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Research Article

The Impact of Chronic Illness on Quality of Life: A Cross Sectional Study among Pakistani Patients with Diabetes

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Abstract

Introduction: Diabetes mellitus is a chronic illness that profoundly impacts patients' physical, psychological, social, and environmental well-being. This study aimed to assess the "Quality of Life" (QoL) among Pakistani patients with type 2 diabetes mellitus.

Materials and Methods: A cross-sectional study was conducted over a 6-month period from July to December 2022 at the Divisional Headquarter Teaching Hospital (DHQ), Kohat, Pakistan. A total of 173 patients with type 2 diabetes were recruited using non-probability convenience sampling. The WHOQOL-BREF questionnaire, translated into Urdu and administered through face-to-face interviews, was used to assess QoL. Data were analyzed using SPSS version 26, applying t-tests, ANOVA, and chi-square tests, with a p-value < 0.05 considered statistically significant.

Results: The mean age of participants was 52.6 ± 10.8 years; 93 (53.8%) were female. Diabetes-related complications were present in 99 (57.2%) participants, with neuropathy being the most prevalent (n=59; 34.1%). QoL scores were significantly lower in patients with complications across all domains. The psychological domain was the most negatively affected, especially among women ($p = 0.02$). Lower income and education levels were associated with reduced scores in physical and environmental domains.

Conclusion: Diabetes substantially impairs the QoL of patients, particularly in those with complications and women. The findings highlight the importance of integrating psychosocial support and socioeconomic considerations into diabetes care strategies in Pakistan.

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Introduction

Chronic illnesses are among the leading global health concerns due to their long-term impact on physical, psychological, and social well-being [1]. Diabetes mellitus, in particular, poses a substantial burden worldwide [2]. Characterized by chronic hyperglycemia due to insulin resistance, deficiency, or both, diabetes contributes to serious complications such as cardiovascular disease, nephropathy, neuropathy, and retinopathy [3]. The World Health Organization (WHO) estimates that over 422 million individuals globally are living with diabetes, a number projected to rise significantly in the coming decades [4].

Low- and middle-income countries like Pakistan face a disproportionate share of this burden due to rapid urbanization, sedentary lifestyles, and dietary transitions [5]. According to the International Diabetes Federation (IDF), over 33 million adults in Pakistan are currently living with diabetes, placing immense pressure on the nation's healthcare system [6]. The chronic nature of the disease requires sustained management involving medication adherence, glycemic monitoring, lifestyle changes, and routine follow-up all of which impact patients' daily lives beyond physical symptoms [7].

Growing attention has been given to the broader psychosocial consequences of diabetes, particularly its influence on Quality of Life (QoL). QoL is a multidimensional concept that encompasses an individual's self-perceived physical health, psychological state, social relationships, and interaction with their environment [8]. In patients with diabetes, QoL may be compromised by complications, fear of hypoglycemic episodes, treatment fatigue, and limitations in social and occupational functioning [9].

While international literature has documented the adverse effects of diabetes on QoL, findings are often inconsistent due to cultural, economic, and healthcare disparities [10]. In the context of Pakistan, few studies have comprehensively assessed QoL among diabetic patients, especially using validated and multidimensional instruments like the WHOQOL-BREF [11]. Furthermore, existing studies have often focused on urban populations or failed to explore gender, education, income, and clinical complications as influencing factors [12].

This study addresses this gap by evaluating the impact of type 2 diabetes on the QoL of patients in a public-sector hospital in Kohat, Pakistan. By using the WHOQOL-BREF tool adapted and administered in Urdu [13] we aimed to explore how socio-demographic and clinical variables affect different QoL domains in a low-resource setting.

Materials and Methods

Study Design and Setting

This cross-sectional study was conducted at the Department of Medicine, Divisional Headquarter Teaching Hospital (DHQ), Kohat, Pakistan, over a 6-month period from July 2022 to December 2022.

Sample Size and Sampling Technique

The study recruited a total of 173 patients through a non-probability consecutive sampling technique. The sample size was determined through the Raosoft sample size calculator, assuming a 95% confidence level and 5% margin of error. Because there was little prior data on the "Quality Of Life" among diabetic patients in Pakistan, they used an estimated population proportion of 50 percent. Therefore, the sample size required for conclusive results was 173 participants.

Inclusion and Exclusion Criteria

Participants in the study were those 18 years of age and older with type 2 Diabetes for a minimum duration of one year who visit the outpatient department of KMC. To reduce the bias regarding the "Quality Of Life", the subjects with acute psychotic disorders, significant head injury with cognitive deficit sequelae, or other chronic diseases like advanced metastatic cancer, full-blown end-stage renal disease, or chronic liver disease were removed from the study sample.

Data Collection Instruments and Procedure

Data were collected using a structured, interviewer-administered questionnaire divided into three sections: Section I: Socio-demographic information (age, gender, education, marital status, occupation, monthly income), Section II: Clinical information (duration of diabetes, treatment modality, presence of complications) and Section III: QoL assessment using the WHOQOL-BREF, a validated instrument

that evaluates four domains: physical health, psychological well-being, social relationships, and environmental factors.

The WHOQOL-BREF questionnaire was translated into Urdu using a forward–backward translation method, followed by expert review for cultural adaptation. A pilot test was conducted with 15 patients to ensure clarity and reliability, and minor linguistic adjustments were made. Trained data collectors administered the Urdu version in face-to-face interviews to ensure consistent understanding across participants with varying literacy levels.

Data Analysis

The data was collected and analyzed using SPSS version 26. The demographic and clinical features were evaluated using descriptive statistics. Continuous variables had the average and standard deviation computed while frequencies and percentages were used for the categorical variables. Demographic subgroups were compared in relation to their average QoL score using independent t-tests and ANOVA. Results with p-value lower than 0.05 were denoted significant.

Ethical Issues

The College Institutional Review Board granted the ethical clearance required for conducting the study. Participation in the study was voluntary and all participants were fully informed regarding the purpose of the study and confidentiality protocols. Hence, written informed consent was obtained from each participant.

Results

A total of 173 patients diagnosed with type 2 diabetes mellitus were included in the study. The mean age of the participants was 52.6 ± 10.8 years, with an age range spanning from 29 to 78 years. Of the total, 93 (53.8%) were female and 80 (46.2%) were male. Most participants were married, accounting for 84.4% of the sample, while 15.6% were either single or widowed. Educational attainment was generally low, with 61.8% having received only primary education or none at all. Regarding socioeconomic status, the majority of participants (58.4%) reported a monthly household income of less than PKR 30,000, indicating a predominantly low-income population (table 1).

Table 1: Socio-demographic Characteristics of Participants (n=173)

Variable	n	%
Gender		
Male	80	46.2%
Female	93	53.8%
Age (mean ± SD) (52.6 ± 10.8) years	N/A	N/A
Marital Status		
Married	146	84.4%
Single/Widowed	27	15.6%
Education Level		
No formal education	43	24.9%
Primary	64	37.0%
Secondary or above	66	38.1%
Monthly Income		
< PKR 30,000	101	58.4%
≥ PKR 30,000	72	41.6%

**Frequency (n), Percentage (%)*

In terms of clinical characteristics, the mean duration of diabetes among the participants was 8.9 ± 6.2 years. The majority of patients (68.8%, n=119) were being managed with oral hypoglycemic agents, while 21.4% (n=37) were on insulin therapy, and 9.8% (n=17) were receiving combination therapy involving both modalities.

Diabetic complications were present in more than half of the patients (57.2%, n=99). Among these, neuropathy was the most commonly reported complication, affecting 34.1% (n=59) of the patients, followed by retinopathy in 22.5% (n=39), and nephropathy in 12.7% (n=22). These findings highlight the considerable burden of complications and the diverse treatment approaches among individuals with type 2 diabetes mellitus (Figure 1).

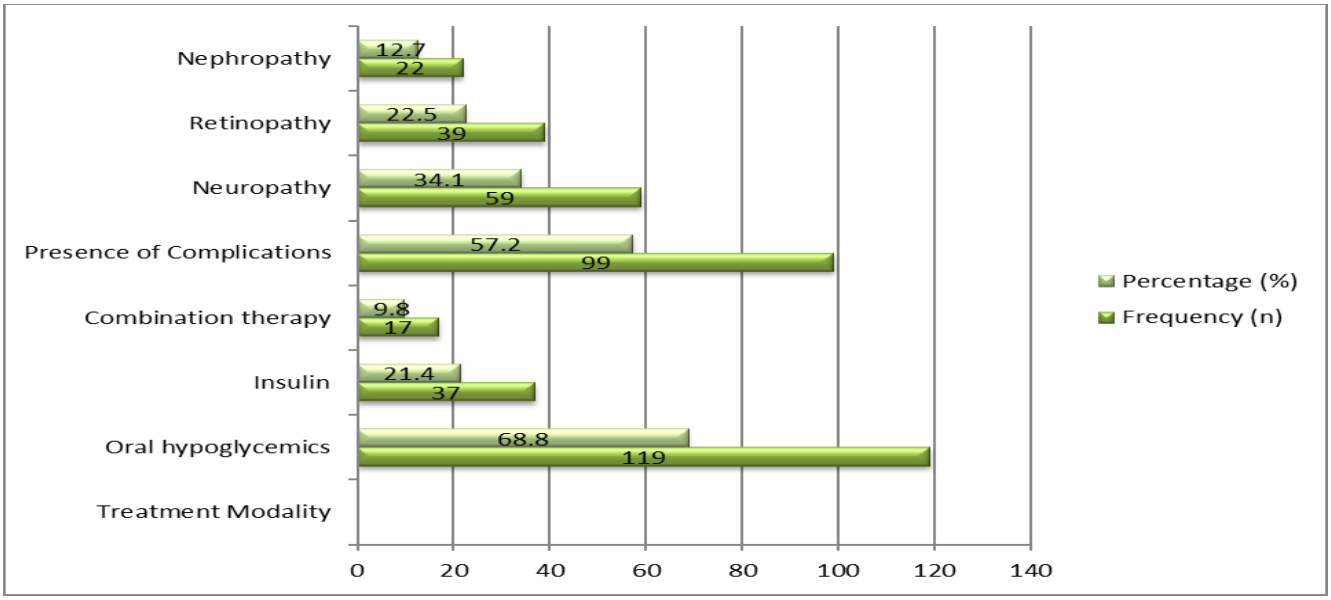

Figure 1: Clinical Characteristics of Patients (n=173)

The mean scores for the WHOQOL-BREF domains among all participants were as follows: physical health 52.4 ± 14.5, psychological well-being 48.6 ± 13.2, social relationships 55.1 ± 15.8, and environmental factors 50.3 ± 12.6. A comparison between patients with and without diabetic complications revealed a significant disparity in "Quality Of Life" (QoL) across all domains. Those with complications (n=99) had markedly lower scores compared to those without complications evaluated domains (Table 2).

(n=74). Specifically, the physical health domain averaged 47.1 ± 13.8 in patients with complications versus 59.4 ± 12.3 in those without ($p < 0.001$). Psychological well-being was 43.5 ± 12.9 compared to 55.1 ± 10.5 ($p < 0.001$), social relationships scored 50.2 ± 14.1 versus 61.8 ± 15.2 ($p < 0.001$), and environmental factors were rated at 45.3 ± 11.9 compared to 56.2 ± 12.0 ($p < 0.001$). These findings indicate that diabetic complications are significantly associated with poorer "Quality Of Life" in all

Table 2: WHOQOL-BREF Scores by Complication Status

Domain	With Complications (n=99)	Without Complications (n=74)	*p*-value
Physical Health	47.1 ± 13.8	59.4 ± 12.3	< 0.001
Psychological Well-being	43.5 ± 12.9	55.1 ± 10.5	< 0.001
Social Relationships	50.2 ± 14.1	61.8 ± 15.2	< 0.001
Environmental Factors	45.3 ± 11.9	56.2 ± 12.0	< 0.001

Further analysis using independent t-tests revealed significant gender differences in specific domains of the WHOQOL-BREF. Females had significantly lower scores than males in the psychological and environmental domains. The mean psychological well-being score for females was 46.2 ± 13.4 compared to 51.3 ± 12.8 for males ($p = 0.02$), while the environmental domain score was 48.1 ± 12.7 in females versus 53.0 ± 12.1 in males ($p = 0.01$). However, no statistically significant gender differences were observed in the physical health domain (53.8 ± 13.6 in males vs. 51.2 ± 14.9 in females, $p = 0.27$) or social relationships domain (56.4 ± 16.0 in

males vs. 54.0 ± 15.6 in females, $p = 0.43$). These findings suggest that gender may play a role in perceived "Quality Of Life", particularly in psychological and environmental aspects (table 3).

Table 3: Gender-wise Comparison of WHOQOL-BREF Domain Scores

Domain	Males (n=80)	Females (n=93)	*p*-value
Physical Health	53.8 ± 13.6	51.2 ± 14.9	0.27
Psychological	51.3 ± 12.8	46.2 ± 13.4	0.02*

Social Relationships	56.4 ± 16.0	54.0 ± 15.6	0.43
Environmental	53.0 ± 12.1	48.1 ± 12.7	0.01*

One-way ANOVA analysis revealed a significant difference in physical health domain scores of the WHOQOL-BREF across different treatment modalities ($p = 0.04$). Patients receiving combination therapy reported the lowest mean physical health diabetes (table 4).

score (46.5 ± 14.2), followed by those on insulin therapy (50.3 ± 15.6), while patients using only oral hypoglycemic agents had the highest physical health scores (54.2 ± 13.1). However, no statistically significant differences were observed among the treatment groups in the psychological, social, or environmental domains. These findings suggest that treatment modality, particularly combination therapy, may be associated with a poorer perception of physical health among patients with type 2

Table 4: ANOVA of Physical Health Scores by Treatment Modality

Treatment Modality	Mean Physical Score ± SD	*p*-value
Oral hypoglycemics	54.2 ± 13.1	N/A
Insulin	50.3 ± 15.6	N/A
Combination therapy	46.5 ± 14.2	0.04

When categorized based on WHOQOL-BREF domain cut-offs, a substantial proportion of patients with type 2 diabetes mellitus exhibited poor to moderate "Quality Of Life" across all domains. In the physical health domain, 39.3% of patients reported poor QoL, while only 21.4% experienced good QoL. The psychological domain reflected a similar trend, with 45.1% of participants falling into the poor QoL category. The environmental domain was more evenly distributed, reflecting a moderate QoL perception among most individuals. Notably, the social relationships domain had the highest proportion of participants with good QoL at 33.5%, suggesting relatively stronger social support systems. These findings emphasize the need for comprehensive, multidimensional interventions particularly focused on physical and psychological well-being to improve the overall "Quality Of Life" in diabetic care (Figure 2).

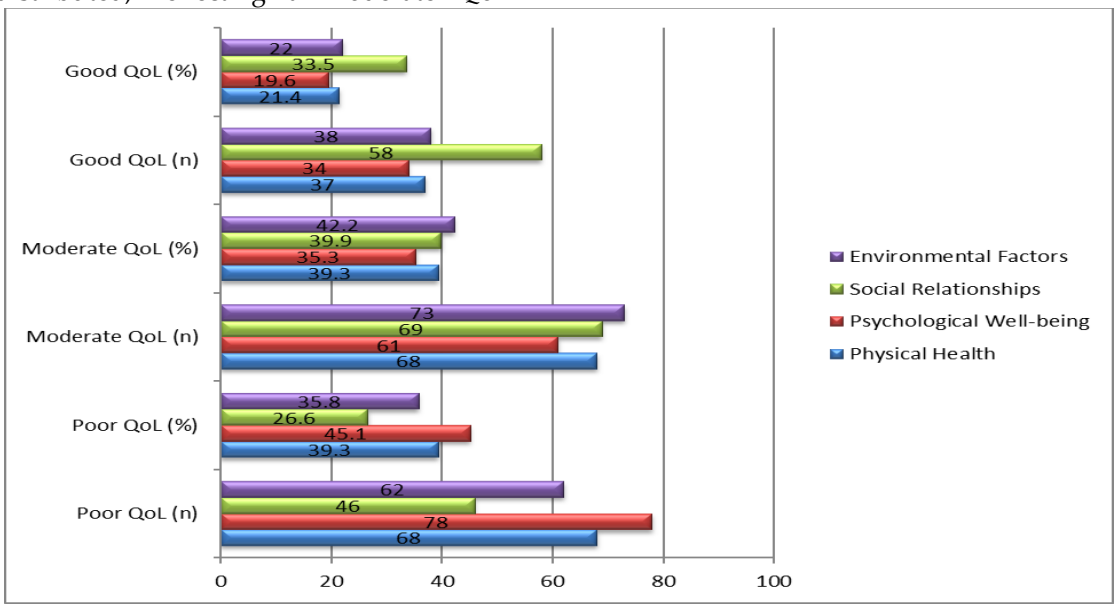

Figure 2: "Quality Of Life" Level Distribution by WHOQOL-BREF Domains (n=173)

Discussion

This cross-sectional study assessed the impact of chronic illness specifically diabetes mellitus on the QoL among Pakistani patients using the WHOQOL-BREF instrument. The findings revealed that a

significant proportion of patients with diabetes reported poor to moderate "Quality Of Life", particularly in the physical and psychological domains. Diabetic complications, female gender, and lower socioeconomic status were associated with lower QoL scores, highlighting the multifaceted burden of diabetes on patients' daily lives.

The results align with global trends where diabetes is consistently shown to negatively affect physical functioning, emotional well-being, and environmental satisfaction [14]. In our study, physical health was among the most compromised domains, especially among those with complications and longer disease duration. This pattern is similarly observed in literature from both high- and low-income countries, where complications such as neuropathy and retinopathy significantly reduce physical mobility and increase dependency, thereby impairing overall "Quality Of Life".

The psychological well-being scores in our population were also notably low, with nearly half of the participants falling in the poor QoL category [15]. This finding mirrors existing evidence suggesting that the chronic and progressive nature of diabetes, coupled with lifestyle modifications and fear of complications, contributes to high rates of anxiety and depression. Additionally, studies from neighboring South Asian regions have reported comparable psychological burdens, particularly in female patients, due to social and cultural factors such as limited autonomy and caregiver roles [16].

In contrast, the domain of social relationships showed relatively better scores. This may reflect the strong family support systems and collectivist culture prevalent in Pakistan, where extended family networks often play an active role in patient care [17]. However, the environmental domain showed moderate scores, likely influenced by economic hardship, limited access to healthcare services, and inadequate public infrastructure all of which are recurrent themes in QoL studies from developing nations [18].

The gender-wise comparison in our study revealed significantly lower scores in psychological and environmental domains for females, which corroborates previous findings that women with chronic illnesses in patriarchal societies often face greater psychological distress and fewer opportunities for healthcare access [19]. Additionally, those on combination therapy reported the lowest physical domain scores, likely indicating more severe disease and greater treatment burden [20].

Limitations and Future Suggestions

This study has certain limitations. Being cross-sectional in design, it cannot establish causality between diabetes and "Quality Of Life" outcomes. The sample was drawn from a single tertiary care hospital, which may limit the generalizability of the findings to the broader diabetic population in Pakistan. Self-reported data may also be subject to recall and reporting biases. Future research should incorporate longitudinal designs to track changes in "Quality Of Life" over time and evaluate the impact of specific interventions. Multi-center studies across diverse urban and rural settings in Pakistan are also recommended to provide a more representative picture. Additionally, incorporating qualitative assessments could offer deeper insights into patient experiences and psychosocial challenges associated with chronic illness.

Conclusion

This study highlights the multidimensional impact of type 2 diabetes mellitus on Quality of Life (QoL) among patients in Pakistan, with the greatest burden observed in those with complications and female patients. The findings emphasize that diabetes affects not only physical health but also psychological, social, and environmental well-being. To address this, diabetes care strategies must integrate psychological support, patient education, and socioeconomic interventions alongside medical treatment. Implementing such holistic approaches within national health programs could significantly enhance patient outcomes and quality of life. Future research should focus on longitudinal, multicenter studies and interventional models to better understand and improve the QoL of diabetic patients across diverse settings in Pakistan.

Authors' contributions

I: conceptualization and supervision; methodology; investigation; writing—original draft; critical

revision of the manuscript; final approval. NK: methodology; data collection; investigation; writing—original draft; critical revision of the manuscript; final approval. BN: data collection; data analysis; writing—original draft; critical revision of the manuscript; final approval. PN: data analysis; methodology; critical revision of the manuscript; final approval. EN: data collection; writing—review and editing; critical revision of the manuscript; final approval. All authors contributed to drafting and critically revising the manuscript; approved the final version for submission; and agree to be accountable for all aspects of the work.

Conflict of interest

The authors declared no conflict of interest.

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