of less than 0.05 was considered statistically significant.

Ethical considerations

The study was approved by the Institutional Ethics Committee (EC/51/2025). Written informed consent was obtained from all participants prior to data collection. Confidentiality of participant information was maintained throughout the study.

Results

Sociodemographic and clinical characteristics

A total of 330 patients with type 2 diabetes mellitus were included in the study. Participants aged less than 60 years accounted for 62.7% of the study population, with males comprising an equal proportion (62.7%). Regarding educational status, primary-level education was reported by 33.9% of participants, while 26.7% had no formal schooling. The duration of diabetes was five years or less in 71.5% of participants. A family history of diabetes was reported by 18.5% of patients. Regarding glycaemic status, poor control was observed in 58.5% of participants based on fasting blood glucose (FBG), 69.4% based on postprandial blood glucose (PPBG), and 79.1% based on HbA1c levels. Detailed baseline characteristics are presented in Table *1*.

Demographic parameters	Frequency (%)
Age	
< 60 years	207 (62.70)
> 60 years	123 (37.30)
Gender	
Male	207 (62.70)
Female	123 (37.30)
Educational Qualification	
No Formal Schooling	88 (26.70)
Primary School	112 (33.90)
Secondary School	58 (17.60)
Graduate	72 (21.90)
Duration of diabetes	
< 5 years	236 (71.5)
6 – 10 years	77 (23.3)
11 – 15 years	11 (3.3)
>15 years	6 (1.8)
Family history of diabetes	
Yes	61 (18.5)
No	269 (81.5)
FBG	
Good Control (< 130 mg/dl)	137 (41.5)
Poor Control (> 130 mg/dl)	193 (58.5)
PPBG	
Good Control (< 180 mg/dl)	101 (30.6)
Poor Control (> 180 mg/dl)	229 (69.4)
HbA1C	
Good Control (< 7%)	69 (20.9)
Poor Control (> 7%)	261 (79.1)

TABLE 1: Sociodemographic and Clinical Characteristics of Study Participants (N = 330)

FBG: fasting blood glucose; PPBG: postprandial blood glucose; HbA1c: glycated haemoglobin.

Medication adherence

Based on the Medication Adherence Report Scale (MARS), 218 (66.1%) patients were adherent to their medications, while 112 (33.9%) were nonadherent (Figure *1*).

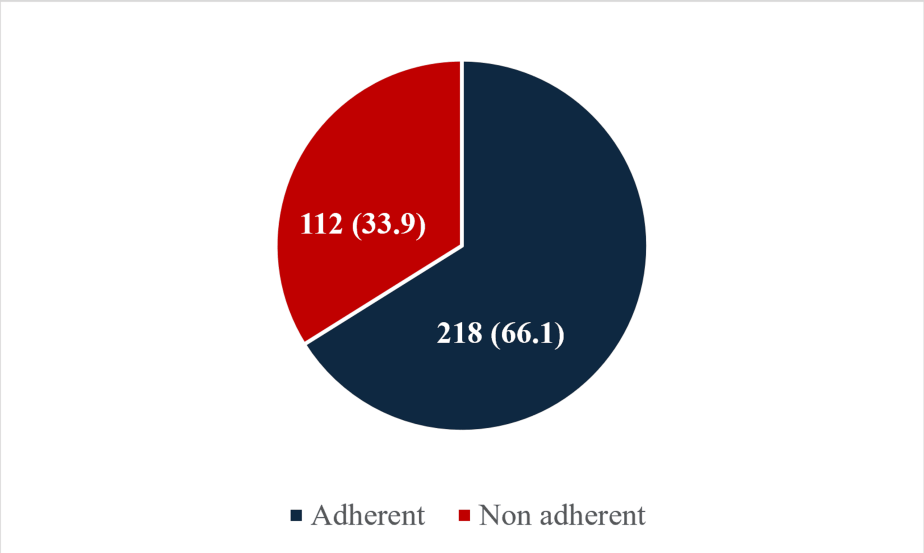


FIGURE 1: Distribution of Medication Adherence Among Patients With Type 2 Diabetes Mellitus Assessed Using the Medication Adherence Report Scale (MARS) (N = 330).

Quality of life

The mean quality-of-life scores varied across the different domains. The psychological domain had the highest mean score (67.10 ± 10.13), followed by the environmental (63.99 ± 13.35) and physical domains (59.63 ± 9.45), whereas the social domain had the lowest mean score (51.36 ± 18.66). The mean scores for overall health and overall quality of life were 59.62 ± 35.51 and 46.59 ± 22.00, respectively (Figure 2).

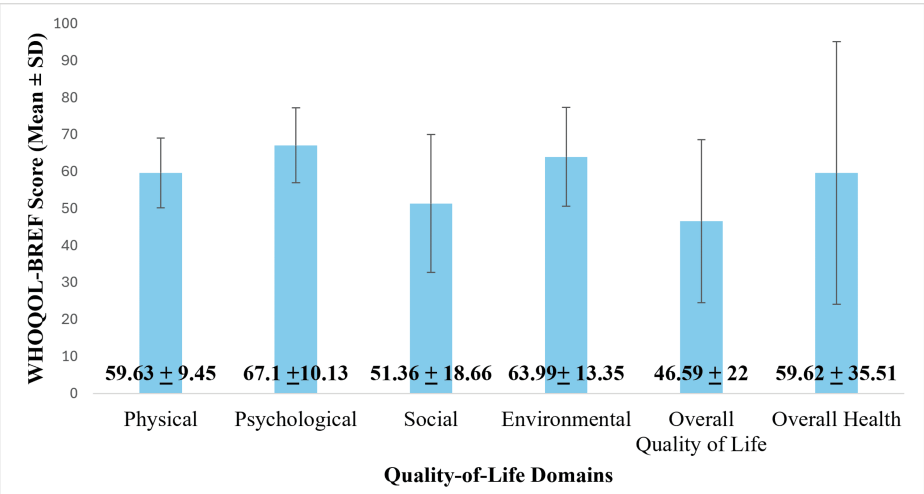


FIGURE 2: Mean ± SD Scores of Quality of Life Domains, Overall Health, and Overall Quality of Life Assessed Using the WHOQOL-BREF (N = 330)

WHOQOL-BREF: World Health Organization Quality of Life-BREF; SD: standard deviation. Values are presented as mean ± SD.

Comparison of quality-of-life scores across sociodemographic and clinical variables

The comparison of mean quality-of-life scores across different sociodemographic and clinical variables is presented in Table 2.

Demographic variables	Physical domain	Test statistic (t/f)	P value	Psychological domain	Test statistic (t/f)	P value	Social domain	Test statistic (t/f)	P value	Environmental domain	Test statistic (t/f)	P value	Overall perception on QoL	Test statistic (t/f)	P value	Overall perception on Health	Test statistic (t/f)	P value
Age																		
< 60 years	59.35 ± 9.40	-0.697	0.485	67.17 ± 10.14	0.147	0.887	52.73 ± 13.28	-0.254	0.800	64.38 ± 13.63	0.684	0.491	46.01 ± 21.59	-0.618	0.538	65.09 ± 24.10	4.229	<0.001*
≥ 60 years	60.10 ± 9.55			67 ± 10.15			53.11 ± 12.90			63.34 ± 12.89			47.56 ± 22.72			53.86 ± 21.95		
Gender																		
Male	59.29 ± 9.48	-0.501	0.615	66.97 ± 9.89	-0.192	0.850	51.65 ± 13.14	-2.215	0.027*	62.58 ± 13.68	-1.474	0.137	48.78 ± 21.44	1.409	0.164	62.43 ± 23.22	1.526	0.132
Female	59.83 ± 9.45			67.19 ± 10.29			54.94± 12.89			64.84 ± 13.11			45.29 ± 22.28			58.33 ± 24.24		
Educational qualification																		
No Formal Schooling	60.92 ± 9.65	0.837	0.476	67.99 ± 9.19	0.412	0.746	51.89 ± 12.80	0.691	0.558	63.88 ± 13.75	1.669	0.173	49.15 ± 21.92	2.471	0.062	62.50 ± 24.85	0.309	0.820
Primary school	59.15 ± 9.45			66.70 ± 9.30			53.42 ± 13.67			63.78 ± 13.12			48.88 ± 21.33			59.59 ± 23.78		
Secondary school	58.68 ± 9.67			66.30 ± 11.43			51.58 ± 12.53			61.37 ± 13.91			45.26 ± 21.69			59.91 ± 22.91		
Graduate	59.57 ± 9.07			67.30 ± 11.44			54.28 ± 13.19			66.58 ± 12.54			40.97 ± 22.71			61.80 ± 24.09		
Duration of diabetes																		
1 – 5 years	60.18 ± 9.52	1.050	0.371	67.12 ± 10.36	0.096	0.963	52.64± 12.45	1.915	0.127	64.06 ± 13.50	0.270	0.847	46.18 ± 22.27	0.881	0.451	61.65 ± 24	0.608	0.611
6 – 10 years	58.02 ± 9.18			67.26 ± 9.11			52.27 ± 14.41			64.20 ± 12.84			47.40 ± 21.68			60.06 ± 24.08		
11 – 15 years	59.74 ± 10.48			65.53 ± 11.50			62.12 ± 15.52			60.51 ± 12.59			54.54 ± 21.84			52.27 ± 20.78		
>15 years	58.33 ± 7.71			67.36 ± 10.13			52.77 ± 14.59			65.10 ± 17.50			37.50 ± 13.69			58.33 ± 25.81		
Family h/o diabetes																		
Yes	60.59 ± 8.84	0.881	0.378	65.57 ± 10.94	-1.310	0.191	52.73 ± 13.41	-0.097	0.923	61.32 ± 14.03	-1.738	0.083	45.49 ± 22.59	-0.432	0.666	61.88 ± 25.66	0.353	0.725
No	59.41 ± 9.58			67.45 ± 9.93			52.91 ± 13.08			64.60 ± 13.14			46.84 ± 21.90			60.68 ± 23.55		
Adherence level																		
Nonadherent	59.91 ± 8.82	0.391	0.695	65.96 ± 9.78	-1.470	0.140	53.57 ± 14.39	0.688	0.493	61.72 ± 13.72	-2.237	0.026*	48.66 ± 20.37	1.224	0.221	61.38 ± 25.96	0.259	0.796
Adherent	59.48 ± 9.78			67.69 ± 10.29			52.52 ± 12.44			65.17 ± 13.03			45.53 ± 22.77			60.66 ± 22.85		
FBG																		
Good Control (<130 mg/dl)	59.86 ± 8.95	-3.910	<0.001*	65.56 ± 9.60	-1.680	0.094	58.87 ± 15.76	-2.323	0.021*	64.14 ± 13.14	-0.029	0.977	46.63 ± 21.84	-0.183	0.855	60.62 ± 32.23	-2.831	0.005*

Poor Control (> 130 mg/dl)	55.85 ± 9.54			63.65 ± 10.58			54.61 ± 17.33			64.09 ± 13.54			47.08 ± 22.08			70.44 ± 29.27		
PPBG																		
Good Control (< 180 mg/dl)	59.68 ± 9.27	-2.803	0.006*	65.38 ± 8.90	-1.191	0.235	60.58 ± 13.73	-3.367	0.001*	64.13 ± 13.42	-0.015	0.988	49.26 ± 22.49	-1.324	0.187	74.01 ± 22.06	-4.278	<0.001*
Poor Control (> 180 mg/dl)	56.56 ± 9.45			64.03 ± 10.73			54.52 ± 17.70			64.11 ± 13.26			45.74 ± 21.61			60.59 ± 33.93		
HbA1C																		
Good Control (< 7%)	62.54 ± 7.87	-5.702	<0.001*	65.88 ± 10.16	-1.319	0.188	63.00 ± 13.71	-4.267	<0.001*	63.04 ± 13.13	0.761	0.448	50.36 ± 21.65	-1.525	0.130	75.36 ± 26.94	-3.551	0.001*
Poor Control (> 7 %)	56.19 ± 9.45			64.06 ± 10.21			54.63 ± 17.13			64.40 ± 13.34			45.88 ± 21.92			61.88 ± 31.89		

TABLE 2: Comparison of Quality-of-Life Domain Scores Across Demographic and Clinical Variables Among Patients With Type 2 Diabetes Mellitus (N = 330)

Quality of life was assessed using the World Health Organization Quality of Life-BREF (WHOQOL-BREF) scale. Independent t-test was used to compare mean scores between two groups. For comparison of more than two groups, one-way analysis of variance (ANOVA) was used.

QoL: quality of life; FBG: fasting blood glucose; PPBG: postprandial blood glucose; HbA1c: glycated haemoglobin.

Age showed a statistically significant difference in overall perception of health, with patients aged less than 60 years having higher scores than those aged ⩾60 years (65.09 ± 24.10 vs. 53.86 ± 21.95; p < 0.001). No significant differences were observed in other quality-of-life domains across age groups.

Gender showed a statistically significant difference in the social domain of quality of life, with females having higher mean scores than males (54.94 ± 12.89 vs. 51.65 ± 13.14; p = 0.027). No significant differences were observed in the other quality-of-life domains between males and females.

Glycaemic parameters showed significant differences in selected quality-of-life domains. Patients with good fasting blood glucose control (FBG <130 mg/dL) had significantly higher mean scores in the physical domain (59.86 ± 8.95 vs. 55.85 ± 9.54; p < 0.001), social domain (58.87 ± 15.76 vs. 54.61 ± 17.33; p = 0.021), and overall perception of health (70.44 ± 29.27 vs. 60.62 ± 32.23; p = 0.005) compared with those with poor control.

Similarly, patients with good postprandial blood glucose control (PPBG <180 mg/dL) had significantly higher scores in the physical (59.68 ± 9.27 vs. 56.56 ± 9.45; p = 0.006) and social domains (60.58 ± 13.73 vs. 54.52 ± 17.70; p = 0.001), as well as in overall perception of health (74.01 ± 22.06 vs. 60.59 ± 33.93; p < 0.001). No significant differences were observed in the psychological, environmental or overall quality-of-life domains.

Patients with good glycaemic control based on HbA1c levels (<7%) also had significantly higher mean scores in the physical domain (62.54 ± 7.87 vs. 56.19 ± 9.45; p < 0.001), social domain (63.00 ± 13.71 vs. 54.63 ± 17.13; p < 0.001), and overall perception of health (75.36 ± 26.94 vs. 61.88 ± 31.89; p = 0.001). No significant differences were observed in the psychological, environmental or overall quality-of-life domains.

Medication adherence showed a statistically significant difference only in the environmental domain of quality of life, with adherent patients having higher mean scores than nonadherent patients (65.17 ± 13.03 vs. 61.72 ± 13.72; p = 0.026). No significant differences were observed in the other domains.

Association of sociodemographic and clinical variables with medication adherence

The association between sociodemographic and clinical variables and medication adherence was assessed using multivariable logistic regression analysis (Table 3). After adjusting for the other variables included in the model, none of the factors, including age, gender, educational status, duration of diabetes, family history of diabetes, and glycaemic parameters (FBG, PPBG, and HbA1c), showed a statistically significant association with medication adherence.

Variable	Adjusted OR (95% CI)	p-value
Age, years		
>65 vs ≤65	0.735 (0.448–1.207)	0.224
Duration of diabetes, years		
<5 vs >15	3.768 (0.391–36.327)	0.251
6–10 vs >15	2.976 (0.298–29.749)	0.353
11–15 vs >15	2.829 (0.209–38.277)	0.434
Glycaemic control		
Poor HbA1c control vs good control	0.938 (0.456–1.928)	0.862
Poor FBG control vs good control	0.989 (0.540–1.813)	0.972
Poor PPBG control vs good control	1.418 (0.796–2.527)	0.236
Gender		
Male vs female	0.836 (0.519–1.346)	0.461
Educational status		
No formal Schooling vs graduate	0.699 (0.360–1.357)	0.290
Primary school vs graduate	0.540 (0.285–1.024)	0.059
Secondary school vs graduate	0.836 (0.405–1.726)	0.628
Family history of diabetes		
Yes vs No	1.108 (0.609–2.016)	0.737

TABLE 3: Multivariable Logistic Regression Analysis of Factors Associated With Medication Adherence Among Patients With Type 2 Diabetes Mellitus (N = 330)

Reference categories: Age ≤65 years; duration of diabetes >15 years; good glycaemic control for HbA1c, FBG, and PPBG; female; graduate education; and no family history of diabetes.

OR: odds ratio; CI: confidence interval; FBG: fasting blood glucose; PPBG: postprandial blood glucose; HbA1c: glycated haemoglobin.

Discussion

In the present study, 66.1% of patients with type 2 diabetes mellitus were adherent to antidiabetic medications. This level of adherence was comparatively higher than that reported in several previous studies, where adherence rates ranged between 40% and 60% [4,13,14]. For instance, Mishra et al. reported good adherence in around 44% of patients [13], while Ahmad et al. observed adherence in less than half of the study population [14]. The relatively higher adherence observed in our study may be attributed to better access to healthcare services, regular follow-up, and structured care available in a tertiary care setting.

Quality-of-life assessment in the present study showed that the psychological domain had the highest mean score, whereas the social domain had the lowest. This pattern suggests that while patients may gradually adapt psychologically to living with diabetes, social interactions and support systems may be adversely affected. Similar findings have been reported by Redekop et al., who demonstrated that diabetes has a considerable impact on social functioning and daily life despite acceptable psychological adaptation [15]. Patients with better glycemic control had higher mean scores, particularly in the physical domain, social domain and overall perception of health.

Glycaemic control was associated with differences in selected quality-of-life domains. Patients with better fasting and postprandial blood glucose control had significantly higher scores in the physical and social domains and in overall perception of health. Similarly, patients with HbA1c levels below 7% had significantly higher scores in the physical and social domains and in overall perception of health than those with higher HbA1c levels. However, no significant differences were observed in the psychological or environmental domains or in the overall quality-of-life score across the glycaemic control categories. These

findings suggest that glycaemic control may be more closely related to certain aspects of physical and perceived health than to all dimensions of quality of life. Previous studies have also reported associations between poor glycaemic control, impaired physical functioning, fatigue, and diabetes-related complications [16]. Nevertheless, the cross-sectional design of the present study does not permit the establishment of a causal relationship between glycaemic control and quality of life.

In the present study, patients with type 2 diabetes mellitus who were adherent to their medications had significantly better quality of life in the environmental domain. This domain reflects factors such as access to healthcare services, financial resources, and availability of medications. This association may indicate that patients with better access to healthcare-related resources and a more favourable living environment are also more likely to adhere to prescribed treatment. Similar observations have been made in earlier studies, in which healthcare access and affordability were identified as important determinants of adherence [4,6].

Multivariable logistic regression analysis did not demonstrate statistically significant associations between medication adherence and the sociodemographic and clinical variables examined, including age, gender, educational status, duration of diabetes, family history of diabetes, and glycaemic parameters. Although primary-level education showed a borderline association with medication adherence, it did not reach statistical significance. This finding is in line with previous studies that have reported inconsistent relationships between demographic factors and adherence behavior [13,16]. Gelaw et al. also noted that adherence is influenced by multiple interacting factors and may not be determined solely by basic demographic characteristics [16].

The relationship between medication adherence and quality of life is not straightforward. Better adherence may contribute to better glycemic control and thereby enhance quality of life. At the same time, patients who feel better may be more likely to continue their treatment regularly. This suggests that both factors may influence each other and should be considered together in the management of diabetes. Overall, the findings of the present study emphasize the importance of improving medication adherence and achieving optimal glycemic control to enhance quality of life among patients with type 2 diabetes mellitus. Interventions such as patient education, regular counselling, simplified treatment regimens, and improved access to healthcare services may help improve both adherence and overall outcomes.

Limitations

This study has certain limitations. Medication adherence was assessed using self-reported questionnaires and may therefore be subject to recall and social desirability biases. The use of non-probability convenience sampling at a single tertiary care teaching hospital, rather than consecutive sampling, may have introduced selection bias and limited the generalisability of the findings. The cross-sectional design limits the ability to establish temporal relationships or causal associations between medication adherence, glycaemic control, and quality of life. Additionally, assistance provided by the principal investigator or attenders in reading and explaining questionnaire items may have influenced participants' interpretation of the questions and introduced response bias.

Conclusions

Our study shows that medication adherence was significantly associated with better quality of life in the environmental domain, while better glycaemic control was associated with higher scores in selected quality-of-life domains, particularly the physical and social domains and overall perception of health. These findings highlight the importance of promoting medication adherence and optimising glycaemic control as integral components of diabetes management. Patient education, regular counselling, and improved access to healthcare services may help enhance treatment adherence and overall quality of life among patients with type 2 diabetes mellitus.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Shanthi Manickam, Vivekraj Navabalan, Anandabaskar Nishanthi, Girija Subramanian

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Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. SMVMCH Ethics Committee, Sri Manakula Vinayagar Medical College and Hospital issued approval EC/51/2025. The study was reviewed and approved by the SMVMCH Ethics Committee, Sri Manakula Vinayagar Medical College and Hospital, under study number EC/51/2025, dated May 21, 2025. Written informed consent was obtained from all participants prior to data collection. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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