Quality of Life Assessment of the Diabetic Patients Residing in Dehradun Using WHOQOL-BREF Scale

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ABSTRACT

Introduction: Diabetes Mellitus (DM) is a chronic disease characterized by high blood sugar, which not only affects the physical health of patients but also affects psychological, social, physical and environmental functioning. People with Diabetes (PWD) suffer from various problems that reduce their quality of life, which is still affected by frequent complications, the stigma of a chronic disease and various myths and misconceptions. Therefore, a careful assessment of physical health, treatment, treatment regimen and Quality of Life (QoL) is important to improve overall health. **Aim:** This study aimed to assess the Quality of Life (QoL) among adults with diabetes mellitus using the WHOQOL-BREF scale and to identify socio-demographic predictors influencing QoL. **Materials and Methods:** A cross-sectional study surveyed 394 adults aged 21 years and older diagnosed with diabetes in urban and semi-urban areas of Patel Nagar, Dehradun, Uttarakhand. Participants completed the WHOQOL-BREF questionnaire, evaluating four domains: physical health, psychological health, social relationships, and environment. Data were analyzed using describe statistics and domain-specific comparisons by age and gender. **Results:** The study found varying QoL scores across domains, with younger males generally reporting higher scores compared to older females. Socio-demographic factors such as age, gender, social habits, socio-economic status, and living conditions significantly influenced QoL outcomes. **Conclusion:** Enhancing QoL for diabetic patients necessitates comprehensive strategies that address socio-demographic disparities and domain-specific challenges. Gender-sensitive approaches are particularly crucial in optimizing care and support for individuals managing diabetes mellitus.

Keywords: Diabetes Mellitus, People with diabetes, Quality of life, WHO, WHOQOL.

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INTRODUCTION

Diabetes Mellitus is a chronic disease characterized by persistent hyperglycemia or high blood sugar.[1,2] Patients with diabetes may have various medical or psychiatric comorbidities that negatively affect overall Quality of Life (QoL).[3-5] QoL refers to an individual's perception of his position in life about the culture and value systems in which he lives and includes his perception of his general well-being, as well as his goals, expectations and concerns.[5] The Quality of life can be influenced by many factors such as age, gender, social habits, education, socioeconomic status, living conditions, occurrence of side effects, treatment programs, etc. Careful assessment of physical health, treatment modalities, treatment program and quality of life are essential to improve overall health.[6,7] Our study aimed to assess the quality of life of a large sample of disabled people over 21 years of age using the WHOQOL-BREF scale and to investigate predictors influencing the quality of life, such as socio-demographic characteristics such as age, gender, social customs, socio-economic status, living conditions and highest education.[8-11]

MATERIALS AND METHODS

A cross-sectional study design was used to assess the quality of life of patients with diabetes. The study included 394 disabled people over 21 years of age with a pre-diagnosis of diabetes in urban and semi-urban areas of Patel Nagar, Dehradun, Uttarakhand. Briefly, Google Forms were sent to employees via WhatsApp and email, and they were asked to complete the WHOQOL-BREF questionnaire after obtaining informed consent. In addition, fieldwork was conducted by visiting the Patel Nagar SBI branch in Dehradun. The branch manager was told about the study and counseled about diabetes through a pre-approved questionnaire, sending it to the manager, who was asked to forward it to all employees. The study was conducted between January 22, 2024 and May 2, 2024. Permission was obtained from the ethics committee of the institution. Informed consent was obtained from all interested persons. Participants

in the study were project diabetics over 21 years of age who had been diagnosed with diabetes, who understood and answered the questions in the research questionnaire, and who were willing to participate. Exclusion criteria include subjects without a confirmed diagnosis of DM. These subjects with serious diseases or other comorbidities can significantly affect the quality of life, making it difficult to isolate the effects of DM, pregnant subjects due to possible diseases Pregnancy with QoL and individuals who refuse to consent. Patients with diabetes were asked to complete quality of life questionnaires using the WHOQOL-BREF (1996) scale. The WHOQOL-BREF contains a total of 26 questions.[12]

These 24 items are based on physical, psychological, social relations environment and two other general health-related topics to assess general perception of quality of life and general perception of their general health.[13] Each item is rated on a 5-point Likert scale from 1-5.[14-16] Raw surface scores were converted to a 0-100 scale according to instructions. The mean scores are then multiplied by 4 to make the domain score comparable to the WHOQOL-100.[17,18]

The formula for converting scores from 0 to 100 is

Transformed scale=([Actual score-lowest possible raw score]/ Possible raw score range*100)

Domain scores were scaled in a positive direction, i.e. higher points, higher quality. The total score was determined by adding the scores of all items.[19,20]

RESULTS

The study utilized a cross-sectional design, surveying 394 diabetic patients. Data collection involved structured questionnaires focusing on socio-demographic variables and the WHOQOL-BREF instrument to assess quality of life across four domains: physical, psychological, social relationships, and environmental.

Socio-demographic profile of people with Diabetes

Understanding the socio-demographic characteristics of the study population is essential for interpreting the quality of life among diabetic patients. This section presents a detailed overview of the socio-demographic profiles of the respondents, including gender, age, social habits, socio-economic status, living conditions, and educational attainment.

Frequency and Percentage Distribution of Socio-demographic Details

The study involved 394 participants, comprising 220 males (55.8%) and 174 females (44.2%), ensuring a balanced gender representation for gender-specific quality-of-life analyses. Age distribution included five groups: ≤30 years (27 participants, 6.9%), 31-50 years (49 participants, 12.4%), 51-60 years (71

participants, 18.0%), 61-70 years (161 participants, 40.9%), and ≥71 years (86 participants, 21.8%), allowing for the examination of Age-related quality of life variations, critical given the progressive nature of diabetes. Social habits were categorized into four groups: alcoholic and non-smoker (70 participants, 17.8%), alcoholic and smoker (50 participants, 12.7%), non-alcoholic and smoker (80 participants, 20.3%), and non-alcoholic and non-smoker (194 participants, 49.2%), providing insights into how smoking and alcohol consumption affect diabetic patients' quality of life. Socio-economic status was divided into five classes: upper class (20 participants, 5.1%), upper middle class (80 participants, 20.3%), middle class (120 participants, 30.5%), lower middle class (120 participants, 30.5%), and lower class (54 participants, 13.7%), highlighting economic factors' influence on health outcomes and healthcare access. Living conditions were recorded as living with a partner and children (80 participants, 20.3%), alone (40 participants, 10.2%), with parents (50 participants, 12.7%), with children (60 participants, 15.2%), with a partner (100 participants, 25.4%), and in an extended family (64 participants, 16.2%), identifying available support systems, crucial for managing diabetes and improving quality of life (Table 1).

Descriptive Statistics

The WHOQOL-BREF scale is a well-established tool for evaluating the QoL across various domains: Physical Health, Psychological Health, Social Relationships, and Environmental Health. This instrument comprises 26 items, with domain scores transformed to a range of 0 to 100. Below is the summary of the descriptive statistics for each domain, including the minimum, maximum, mean, and Standard Deviation (SD) scores (Mean±SD) (Table 2).

Descriptive Summary of WHOQOL-BREF Domain
QoL Scores by Age and Gender

To analyze the quality of life among diabetic patients, we computed the mean and standard deviation of the WHOQOL-BREF domain scores by different age groups and genders. This detailed breakdown allows us to understand the variations in quality of life influenced by demographic factors such as age and gender.

Table 3 presents the descriptive statistics for the WHOQOL-BREF domains across different age groups and genders. The results highlight several important trends and differences in the quality of life among diabetic patients.

The data indicates that younger males generally report higher quality of life scores across all domains than older females, who report the lowest scores. These findings suggest the need for targeted interventions to improve the quality of life among older female diabetic patients. Healthcare providers should consider age and gender-specific strategies to address the unique challenges faced by different demographic groups.

Table 1: Frequency and Percentage Distribution of Socio-demographic Details.

Socio-demographic variables		f (%)
Gender	Male	220(55.8)
	Female	174(44.2)
Age Groups	≤30	27(6.9)
	31-50	49(12.4)
	51-60	71(18.0)
	61-70	161(40.9)
	71 and above	86(21.8)
Social Habits	Alcoholic and non-smoker	72(18.3)
	Alcoholic and smoker	56(14.2)
	Non- alcoholic and smoker	23(5.8)
	Non-alcoholic and non-smoker	243(61.7)
Socio-economic Status	Upper class	29(7.4)
	Upper middle class	28(7.1)
	Middle class	294(74.6)
	Lower middle class	24(6.1)
	Lower class	19(4.8)
Living conditions	Partner and Children	171(43.4)
	Alone	38(9.6)
	Parents	5(1.3)
	Children	67(17.0)
	Partner	98(24.9)
	In extended Family	15(3.8)
Highest Education received	Primary	138(35.0)
	Secondary	61(15.5)
	Graduation	60(15.2)
	Post-graduation	25(6.3)
	Illiterate	110(27.9)

The data indicates that younger males generally report higher QoL scores across all domains than older females, who report the lowest scores.

DISCUSSION

This study assessed the Quality of Life (QoL) of diabetic patients residing in Dehradun using the WHOQOL-BREF scale. The results revealed significant impacts on various domains of QoL, including physical health, psychological health, social relationships, and environmental health. Socio-demographic factors such as gender, age, and socioeconomic status were found to influence QoL outcomes, highlighting the importance of tailored interventions for diabetic patients.

Table 2: Descriptive Summary of WHOQOL-BREF Domain.

Domains	Minimum	Maximum	Mean±SD
Physical	19	75	51.11±14.12
Psychological	19	88	49.86±13.24
Social	25	94	55.75±12.07
Environmental	31	88	55.75±10.83

The WHOQOL-BREF scale, established as a reliable tool for evaluating QoL in patients with chronic diseases like diabetes, was effective in identifying the significant challenges diabetic patients face. Our findings indicated that the physical health domain was the most affected, with participants experiencing limitations in daily activities and mobility. This aligns with previous studies, which observed similar declines in physical well-being in diabetic patients, largely due to complications like neuropathy, retinopathy, and cardiovascular issues.[1,3,6]

The psychological health domain also showed poor QoL scores, with increased reports of diabetes-related distress, depression, and anxiety. These findings are consistent with the work of others who noted that diabetes distress is a significant barrier to improved diabetes management.[7,12] The burden of managing a chronic illness, coupled with the fear of complications, often leads to feelings of helplessness. Moreover, women with diabetes often report lower psychological well-being than men, as found in studies, likely due to additional social and care giving responsibilities.[4,10]

In terms of social relationships, the study revealed that male participants generally reported better social functioning than female participants, although the difference was not statistically significant. This finding resonates with research highlighting the role of social support in improving diabetes management and QoL. Social networks are important for encouraging adherence to self-care behaviors and providing emotional support.[9,16] However, the social stigma surrounding diabetes can hinder effective social engagement. The ability to maintain meaningful social interactions and support systems can substantially improve the QoL of diabetic patients.[10,18]

The environmental health domain, which includes access to healthcare services and socio-economic conditions, was also identified as a major determinant of QoL in our study. Patients with limited access to healthcare and financial constraints reported significantly poorer scores in this domain. This mirrors findings from other studies, which noted that inadequate access to healthcare services can severely affect the management of diabetes.[11,14] Furthermore; environmental factors like socioeconomic status play a crucial role in managing diabetes effectively. Patients from lower socioeconomic backgrounds often face barriers to accessing necessary medical care, leading to poorer health outcomes and reduced QoL.[5,7]

Table 3: Descriptive Statistics of WHOQOL-BREF Domains by Age and Gender.

Age Groups	Gender	Physical (Mean±SD)	Psychological (Mean±SD)	Social (Mean±SD)	Environmental (Mean±SD)
≤30	Male (*n*=17)	59.82±10.14	52.94±11.81	59.41±10.17	61.88±8.61
	Female (*n*=10)	50.80±15.27	51.40±15.40	53.70±17.01	61.30±12.61
31-50	Male (*n*=28)	56.86±14.03	47.61±16.03	59.96±10.81	60.75±11.01
	Female (*n*=21)	49.81±17.76	49.29±10.97	51.52±12.04	53.95±8.49
51-60	Male (*n*=44)	54.89±12.56	47.18±17.07	58.93±9.07	58.91±11.46
	Female (*n*=27)	49.41±12.56	47.37±11.13	45.81±11.44	55.19±9.42
61-70	Male (*n*=88)	49.30±14.44	46.38±13.48	57.67±10.79	58.08±8.79
	Female (*n*=73)	50.60±13.07	53.84±11.13	51.82±12.48	52.51±9.90
71 and above	Male (*n*=43)	52.16±14.88	51.35±12.89	58.98±situ11.693	60.40±11.59
	Female (*n*=43)	45.37±13.39	53.19±9.97	56.56±12.65	54.02±13.18

Table 4: Distribution of Diabetic Patients According to the WHOQOL-BREF Scale Domains (*n*=394).

OL Domains	Gender	Poor QoL	Moderate QoL	High QoL
Physical Health	Male	58	123	39
	Female	64	91	19
Psychological Health	Male	91	98	31
	Female	60	96	18
Social Relationship	Male	11	137	72
	Female	57	80	37
Environmental Health	Male	11	152	57
	Female	39	112	23

Scores≤45: low QoL, scores 46-65: moderate QoL, scores 66-100: high QoL

The study also found that improved self-care behaviors were associated with better QoL outcomes. This is consistent with the findings of others who showed that diabetes self-management is a critical factor in controlling blood glucose levels and improving QoL. Self-care activities, including proper medication adherence, regular physical activity, and dietary control, are essential for maintaining health and preventing complications.[6,17] Furthermore, empowerment-based interventions, which enhance self-management skills, can significantly improve QoL in diabetic patients.[9,17]

Gender differences in QoL were also observed in our study, with female patients generally reporting lower QoL than their male counterparts. This is consistent with other studies, which found that female diabetic patients often report more negative experiences and lower QoL than men. This gender disparity may be due to the additional psychological and emotional burdens that women face in managing diabetes while also fulfilling caregiving roles. Diabetes-related distress is more prevalent among women, which can negatively affect their overall QoL.[8,15,19,20]

In conclusion, this study underscores the complex interplay between physical, psychological, social, and environmental factors in determining the QoL of diabetic patients. Interventions

aimed at improving self-care practices, enhancing social support, and addressing psychological and environmental barriers to care are crucial for improving QoL. Tailored, patient-centered care that considers gender, socio-economic status, and emotional well-being is essential for improving diabetes outcomes and overall well-being.

CONCLUSION

Diabetes mellitus remains a significant global health challenge, affecting millions of individuals and placing a substantial burden on both patients and healthcare systems. Beyond glycemic control, improving the Quality of Life (QoL) of diabetic patients is a central goal in comprehensive diabetes care. As shown in Table 4, the findings reveal distinct differences across various QoL domains, particularly highlighting gender-related disparities. Males reported better QoL scores in most domains, particularly in Physical Health, Psychological Health, and Social Relationships, where a greater number of male patients fell into the "High QoL" category. In contrast, females exhibited lower QoL scores, especially in the Physical Health domain, with a higher number of females categorized under "Poor QoL." These results emphasize the need for gender-sensitive healthcare interventions that address the unique physiological, psychological, and social

factors influencing the QoL of male and female diabetic patients differently. Tailoring diabetes care strategies to these gender-based differences could significantly improve patient outcomes and enhance their overall quality of life.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

DM: Diabetes Mellitus; **PWD:** People with diabetes; **QoL:** Quality of life; **WHO:** World Health Organization; **WHOQOL:** World Health Organization Quality of Life.

ETHICAL STATEMENT

The study was conducted in accordance with ethical principles The Informed consent was obtained from all participants online through Google Forms before data collection, ensuring confidentiality and voluntary participation. The form included a detailed explanation of the study's purpose, procedures, voluntary participation, and confidentiality measures. Participants were required to select the "I consent" option before proceeding with the survey. The data collected were anonymized and securely stored to ensure participant privacy.

SUMMARY

This study aimed to evaluate the quality of life (QoL) among diabetic patients using a cross-sectional design. A total of 394 diabetic patients participated, with data collected through structured questionnaires focusing on socio-demographic variables and the WHOQOL-BREF scale.

The findings revealed that younger males reported higher QoL scores across all domains, whereas older females had the lowest scores. Socio-demographic factors, including age, gender, social habits, socio-economic status, and living conditions, were associated with significant variations in QoL. The physical and environmental health domains exhibited the lowest scores, highlighting areas for targeted interventions.

These results emphasize the need for demographic-specific strategies to improve the QoL of diabetic patients, particularly older females, by addressing their unique challenges and healthcare needs.

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