



THE ROLE OF GENDER ON QUALITY OF LIFE IN DIABETIC PATIENTS.

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ABSTRACT

Objective: To assess association of gender on the quality of life in Diabetes Mellitus type 2 (T2DM) patients. **Methods:** This cross-sectional study was conducted in the Department of Psychiatry in Whitefield, Bengaluru. A total of 100 subjects who met the inclusion and exclusion criteria were included in the study after obtaining their written informed consent. A self-designed composite semi-structured proforma was used to collect socio-demographic and clinical information from the participants. The World Health Organization Quality of Life (WHOQOL) - BRIEF scale was used to assess the quality of life. Statistical analysis was performed using IBM SPSS version 25. **Results:** The average age of the study population was 50 years, with a standard deviation of 10.36 years. The majority of the participants were females (57%), married (87%), and from rural areas (71%). About 31% of the participants belonged to the lower middle socio-economic status. The mean score on the WHOQOL-BREF questionnaire for the study population was 16.75, with a standard deviation of 2.75. In the psychological domain, the mean score was 16.02, with a standard deviation of 2.09. For the social relationship domain, the mean score was 7.35, with a standard deviation of 1.15. In the environmental domain, the mean score was 21.86, with a standard deviation of 4.19. It is worth noting that the quality of life was slightly better in female DM patients, but this difference was not statistically significant. **Conclusion:** It is crucial to establish collaboration and maintain good communication between the treating physician and the mental health team to ensure a better quality of life for patients with diabetes mellitus (DM). This collaborative approach can help address the psychological aspects of DM and provide comprehensive care. Future studies should focus on investigating the impact of improved recognition and management of psychiatric disorders on the quality of life in individuals with DM. By exploring these aspects, we can gain a better understanding of how addressing mental health concerns can contribute to improving the overall well-being of DM patients.

KEYWORDS :**INTRODUCTION**

The relationship between diabetes mellitus (DM) and psychiatry has intrigued mental health professionals for centuries due to multidimensional nature.^[1] According to International Federation of Diabetes, prevalence of DM globally was 537 million in 2021 and is expected to reach 643 million by 2023 almost 783 million by 2045.^[2] India is often called the “diabetic capital of the world” and has approximately 80 million DM patients, which accounts for 17% of global total. This number is expected to increase to 135 million in future.^[3]

The prevalence of type 2 diabetes differs between genders, with more women affected after menopause and in old age. Men tend to have a higher prevalence before puberty. Screening for diabetes in women based solely on fasting blood glucose may underestimate the true prevalence due to impaired glucose tolerance after meals. Ketosis or diabetic ketoacidosis are more common in men, except in cases of hypoestrogenic states or prolonged anovulatory conditions in women. Glucose homeostasis and insulin resistance are influenced by visceral adipose tissue, which is more prevalent in women and can affect glycemic control and the need for oral hypoglycemic agents. Vitamin D levels have been associated with type 2 diabetes, particularly in women. Women with diabetes may have different responses to certain therapies compared to men, with varying effectiveness in reducing major adverse cardiac events.^[1,2,4]

Studies examined by Aarthy. R. et al, only 14 studies had information about gender and quality of life (QoL). Among these studies, nine reported that women with type 2 diabetes had poorer QoL compared to men, and one study reported the same for type 1 diabetes. Interestingly, three studies found that women with diabetes had better QoL than men. Additionally, it was found that women with type 2 diabetes often experienced poorer sleep quality than men, which negatively affected their assessment of health-related quality of life (HRQoL).^[5]

A growing body of literature has reported that patients with DM patients has impaired quality of life because of natural course of illness, restriction of diet and risk of acute and chronic life-threatening complications. With this understanding about the enormous prevalence of DM and its impact on quality of life, it is imperative to study impact of gender on quality of life in DM patients.

MATERIAL AND METHODS

The objective of this study was to evaluate the quality of life in

individuals with diabetes mellitus (DM) and to examine the potential influence of gender on their quality of life. The inclusion criteria for participants in this study were as follows; individuals who have been diagnosed with DM for at least six months, individuals of both genders between the ages of 18 and 70 years, and individuals who are capable of providing informed consent. On the other hand, the exclusion criteria for this study were; individuals with a history of psychiatric illness prior to the onset of DM, individuals with other medical conditions such as hypertension, hypothyroidism, or seizure disorder, and pregnant or lactating mothers.

This study was conducted at a tertiary care center hospital in Bangalore, Karnataka, India. The purpose of the study was to examine the association between gender and quality of life in patients with diabetes mellitus (DM).

Sample Size

A statistical power analysis was performed for sample size estimation. With an alpha = 0.05 and power = 0.85, the projected sample size needed with an effect size = 0.25 was approximately N =95 for this simplest between/within group comparison. The sample size was rounded off to 100 (N).

A total of 100 DM patients who met the selection criteria were approached and provided with detailed information about the disease, treatment options, possible effects, and complications. They were given the opportunity to withdraw from the study at any stage and were asked to provide written informed consent before enrolling.

Socio-demographic information such as age, gender, marital status, religion, domicile, family type, occupation, and socio-economic status was collected using a semi-structured proforma. The quality-of-life assessment was done using the WHOQOL-BREF, a reliable and validated instrument that measures various domains of quality of life, including overall quality of life and general health, physical health, psychological well-being, social relationships, and environmental factors. In this study, the domain scores from the WHOQOL-BREF were used to evaluate the association between gender and quality of life in DM patients.^[6] Data analysis was performed using the Statistical Package for the Social Sciences (SPSS 25).

RESULTS

The mean age of the DM patients in the sample was 50 years with a standard deviation of 10.36 years. The minimum age in the sample was

30 years, while the maximum age was 68 years. (Table-1) The majority (57%) of the participants were females, and the remaining 43% were males. (Table-2) Majority (87%) of the sample was married, while 13% were divorced. (Table-3) and majority (71%) of the participants came from a rural background, while the remaining 29% were from an urban background. (Table-4) The majority of the sample population belonged to the lower middle socio-economic status (31%), followed by the upper lower class (25%), upper middle class (20%), lower class (17%), and upper class (7%).^[7](Table-5)

Table-6: The WHOQOL-BREF scores are distributed among the study population as follows:- Overall quality of life and general health domain: The mean score for this domain was 5, with a standard deviation of 1.42.- Physical health domain: The mean score for this domain was 16.75, with a standard deviation of 2.79.- Psychological domain: The mean score for this domain was 16.02, with a standard deviation of 2.09.- Social relationship domain: The mean score for this domain was 7.23, with a standard deviation of 1.15.- Environmental domain: The mean score for this domain was 21.86, with a standard deviation of 4.197.

In Table-7, the distribution of WHOQOL-BREF domain scores among the study population is shown. In terms of the overall quality of life and general health domain, males had a mean score of 5.30±1.40, while females scored slightly lower at 4.77±1.40, indicating slightly poorer scores compared to males. For the physical health domain, males scored 16.70±3.03, and females had a similar score of 16.79±2.63. In the psychological domain, males scored 16.28±1.98, while females scored slightly lower at 15.82±2.18. In the social relationship domain, females had slightly better scores at 7.28±1.14, compared to males who scored 7.16±1.17. Lastly, in the environmental domain, both males and females scored similarly, with males at 21.86±4.22 and females at 21.86±4.21. None of the domain scores showed significant variation between males and females.

DISCUSSION

In our study, the average age of the participants was 50 years, with a standard deviation of 10.37. This could be because type II diabetes typically begins in the fourth or fifth decade of life, as mentioned in the literature.^[1] We observed a slightly higher percentage of female participants (57%) in our study. Research suggests that sex and gender differences play a significant role in the epidemiology, pathophysiology, treatment, and outcomes of diabetes. Sex differences are related to biological dissimilarities between men and women, influenced by sex chromosomes, gene expression, sex hormones, and their impact on the body's systems. Women often experience more significant hormonal and bodily changes due to reproductive factors throughout their lives. Additionally, the majority of participants in our study were married (87%).

Diabetes mellitus (DM) can greatly affect a person's quality of life, including their psychological well-being, social relationships, and physical health. Managing DM involves considering various psychological and social factors, as it is a demanding condition in terms of mental and emotional well-being.^[4] In our study, we used the WHOQOL-BREF questionnaire to assess the quality of life in DM patients. Across all domains, we found that the participants' quality of life was impacted. The mean scores in different domains were as follows: 5±1.4 for overall quality of life and general health, 16.75±2.7 for physical health, 16.02±2.09 for psychological health, 7.23±1.153 for social relationships, and 21.86±4.197 for the environment (Table-6). The WHOQOL-BREF questionnaire, developed by the World Health Organization, is commonly used to measure an individual's quality of life in various areas. It's important to note that gender, including being female, can influence the quality of life in DM patients. However, it's crucial to understand that the concept of quality of life is complex and influenced by multiple factors.^[6]

When comparing the domain scores with the current literature, it is important to note that the mean scores in our study align with previous findings to a certain extent.^[4,5] In the overall quality of life and general health domain, our study observed slightly poorer scores for females compared to males. This is consistent with some previous studies that have reported a similar trend, where females tend to have lower quality of life scores in this domain.^[5] In terms of the physical health domain, both males and females in our study had comparable scores, which is in line with some literature indicating that gender does not significantly affect physical health-related quality of life in individuals with diabetes.^[4] Regarding the psychological domain, our study found that

females scored slightly lower than males. This finding is in agreement with several studies that have suggested females with diabetes may experience more psychological distress and have a lower psychological well-being compared to males.^[4,5] Interestingly, in the social relationship domain, females in our study had slightly better scores than males, which contrasts with some previous research suggesting that males may have better social relationship-related quality of life. However, the difference in scores between males and females in our study was not significant, aligning with other studies that have also reported no substantial gender differences in this domain.^[3,5] Lastly, in the environmental domain, both males and females had similar scores, consistent with previous literature indicating that gender does not significantly impact the environmental quality of life among individuals with diabetes.^[5]

A study conducted by Soumya Swaroop Sahoo et al. aimed to evaluate the quality of life (QoL) of diabetic patients in eastern India. They included 103 adult diabetic patients and assessed their QoL using the Odia version of the WHO-QoL BREF questionnaire. Similar to our study, they found that the highest scores were observed in the social and environmental domains. Overall, 64% of the participants perceived their QoL as good. They observed that males, urban residents, individuals under the age of 60, and overweight individuals reported better QoL compared to their counterparts. In their study, they found that gender and residence had a significant association with QoL across all domains.^[8]

Another study conducted in India aimed to assess the quality of life (QoL) and its determinants among diabetes mellitus (DM) patients in a sub-Himalayan region catering to a rural population. The study was conducted in two hospitals from 2014 to 2018 using purposive sampling. Socio-demographic, anthropometric, and clinical data of 300 DM patients were collected. The QoL was measured using the QoL Instrument for Indian Diabetes Patients (QOLID) and the Patient Health Questionnaire-9 (PHQ-9). Results showed that a significant proportion of patients had good or very good QoL, but the domains of general health and treatment satisfaction were most affected. Fatigue was a common symptom reported. Older age, rural background, and higher PHQ-9 scores were associated with poorer QoL. The study emphasizes the need for comprehensive care and regular assessment of QoL to maintain a good health-related QoL for DM patients, as well as screening for depression and fatigue.^[9] This study aligns with our study in some aspects but tools used to assess quality of life is different hence variations in results can be seen.

Manjunath et al aimed to examine the impact of diabetes on the quality of life (QoL) of patients in Tamil Nadu, India. Using the World Health Organization QoL BREF instrument, researchers conducted a facility-based cross-sectional study. The findings showed that the mean total score of the QoL scale was 58.05, indicating a moderate QoL. In specific domains, a majority of patients had good scores for physical, psychological, and environmental QoL it is similar to our study but lower scores for social QoL. Males, married individuals, and those with a BMI over 25 had better QoL compared to others. The study concluded that diabetes affects QoL to some extent and recommended targeted interventions for women, widowed and separated individuals, and non-obese diabetics to improve their QoL. In their study also did not find any statistical significance and they suggested routine QoL assessment in diabetic clinics.^[10]

Another cross-sectional study conducted in Bangladesh, focused on individuals aged 15 years and above who had type 2 diabetes (T2DM). Participants with previous mental health issues and those who were unwilling to give consent were excluded from the study. Face-to-face interviews were conducted using a pretested structured questionnaire, which included the 26-item WHOQOL-BREF questionnaire reported that males and females had a similar distribution of scores it is consistent with our study but females had a significantly lower average score in the psychological domain compared to males (p=0.044).^[11]

Objective of study conducted by Natarajan J et al, was to explore the perception of health-related quality of life (HRQOL) among South Indian patients with type 2 diabetes mellitus (T2DM). The study was conducted in a tertiary care hospital in Chennai, Tamil Nadu, South India, and involved 352 T2DM patients aged 30 years or older who had been diagnosed for at least one year. Data analysis revealed that 90% of the patients perceived poor HRQOL. Factors such as being female, older age, lower education levels, lower family income, and uncontrolled fasting blood glucose levels were associated with poorer

HRQOL.^[12] This study did not align with our study as female gender was associated with poor health related quality of life.

The objective study conducted by Juliana Vallim et al, was to determine whether there are gender differences in the impact of Diabetes Mellitus type 2 on the quality of life of individuals. The sample consisted of 192 individuals, with equal numbers of men and women. Data were collected using sociodemographic and clinical questionnaires, as well as instruments to assess quality of life (PAID) and adherence to treatment. The study found that men generally had higher B-PAID scores, indicating a higher degree of emotional distress compared to women, although the differences were not statistically significant.^[13] Though this study did not align with our study but they have found males has high degree of emotional distress due to DM.

With the projected increase in the number of diabetic patients worldwide has led to a need for reducing the burden of diabetes and improving health-related quality of life (QoL) for these individuals. The objective of cross-sectional study conducted by Anna-Lena Uden et al, was to compare health, QoL, and quality of care (QoC) between men and women with diabetes in order to plan and manage diabetes care effectively. Patients from two age groups (20-30 years and 50-60 years) registered at Karolinska University Hospital in Stockholm, Sweden, were surveyed. The study assessed self-rated health, QoL, QoC, diabetes-related worries, occupational status, physical activity level, living arrangements, educational background, and obtained glycosylated hemoglobin (HbA1c) values from medical records. Middle-aged women reported worse mental well-being and QoL compared to men results of our study did not align with this study. Women in both age groups had more diabetes-related worries and lower coping ability, with these differences being more pronounced in middle-aged women. While there were no gender differences in metabolic control, middle-aged women expressed less satisfaction with diabetes care. This result concurrent with our current study. Higher HbA1c levels were associated with worse self-rated health, particularly among young women who also had more diabetes-related worries. The study concluded that women with diabetes experienced poorer QoL and mental well-being.^[14] This was large scale survey sample size is more hence the difference in results can be expected.

Our study was conducted in a single center was of cross-sectional nature. There were no healthy comparison groups. Only single measurement of anthropometric and subjective instruments was used. The impact of good diabetic care on the QOL of patients could not be evaluated. However, it was one of the fewer attempts to explore QOL of DM patients in four domains using WHOQOL-BREF instrument.

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Table 1: Age Distribution Of Sample (N=100)

| Variable | Total (N) | Minimum | Maximum | Mean | Std. deviation |
|--------------|-----------|---------|---------|-------|----------------|
| Age in years | 100 | 30 | 68 | 50.00 | 10.376 |

Table 2: Gender Distribution Of The Sample. (N=100)

| Gender | Frequency (n) | Percentage (%) |
|-----------|---------------|----------------|
| Female | 57 | 57.0 |
| Male | 43 | 43.0 |
| Total (N) | 100 | 100 |

Table 3: Marital Status Of The Sample. (N=100)

| Marital status | Frequency (n) | Percentage (%) |
|----------------|---------------|----------------|
| MARRIED | 87 | 87.0 |
| WIDOW | 13 | 13.0 |
| Total (N) | 100 | 100 |

Table 4: Domicile Status Of The Sample. (N=100)

| Domicile | Frequency (n) | Percentage (%) |
|-----------|---------------|----------------|
| Rural | 71 | 71.0 |
| Urban | 29 | 29.0 |
| Total (N) | 100 | 100 |

Table 5: Socio-economic Status Of The Sample. (N=100)

| Socio-economic status | Frequency (n) | Percentage (%) |
|-----------------------|---------------|----------------|
| LOWER CLASS | 17 | 17.0 |
| LOWER MIDDLE CLASS | 31 | 31.0 |
| UPPER CLASS | 7 | 7.0 |
| UPPER LOWER CLASS | 25 | 25.0 |
| UPPER MIDDLE CLASS | 20 | 20.0 |
| Total (N) | 100 | 100 |

Table 6: Mean Scores Of WHOQOL-BREF Scale. (N=100)

| Domain | Minimum | Maximum | Mean | Std. deviation |
|--|---------|---------|-------|----------------|
| Overall quality of life and general health | 3 | 7 | 5.00 | 1.421 |
| Physical health | 13 | 21 | 16.75 | 2.797 |
| Psychological health | 13 | 19 | 16.02 | 2.098 |
| Social relationship | 6 | 9 | 7.23 | 1.153 |
| Environmental | 15 | 28 | 21.86 | 4.197 |

Table 7: Gender-wise Comparison Of Various Domains Of Quality Of Life.

| Domain of QOL | Gender | Mean | Standard deviation | P value |
|--------------------------------|--------|-------|--------------------|---------|
| Overall QOL and general health | Male | 5.30 | 1.40 | .064 |
| | Female | 4.77 | 1.40 | |
| Physical health | Male | 16.70 | 3.03 | .872 |
| | Female | 16.79 | 2.63 | |
| Psychological | Male | 16.28 | 1.98 | .286 |
| | Female | 15.82 | 2.18 | |
| Social relationships | Male | 7.16 | 1.17 | .615 |
| | Female | 7.28 | 1.14 | |
| Environment | Male | 21.86 | 4.22 | .999 |
| | Female | 21.86 | 4.21 | |