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Original Research Article

# Treatment Adherence and its Association with Health-Related Quality of Life Among Patients with Diabetes Mellitus Attending a Diabetic Clinic in Kolkata, West Bengal

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**Abstract**

**Background:** Diabetes mellitus is a chronic metabolic disorder that affects physical, psychological, social, and functional well-being. Health-related quality of life (HRQoL) is an important patient-centred outcome and may be influenced by disease duration, treatment, socioeconomic factors, and psychological well-being.

**Aim:** To assess treatment adherence and its association with health-related quality of life (HRQoL) among patients with diabetes mellitus attending a diabetic clinic in Kolkata, West Bengal.

**Materials and Methods:** A hospital-based cross-sectional descriptive and analytical study was conducted over 12 months among 150 adult patients with diabetes mellitus attending a selected diabetic clinic in Kolkata.

**Results:** Among 150 patients, 48 (32.0%) had poor QoL, 52 (34.7%) had moderate QoL, and 50 (33.3%) had good QoL. The overall mean QoL score was 104.81 ± 27.153. Duration of diabetes was not significantly correlated with Medication ($p=0.496$), Dietary Practices ($p=0.543$), Exercise ($p=0.122$), Blood Sugar Monitoring ($p=0.953$), or Foot Care ($p=0.445$). Type of diabetes was significantly associated with Foot Care ($p=0.006$), while treatment modality also showed a significant association with Foot Care ($p<0.0001$). Receiving diabetes-related information was significantly associated with Exercise ($p=0.018$) and Foot Care ($p<0.0001$). Other chronic illnesses, family history, Stress, Anxiety, and Depression showed no significant associations with self-care domains ($p>0.05$).

**Conclusion:** Diabetes mellitus substantially affects HRQoL. Regular QoL assessment, diabetes education, lifestyle support, and attention to psychological and self-care needs should be integrated into routine diabetic management.

**Keywords:** Diabetes mellitus; Health-related quality of life; Quality of life; Diabetes self-care; Psychological well-being; Kolkata.

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## Introduction

Diabetes is a non-communicable, lifestyle-related chronic disease with increasing prevalence in low- and middle-income countries. Diabetes has been projected as the seventh leading cause of death as per the World Health Organization (WHO) by 2030.[1] It has been noted that India is now the home of the highest number of diabetic patients in this millennium.[2] The age-standardized prevalence of persons with diabetes ranges from 8% to 18% in urban India.[3]

Health-related quality of life (HRQOL) is defined as “an individual's or group's perceived physical and mental health over time” and it comprises aspects that can affect physical or mental health.[4] Reported literature suggested that depression is more among people with diabetes than nondiabetics. Moreover, this lifestyle disease with complications has a significant reverse impact on HRQOL. [5,6,7,8] In view of the limited studies on HRQOL among diabetic patients of the Eastern region, this current project was conducted to determine the quality of life, the prevalence of depression and the associated factors in diabetic patients attending the lifestyle clinic of a tertiary healthcare facility in Eastern India.

Primary care physicians are again gaining importance all over the world on the basis of their primary-level contact and rapport at the household

level. Therefore, the present research would be beneficial for both the country and community to engage the physicians for the betterment of overall quality of life. The primary objective of the study was to assess treatment adherence and its association with health-related quality of life (HRQoL) among patients with diabetes mellitus attending a diabetic clinic in Kolkata, West Bengal.

The study also aimed to determine the association between HRQoL and selected factors among diabetic patients, thereby providing a better understanding of the multidimensional impact of diabetes on their psychological and social well-being.

**Materials and Methods**

**Study Design:** A hospital-based cross-sectional descriptive and analytical study

**Study Place:** The study was conducted in the Diabetic Clinic of a selected hospital in Kolkata, West Bengal.

**Study Duration:** 12 months

**Study Population:** The study population was comprise adult patients diagnosed with diabetes mellitus who attend the diabetic clinic of the selected hospital during the study period.

**Sample Size:** 150 diabetic patients

**Study variables**

- Distribution of Mean Domain-wise and Total Quality of Life (QoL) Scores Among Study Participants
- Tool- 2 Total Quality of life (QoL) Group
- Part-E (Medication) Total Part-E (Dietary Practices) Total Part-E (Exercise) Total Part-E (Blood Sugar Monitoring) Total Part-E (Practicing proper foot care) Total * Type of diabetes, Treatment, Other chronic illnesses, Family
- Tool 3 (DASS-21) Stress Group, Anxiety Group, Depression Group

**Inclusion Criteria**

1. Patients aged 18 years and above.
2. Patients diagnosed with diabetes mellitus.
3. Patients attending the diabetic clinic during the study period.
4. Patients who are willing to participate in the study.
5. Patients who are able to understand and respond to the study questionnaire.
6. Patients who provide written informed consent**.**

**Exclusion Criteria**

1. Patients who are critically ill or medically unstable at the time of data collection.
2. Patients with severe cognitive impairment or psychiatric illness that prevents them from responding reliably to the questionnaire.
3. Patients who are unable to communicate adequately with the investigator.
4. Patients who are unwilling to participate or do not provide informed consent.
5. Patients with incomplete information required for assessment of HRQoL.

**Statistical Analysis:** Data were entered into Microsoft Excel and analyzed using SPSS version 27.0 and GraphPad Prism version 5. Numerical variables were summarized as mean ± standard deviation, while categorical variables were presented as frequency and percentage. Independent sample t-test and paired t-test were used for comparison of means, while Chi-square or Fisher's exact test, as appropriate, was used for comparison of categorical variables. A p-value ≤0.05 was considered statistically significant**.**

**Result**

**Table 1: Distribution of Mean Domain-wise and Total Quality of Life (QoL) Scores Among Study Participants (N = 150)**

| Tool 2 Domain | N | Mean ± SD |
|---|---|---|
| Treatment Satisfaction Total | 150 | 11.03 ± 2.584 |
| General Health Total | 150 | 7.83 ± 2.219 |
| Symptom Botherness Total | 150 | 9.93 ± 3.026 |
| Financial Worries Total | 150 | 8.68 ± 2.858 |
| Emotional and Mental Health Total | 150 | 16.78 ± 5.149 |
| Diet Satisfaction Total | 150 | 8.45 ± 2.666 |
| Physical Endurance Total | 150 | 20.25 ± 6.506 |
| Role Limitation Due to Physical Health Total | 150 | 21.86 ± 6.412 |
| Total Quality of Life (QoL) | 150 | 104.81 ± 27.153 |

**Table 2: Tool- 2 Total Quality of life (QoL) Group (N = 150)**

| | | Frequency | Percent |
|---|---|---|---|
| Total Quality of life (QoL) Group | Poor (34-78) | 48 | 32.0 |
| | Moderate (79-124) | 52 | 34.7 |
| | Good (125-169) | 50 | 33.3 |
| | Total | 150 | 100.0 |

**Table 3: To find out relationship between treatment adherence among diabetic patients (N = 150)**

| | | Duration of diabetes in years | Remarks |
|---|---|---|---|
| Part-E (Medication)Total | Pearson Correlation | -0.056 | Negative correlation |
| | Sig. (2-tailed) | 0.496 | Not Significant |
| | N | 150 | |
| Part-E (Dietary Practices) Total | Pearson Correlation | -0.050 | Negative correlation |
| | Sig. (2-tailed) | 0.543 | Not Significant |
| | N | 150 | |
| Part-E (Exercise) Total | Pearson Correlation | -0.127 | Negative correlation |
| | Sig. (2-tailed) | 0.122 | Not Significant |
| | N | 150 | |
| Part-E (Blood Sugar Monitoring) Total | Pearson Correlation | -0.005 | Negative correlation |
| | Sig. (2-tailed) | 0.953 | Not Significant |
| | N | 150 | |
| Part-E (Practicing proper foot care) Total | Pearson Correlation | -0.063 | Negative correlation |
| | Sig. (2-tailed) | .445 | Not Significant |
| | N | 150 | |

**Table 4: Part-E (Medication)Total Part-E (Dietary Practices) Total Part-E (Exercise) Total Part-E (Blood Sugar Monitoring) Total Part-E (Practicing proper foot care) Total * Type of diabetes, Treatment, Other chronic illnesses, Family (N = 150)**

| Variable | Category (n) | Medication Total, Mean ± SD | Dietary Practices Total, Mean ± SD | Exercise Total, Mean ± SD | Blood Sugar Monitoring Total, Mean ± SD | Proper Foot Care Total, Mean ± SD |
|---|---|---|---|---|---|---|
| Type of diabetes | Type-I (10) | 6.50 ± 2.321 | 12.30 ± 3.683 | 3.20 ± 0.919 | 11.40 ± 2.797 | 12.90 ± 4.175 |
| | Type-II (140) | 5.52 ± 2.076 | 12.14 ± 2.859 | 2.79 ± 0.782 | 11.32 ± 2.439 | 10.47 ± 2.557 |
| | p-value | 0.155 | 0.864 | 0.118 | 0.922 | 0.006 |
| Treatment | Combination therapy (52) | 6.04 ± 1.909 | 12.79 ± 2.768 | 2.77 ± 0.703 | 11.52 ± 2.288 | 11.62 ± 2.965 |
| | Insulin Injection (18) | 5.22 ± 2.602 | 12.22 ± 2.901 | 2.89 ± 0.676 | 11.67 ± 3.049 | 11.39 ± 3.806 |
| | Oral antidiabetic agent (78) | 5.45 ± 2.004 | 11.78 ± 2.953 | 2.85 ± 0.884 | 11.19 ± 2.407 | 9.87 ± 1.996 |
| | Oral antidiabetic agent + Ayurveda (2) | 2.50 ± 3.536 | 9.00 ± 1.414 | 2.50 ± 0.707 | 8.50 ± 2.121 | 8.00 ± 0.000 |
| | p-value | 0.152 | 0.114 | 0.826 | 0.55 | <0.0001 |
| Other chronic illnesses | Bronchial Asthma (10) | 6.70 ± 1.337 | 14.00 ± 1.944 | 2.90 ± 0.568 | 12.60 ± 2.119 | 13.00 ± 3.091 |
| | Cancer (2) | 7.00 ± 1.414 | 14.00 ± 2.828 | 2.50 ± 0.707 | 11.00 ± 1.414 | 9.50 ± 0.707 |
| | Cardiovascular disease (62) | 5.65 ± 2.204 | 12.06 ± 2.781 | 2.77 ± 0.798 | 11.15 ± 2.194 | 10.47 ± 2.481 |
| | Cardiovascular disease + | 2.50 ± 2.121 | 11.00 ± 7.071 | 3.00 ± 0.000 | 10.50 ± 3.536 | 11.00 ± 1.414 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Bronchial Asthma (2) | | | | | |
| | Cardiovascular disease + Renal disease (8) | 4.88 ± 1.458 | 10.38 ± 3.159 | 2.50 ± 0.756 | 11.38 ± 3.335 | 11.13 ± 4.224 |
| | Cardiovascular disease + Thyroid disorder (7) | 5.71 ± 1.380 | 12.00 ± 3.215 | 3.00 ± 0.816 | 12.14 ± 2.610 | 10.14 ± 2.478 |
| | Cardiovascular disease + Thyroid disorder + Cervical cancer (1) | 5.00 ± | 8.00 ± | 1.00 ± | 11.00 ± | 10.00 ± |
| | No (35) | 5.57 ± 2.512 | 12.00 ± 3.190 | 2.94 ± 0.906 | 11.31 ± 3.017 | 10.23 ± 2.787 |
| | Renal disease (6) | 5.83 ± 1.329 | 11.50 ± 2.665 | 2.67 ± 0.816 | 10.67 ± 2.251 | 10.83 ± 3.061 |
| | Thyroid disorder (17) | 5.18 ± 1.667 | 12.94 ± 2.249 | 2.94 ± 0.659 | 11.29 ± 2.054 | 10.71 ± 2.664 |
| | p-value | 0.467 | 0.179 | 0.782 | 0.664 | 0.117 |
| Family history | Both parents (16) | 4.88 ± 2.500 | 12.25 ± 2.955 | 2.63 ± 1.025 | 10.38 ± 2.579 | 10.00 ± 1.826 |
| | Father (24) | 5.83 ± 2.160 | 12.38 ± 2.683 | 2.96 ± 0.806 | 11.92 ± 2.394 | 11.75 ± 2.848 |
| | Mother (12) | 5.75 ± 2.491 | 12.67 ± 3.627 | 2.75 ± 0.866 | 10.92 ± 2.712 | 10.75 ± 3.817 |
| | None (98) | 5.62 ± 1.972 | 12.01 ± 2.891 | 2.83 ± 0.746 | 11.39 ± 2.401 | 10.45 ± 2.656 |
| | p-value | 0.522 | 0.86 | 0.621 | 0.243 | 0.151 |

**Table 5: Part-E (Medication)Total Part-E (Dietary Practices) Total Part-E (Exercise) Total Part-E (Blood Sugar Monitoring) Total Part-E (Practicing proper foot care) Total * Have you received any information regarding diabetes? (N = 150)**

| Have you received any information regarding diabetes? | Medication Total, Mean ± SD | Dietary Practices Total, Mean ± SD | Exercise Total, Mean ± SD | Blood Sugar Monitoring Total, Mean ± SD | Proper Foot Care Total, Mean ± SD |
|---|---|---|---|---|---|
| No (n=51) | 5.29 ± 1.781 | 11.78 ± 2.845 | 2.61 ± 0.827 | 10.92 ± 2.305 | 9.49 ± 2.111 |
| Yes (n=99) | 5.74 ± 2.239 | 12.33 ± 2.935 | 2.93 ± 0.759 | 11.54 ± 2.512 | 11.22 ± 2.852 |
| p-value | 0.222 | 0.275 | 0.018 | 0.147 | <0.0001 |

To find out relationship between treatment adherence and Psychological factors among diabetic patients.

**Table 6: Part-E (Medication)Total Part-E (Dietary Practices) Total Part-E (Exercise) Total Part-E (Blood Sugar Monitoring) Total Part-E (Practicing proper foot care) Total * Tool 3 (DASS-21) Stress Group, Anxiety Group, Depression Group (N = 150)**

| DASS-21 Group | | N | Medication Total Mean ± SD | Dietary Practices Total Mean ± SD | Exercise Total Mean ± SD | Blood Sugar Monitoring Total Mean ± SD | Proper Foot Care Total Mean ± SD |
|---|---|---|---|---|---|---|---|
| Stress | Normal | 23 | 6.39 ± 2.291 | 12.91 ± 3.356 | 2.96 ± 0.767 | 12.22 ± 2.392 | 11.26 ± 2.435 |
| | Mild | 63 | 5.54 ± 2.109 | 11.94 ± 2.839 | 2.87 ± 0.813 | 11.08 ± 2.451 | 10.81 ± 2.805 |
| | Moderate | 58 | 5.29 ± 2.026 | 12.16 ± 2.840 | 2.76 ± 0.779 | 11.33 ± 2.445 | 10.36 ± 2.851 |
| | Severe | 5 | 6.00 ± 1.581 | 12.00 ± 2.121 | 2.40 ± 0.894 | 11.00 ± 2.449 | 8.80 ± 1.304 |
| | Extremely Severe | 1 | 5.00 ± 0.0 | 8.00 ± 0.0 | 2.00 ± 0.0 | 8.00 ± 0.0 | 10.00 ± 0.0 |
| | p-value | | 0.309 | 0.413 | 0.443 | 0.232 | 0.368 |
| Anxiety | Normal | 1 | 8.00 ± 0.0 | 16.00 ± 0.0 | 3.00 ±0.0 | 15.00 ± 0.0 | 13.00 ± 0.0 |
| | Mild | 1 | 8.00 ± 0.0 | 16.00 ± 0.0 | 3.00 ±0.0 | 12.00 ± 0.0 | 10.00 ± 0.0 |
| | Moderate | 25 | 5.40 ± 2.102 | 12.40 ± 3.136 | 2.68 ± 0.945 | 11.12 ± 2.906 | 10.52 ± 2.648 |
| | Severe | 57 | 5.70 ± 2.087 | 11.70 ± 2.903 | 2.88 ± 0.758 | 11.23 ± 2.315 | 10.42 ± 2.639 |
| | Extremely Severe | 66 | 5.48 ± 2.121 | 12.32 ± 2.791 | 2.82 ± 0.783 | 11.42 ± 2.412 | 10.83 ± 2.912 |
| | p-value | | 0.535 | 0.262 | 0.886 | 0.616 | 0.825 |
| Depression | Normal | 8 | 6.25 ± 1.753 | 13.38 ± 3.204 | 2.87 ± 0.835 | 11.00 ± 2.070 | 10.00 ± 2.563 |
| | Mild | 36 | 5.67 ± 1.971 | 11.69 ± 2.926 | 2.89 ± 0.854 | 11.39 ± 2.522 | 9.83 ± 2.501 |
| | Moderate | 84 | 5.48 ± 2.236 | 12.10 ± 2.852 | 2.83 ± 0.758 | 11.25 ± 2.297 | 11.00 ± 2.824 |
| | Severe | 19 | 5.63 ± 1.978 | 12.95 ± 2.697 | 2.63 ± 0.831 | 11.63 ± 3.148 | 10.74 ± 2.884 |
| | Extremely Severe | 3 | 5.67 ± 2.082 | 10.67 ± 4.619 | 2.67 ± 1.155 | 11.67 ± 3.512 | 11.00 ± 1.732 |
| | p-value | | 0.898 | 0.34 | 0.829 | 0.964 | 0.282 |

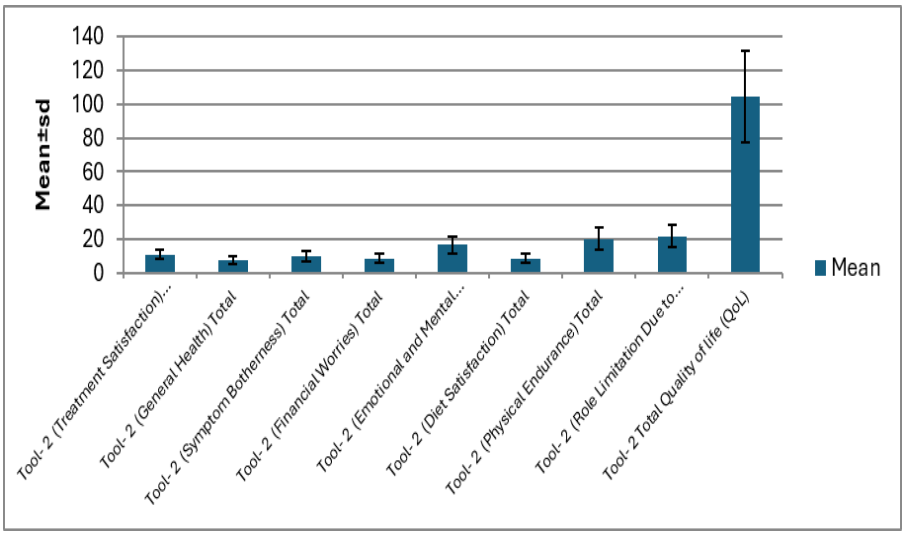



**Figure 1: Distribution of Mean Domain-wise and Total Quality of Life (QoL) Scores Among Study Participants (N = 150)**

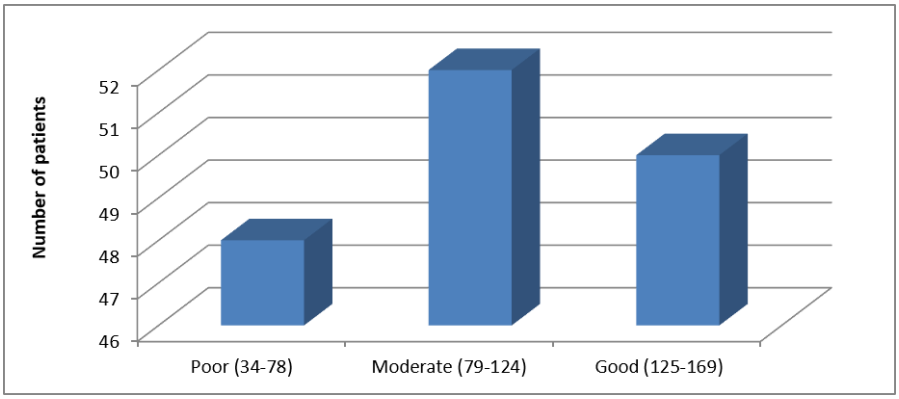



**Figure 2: Tool- 2 Total Quality of life (QoL) Group**

Among the 150 patients, the mean Treatment Satisfaction score was 11.03 ± 2.584. The mean General Health score was 7.83 ± 2.219, Symptom Botherness score was 9.93 ± 3.026, Financial Worries score was 8.68 ± 2.858, Emotional and Mental Health score was 16.78 ± 5.149, Diet Satisfaction score was 8.45 ± 2.666, Physical Endurance score was 20.25 ± 6.506, and Role Limitation Due to Physical Health score was 21.86 ± 6.412. The overall mean Quality of Life (QoL) score was 104.81 ± 27.153. Table 1

Among the 150 patients, 48 patients (32.0%) had poor quality of life (QoL), 52 patients (34.7%) had moderate quality of life (QoL), and 50 patients (33.3%) had good quality of life (QoL). Table 2

Among the 150 patients, duration of diabetes showed a weak negative correlation with Medication score ($r = -0.056$, $p = 0.496$), which was not statistically significant. Similarly, a weak negative correlation was observed with Dietary Practices ($r = -0.050$, $p = 0.543$), Exercise ($r = -0.127$, $p = 0.122$), Blood Sugar Monitoring ($r = -0.005$, $p = 0.953$), and Proper Foot Care ($r = -0.063$, $p = 0.445$); however, none of these correlations were statistically significant ($p > 0.05$). Table 3

For type of diabetes, Medication (p=0.155, Not Significant), Dietary Practices (p=0.864, Not Significant), Exercise (p=0.118, Not Significant), Blood Sugar Monitoring (p=0.922, Not Significant), and Proper Foot Care (p=0.006, Significant). For treatment modality, Medication (p=0.152, Not Significant), Dietary Practices (p=0.114, Not Significant), Exercise (p=0.826, Not Significant), Blood Sugar Monitoring (p=0.550, Not Significant), and Proper Foot Care (p<0.0001, Significant). For other chronic illnesses, Medication (p=0.467, Not Significant), Dietary Practices (p=0.179, Not Significant), Exercise (p=0.782, Not Significant), Blood Sugar Monitoring (p=0.664, Not Significant), and Proper Foot Care (p=0.117, Not Significant). For family history, Medication (p=0.522, Not Significant), Dietary Practices (p=0.860, Not Significant), Exercise (p=0.621, Not Significant), Blood Sugar Monitoring (p=0.243, Not Significant), and Proper Foot Care (p=0.151, Not Significant). Table 4

Among the 150 patients, those who had received information regarding diabetes (99 patients) had a mean Medication score of 5.74 ± 2.239, compared with 5.29 ± 1.781 among those who had not received information (51 patients), with p=0.222 (Not Significant). The mean Dietary Practices score was 12.33 ± 2.935 among the informed patients and 11.78 ± 2.845 among the non-informed patients (p=0.275, Not Significant). The mean Exercise score was 2.93 ± 0.759 versus 2.61 ± 0.827, respectively, showing a statistically significant difference (p=0.018, Significant). The mean Blood Sugar Monitoring score was 11.54 ± 2.512 among patients who received information and 10.92 ± 2.305 among those who did not (p=0.147, Not Significant). The mean Proper Foot Care score was 11.22 ± 2.852 among informed patients compared with 9.49 ± 2.111 among non-informed patients, showing a highly statistically significant difference (p<0.0001, Significant). Table 5

For DASS-21 Stress, Medication (p=0.309, Not Significant), Dietary Practices (p=0.413, Not Significant), Exercise (p=0.443, Not Significant), Blood Sugar Monitoring (p=0.232, Not Significant), and Proper Foot Care (p=0.368, Not Significant). For DASS-21 Anxiety, Medication (p=0.535, Not Significant), Dietary Practices (p=0.262, Not Significant), Exercise (p=0.886, Not Significant), Blood Sugar Monitoring (p=0.616, Not Significant), and Proper Foot Care (p=0.825, Not Significant). For DASS-21 Depression, Medication (p=0.898, Not Significant), Dietary Practices (p=0.340, Not Significant), Exercise (p=0.829, Not Significant), Blood Sugar Monitoring (p=0.964, Not Significant), and Proper Foot Care (p=0.282, Not Significant). Thus, none of the diabetes self-care domains showed a statistically significant association with Stress, Anxiety, or Depression (all p>0.05). Table 6

## Discussion

In the present study of 150 diabetic patients, 48 (32.0%) had poor QoL, 52 (34.7%) had moderate QoL and 50 (33.3%) had good QoL, with a mean QoL score of 104.81 ± 27.153. This indicates a considerable burden on quality of life. Similarly, Joshi et al. [9] reported good physical and psychological QoL in 151 (79.5%) of 190 diabetic patients, although only 24 (12.6%) performed daily foot inspection. Duration of diabetes was not significantly correlated with Medication, Dietary Practices, Exercise, Blood Sugar Monitoring or Foot Care (all $p>0.05$). Likewise, other chronic illnesses and family history showed no significant associations with self-care domains. These findings suggest that disease duration and background characteristics alone may not determine self-care behaviour.

Type of diabetes was significantly associated with Proper Foot Care ($p=0.006$), while treatment modality was also significantly associated with Proper Foot Care ($p<0.0001$). However, other self-care domains showed no significant associations. Muniyapillai et al., [10] in a cross-sectional study of 150 patients, similarly reported that self-care practices were associated with diabetes-related outcomes and emphasized the importance of adequate self-management. A particularly important finding was that patients who had received diabetes-related information demonstrated significantly better Exercise ($p=0.018$) and Proper Foot Care ($p<0.0001$). This is consistent with Gehlawat et al.,[11] who found that structured diabetes education significantly improved foot care by 1.95 days/week and also improved diet, physical activity, medication adherence and blood-glucose monitoring. Anjali et al. [12] also demonstrated that diabetes self-management education significantly improved glycaemic control and diabetes-related distress ($p=0.001$), supporting the value of structured patient education. In the present study, Stress, Anxiety and Depression were not significantly associated with any self-care domain (all $p>0.05$). However, Abraham et al.,[13] in an Indian randomized controlled trial of 80 patients, found significant improvement in QoL ($p=0.006$), diet and exercise self-care ($p=0.001$) and reductions in depression and anxiety ($p=0.001$) following a brief self-management intervention. Overall, the findings emphasize the importance of regular QoL assessment and structured diabetes education, particularly focusing on exercise and foot-care practices. Mohanty S et al [14] studied 150 patients with type 2 diabetes in rural East India and reported a mean overall QoL score of 61.66 ± 15.35, with 17.3% having poor QoL. They also found that 66.6% of patients did not perform any exercise during the preceding week, 86% had not monitored blood glucose, and only 73.3% reported adherence to medication. These findings support the present study, particularly the importance of strengthening exercise, glucose monitoring, and foot-care practices. Gupta SK et al. [15] evaluated 700 patients with type 2 diabetes in rural Punjab and found that 391 (56%) had severe diabetes-related distress and 309 (44%) had moderate distress. Severe distress was significantly associated with poorer self-care practices (aOR=0.53, 95% CI: 0.32–0.85, $p=0.01$). Hypertension increased the odds of severe distress (aOR=3.47, 95% CI: 2.48–4.87, $p<0.01$). This contrasts with the present study, where Stress, Anxiety, and Depression were not significantly associated with the individual self-care domains (all $p>0.05$).

## Conclusion

Diabetes mellitus was associated with a considerable burden on health-related quality of life among the study participants. The findings highlight the importance of comprehensive diabetes care that extends beyond medical treatment to include regular assessment of quality of life, structured diabetes education, exercise promotion, blood glucose monitoring, and proper foot care. Diabetes-related information appeared particularly important for improving exercise and foot-care practices. Although psychological factors were not significantly associated with the assessed self-care domains in this study, psychological well-being should remain an integral part of patient-centred diabetes management. Overall, individualized education, continuous self-care support, and holistic clinical management may help improve quality of life and long-term diabetes outcomes. Current evidence similarly emphasizes the importance of self-care and patient education in improving diabetes-related quality of life.

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