



A Comprehensive Guide to the Relationship Between QOL and Socio-Demographic Profile

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ABSTRACT

Background: Age, gender, insulin use, income, a disease complication, education, psychological factors, kind of healthcare, and disease knowledge are all factors that might affect a patient's quality of life (QOL). The quality of a person's life is the most important aspect in determining their level of health (QOL).

Methods: This prospective, cross-sectional, observational study began following ethical approval. The study covered 182 patients. While comparing categorical data, the chi-square test was used, comparing normally distributed continuous data required either the unpaired t-test.

Results: Diabetes patients had an average age of 65.51±4.12 years. The majority of the patients 122 (67%) were men, outnumbered the women. Eighty-four percent of the patients, or 154 of them, were married. 37 patients (20.3%) were Muslims, whereas 145 patients (79.7%) identified as Hindus. 45 patients (24.7%) belonged to joint families, while 145 patients (79.7%) were primarily from nuclear families. HbA1c and FPG have respective mean values of 7.23±1.25 and 142.96±18.56. the average duration of DM was 13.00±5.69. The mean systolic and diastolic blood pressures are respectively 142.96±18.56 and 84.06± 9.67. 54% of patients have DM in their family tree. 64.29% of patients have comorbid conditions. Complications occur in just 7.69% of patients. 14.8% of patients in therapy use insulin.

Conclusions: Age, marital status, HbA1c, and the duration of diabetes mellitus were some of the sociodemographic and clinical factors that independently predicted a lower quality of life in diabetes patients.

Keywords: Quality of life (QOL), Type 2 DM, HbA1C, Duration of DM.

INTRODUCTION

Diabetes mellitus is a miscellaneous group of diseases that constantly presents with occurrences of hyperglycaemia and glucose dogmatism similar to imperfect insulin action or due to lack of insulin or both. In 2010, nearly about 285 million people between the 20-79 times of age group were reported to have diabetes worldwide, and around 70% of those living in developing countries. The pancreatic hormone insulin is responsible for the regulation of blood glucose position¹. Major causes of morbidity and mortality worldwide remain to be complications of Type 2 DM. Over 65 years of the age group population, the estimation is indeed more intimidating. Around 19 million people or 26.9% of all those people in this age group in 2010 suffered from diabetes. Elderly people take a severe risk for this complaint since elderly adults with Type 2 DM are linked to an increase in mortality and complication when it's compared to young diabetics and non-diabetic people in the same age group².

Due to the high prevalence of diabetes there, India is known as the "Diabetes Capital" of the world. T2DM makes up the bulk of diabetes cases out of all cases. Type 2 diabetes mellitus has various regular symptoms linked to cardiovascular disease, renal disease, disability, and blindness³. When compared to young diabetics and non-diabetics in the same age group, older adults with Type 2

DM are associated with an increase in mortality and complications, placing them at a significant risk for this complaint⁴. The quality of life (QOL) of the older population is negatively impacted by T2DM. QOL is affected by a number of variables in patient of T2DM cases, including age, gender, insulin use, income, a disease complication, education, psychological aspects, kind of healthcare, and disease awareness. Improved glycaemic management is linked to higher QOL⁵. One of the largest issues at the moment is ensuring that the elderly have a decent quality of life, especially in light of the fact that some chronic diseases, like diabetes, are on the rise. Age is one of the biggest risk factors for diabetes, and diabetes has been related to a negative impact on quality of life⁶. Similar factors that affect QOL in four separate categories include age, sex, health, and sickness status, as well as urban and rural environments⁷. In order to determine how a complaint and its treatment may affect people and health care costs, one important outcome for those with Type 2 DM is HRQOL⁸.

METHODS

Following getting ethical approval from King George's Medical University, Lucknow (Ref. code: VI-PGTSC-IIA/P10), this prospective, cross-sectional, observational study was launched. Department of Pharmacology & Therapeutics, King George's Medical University, Lucknow



collaborated with the Department of Medicine to undertake the current study.

Inclusion and exclusion criteria:

Following their consent, patients who met the following requirements were enrolled in the trial:

1. Inclusion criteria

- Patients ≥ 60 years of age.
- Diagnosed with T2DM and on antidiabetic medication for ≥ 6 months (with and without comorbidities).
- Written informed consent.

2. Exclusion criteria

- Patient not willing to give informed consent.
- Newly diagnosed T2DM patients.
- Patients of Type I Diabetes Mellitus.
- Patient on steroid medication.
- Any serious surgical conditions.
- Patient < 60 years of age.
- Patient having any autoimmune disease, inflammatory conditions, and infections (HIV, TB)
- Patients with mental and psychiatric disorders.

A study (Patel B, et al 2014) is used for the calculation of sample size, formula below is used to determine the sample size, $n = [Z(1 - \alpha/2) + Z(1 - \beta)]^2 \frac{[SD_1^2 + SD_2^2]}{(X_1 - X_2)^2}$, n = sample size. The number of patients enrolled in this study was 182.

Statistical analysis

While categorical data was compared using the chi-square test, the normally distributed continuous data were compared using the unpaired t-test. The odd ratios for quality of life (QOL) impairment were calculated using univariate binary logistic regression analysis. The forward conditional technique was utilized in multivariate linear regression to identify the independent predictors of reduced quality of life (QOL), and variables with P values ≤ 0.10 in the univariate binary logistic regression analysis were included. The SPSS version 21.0 program for Windows (SPSS Inc., Chicago, IL, USA) was used for all statistical analysis. Statistical significance was determined by a two-sided P value of < 0.05 .

RESULTS

The mean age of the diabetic patients was found to be 65.51 ± 4.12 years. The majority of the patients i.e., 122 (67%) were males whereas females were 60 (33%). The majority of the patients i.e., 154 (84.6%) were married. The majority of the patients, i.e., 145 (79.7%) were Hindus whereas 37 (20.3%) were Muslims. The majority of the patients 145 (79.7%), were from nuclear families, while 45

(24.7%) were from joint families. The majority of the patients i.e., 111 (61%) were from rural areas whereas patients from urban areas were 71 (39%). The majority of the patients, i.e., 135 (74.18%), belong to a mixed diet pattern whereas 47 (25.82%) belong to a veg diet pattern. The prevalence of substance abuse is 111 (60.99%). Among the frequency of exercise, the majority have no exercise (60.99%), occasional (37.36%), and routine (1.65%). The percentage of graduates, intermediate, high school, primary school, and illiterate are 22%, 7.1%, 32.4%, 24.7%, and 13.7% respectively. The percentage of professional & semi-professional, skilled & semi-skilled, unskilled, and homemakers are 18.7%, 24.7%, 32.4%, and 24.2% respectively. The percentages of the upper middle class (II), lower middle class (III), upper lower class (IV), and lower class (V) are 23.6%, 41.8%, 20.3%, and 14.3% respectively (Table 1 and Figure 1A- 1F).

Table 1: Socio-demographic characteristics of Type 2 Diabetes Mellitus patients (n=182)

Parameters	n=182
Age (Years)	65.51 \pm 4.12
Gender: Male/Female	122 (67%)/60 (33%)
Religion: Hindu/Muslim	145 (79.67%)/37 (20.33%)
Residence: Urban/Rural	71 (39.01%)/111 (60.99%)
Marital Status: Widowed/Married	28 (15.38%)/154 (84.62%)
Diet pattern: Mixed/Veg	135 (74.18%)/47 (25.82%)
Substance Abuse: No/Yes	71 (39.01%)/111 (60.99%)
Education: Graduate/Intermediate/High School /Primary School/Illiterate	40 (22%)/13 (7.1%)/59 (32.4%)/45 (24.7%)/25 (13.7%)
Occupation: Professional & Semi-professional/Skilled & semi-skilled/Unskilled/Homemaker	34 (18.7%)/45 (24.7%)/59 (32.4%)/44 (24.2%)
Type of family: Joint family/Nuclear family	137 (75.27%)/45 (24.73%)
Socioeconomic status: Upper middle class (II)/Lower middle class (III)/Upper lower class (IV)/Lower class (V)	43 (23.6%)/76 (41.8%)/37 (20.3%)/26 (14.3%)

The mean values of HbA1c and FPG are 7.23 ± 1.25 and 142.96 ± 18.56 . the mean duration of DM is 13.00 ± 5.69 . The mean systolic BP and diastolic BP are 142.96 ± 18.56 and 84.06 ± 9.67 . 61.54% of patients have a positive family history of DM. The percentage of patients with comorbidity is 64.29%. Only 7.69% of patients have complications. The percentage of insulin use in therapy is 14.8%. The following percentage of patients belongs to the oral antidiabetic medication: Metformin [15 (8.2%)], Metformin + Glimepiride/Gliclazide [100 (54.9%)], Metformin+ Glimepiride+ Dapagliflozin [3 (1.6%)], Metformin+ Voglibose [7 (3.8%)], Metformin+ Glimepiride+ Teneeligiptin+ Voglibose [6 (3.3%)], Metformin+ Glimepiride+ Pioglitazone [32 (17.6%)],



Metformin+ Glimepiride+ Pioglitazone+ Vildagliptin [13 (7.1%)], Metformin+ Glimepiride+ Voglibose [4 (2.2%)], and Metformin+ Pioglitazone [2 (1.1%)] (Table 2 and Figure 2A-2E).

Figure 1A-1F: Socio-demographic characteristics of Type 2 Diabetes Mellitus patients (n=182)

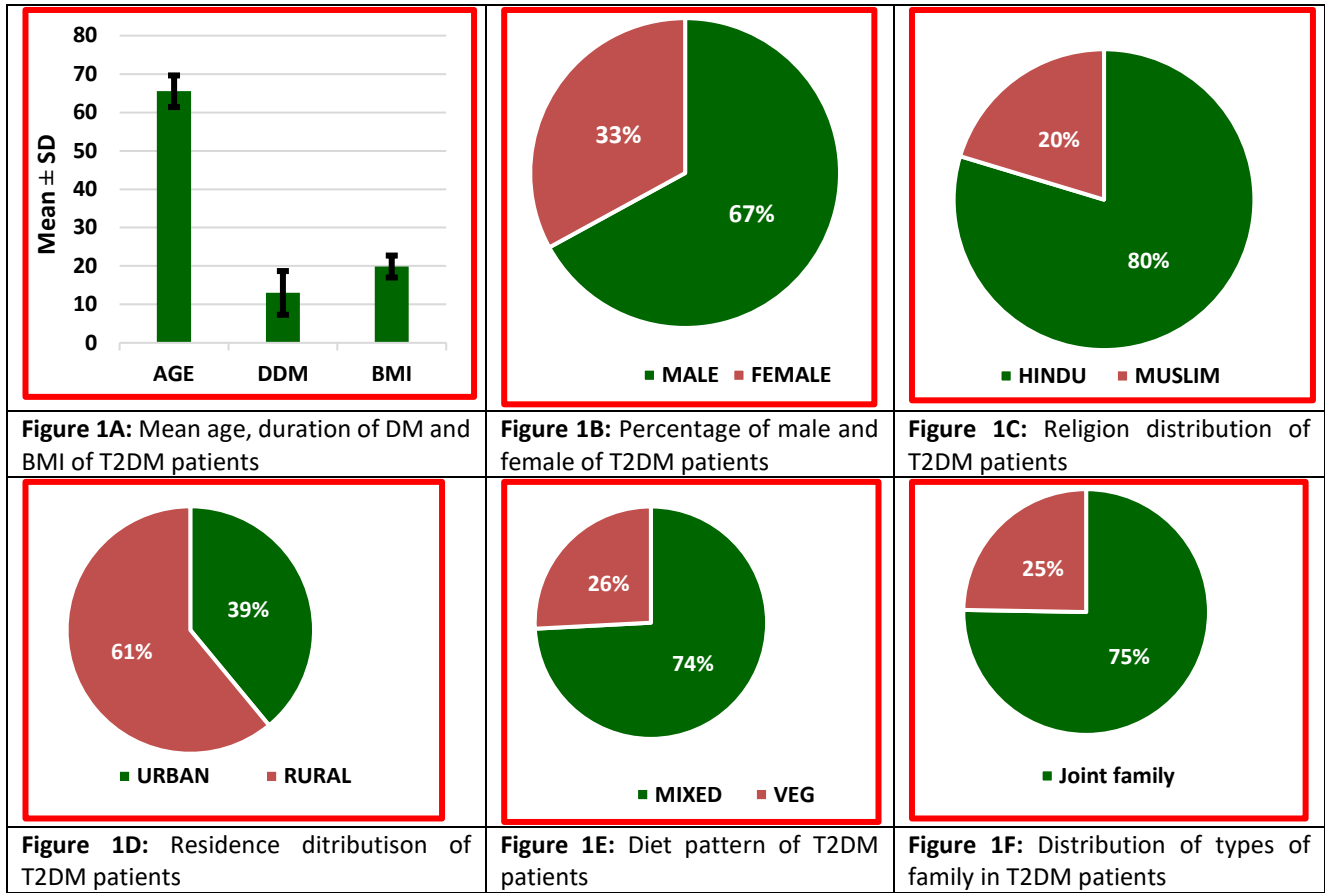
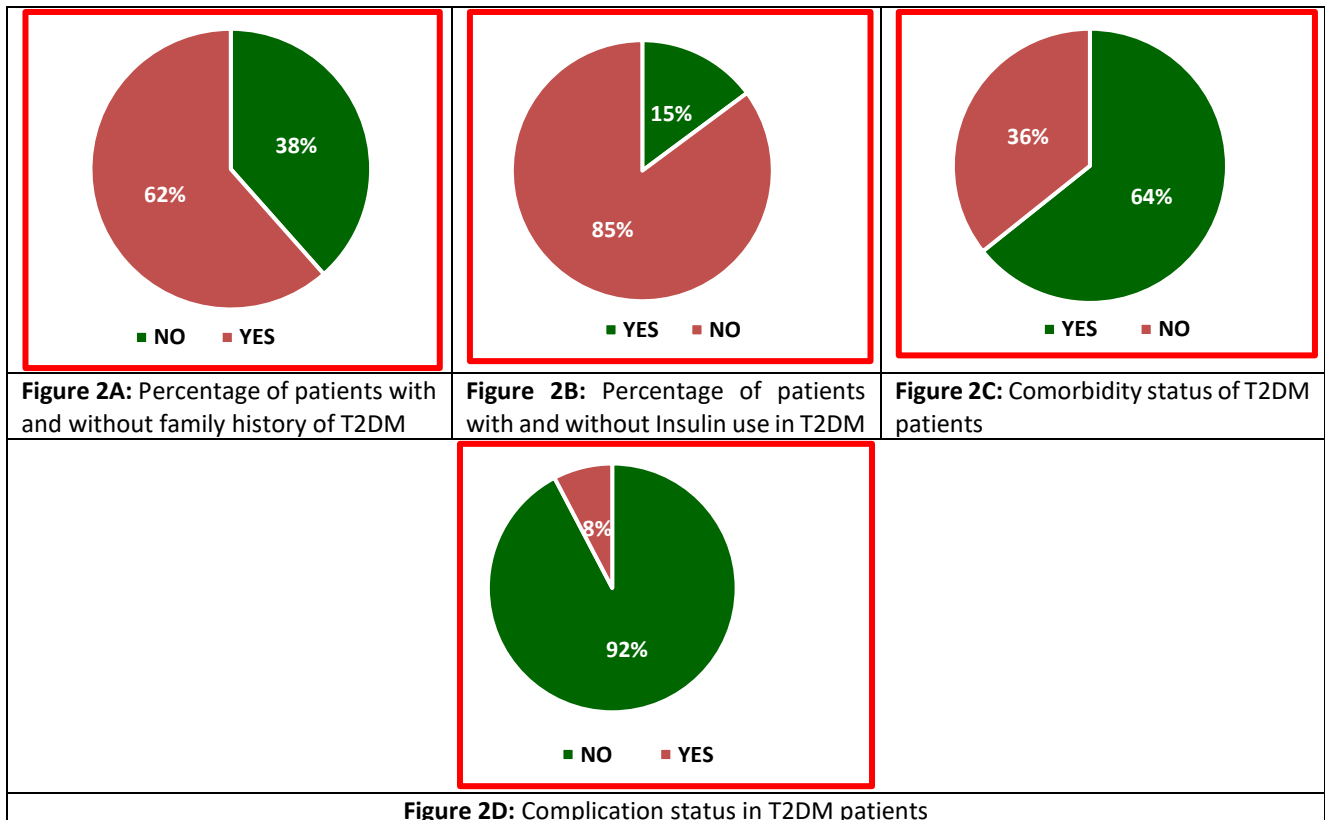


Figure 2A-2E: Clinical parameters and laboratory characteristics of Type 2 Diabetes Mellitus patients (n=182)



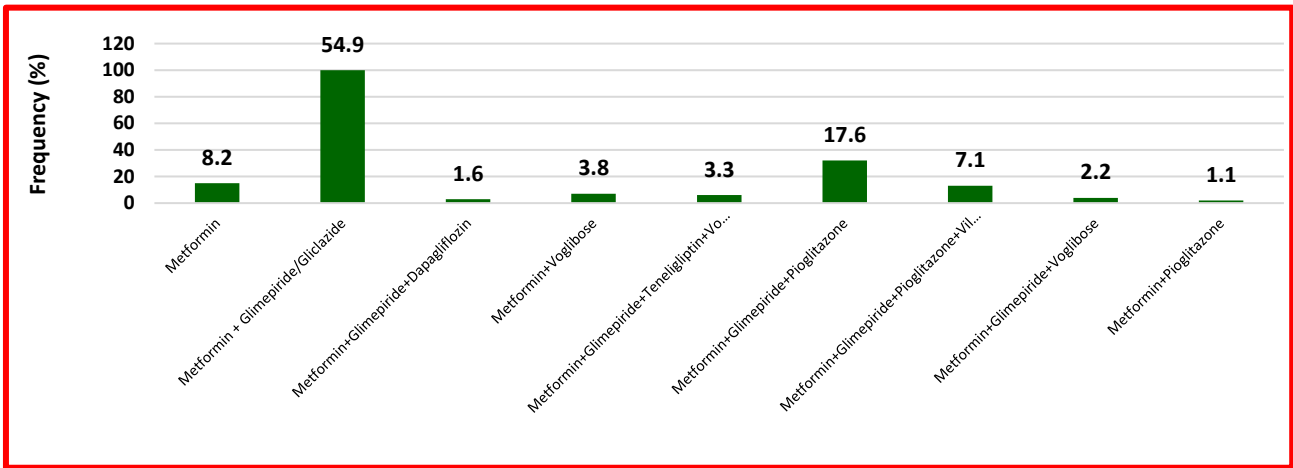


Figure 2E: Distribution of Oral antidiabetic medication in T2DM patients

Figure 3A-3C: WHOQOL-BREF domains, WHOQOL-OLD facets, and ADS score characteristics in Type 2 Diabetes Mellitus patients (n=182)

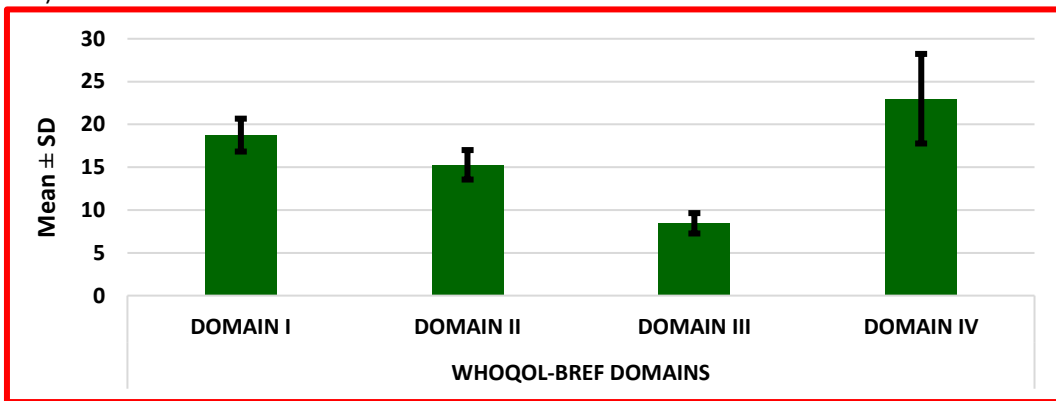


Figure 3A: WHOQOL-BREF Domain I,II,III and IV score of T2DM patients

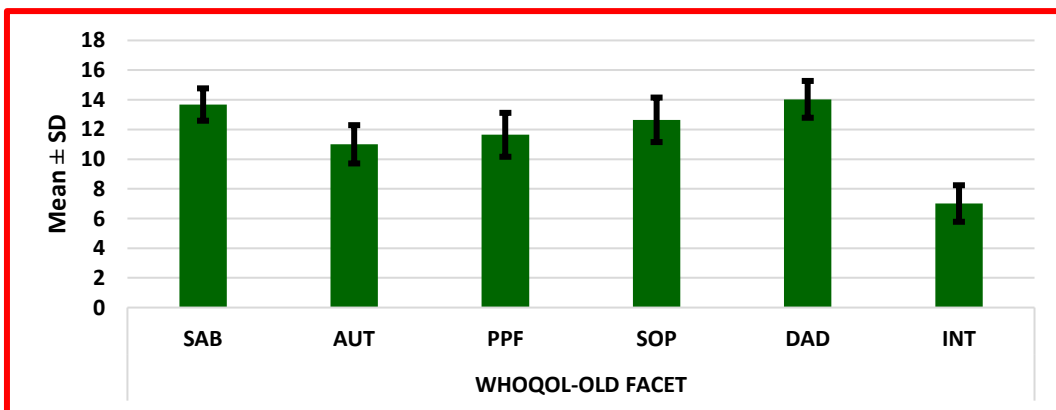


Figure 3B: WHOQOL-OLD facet score of T2DM patients

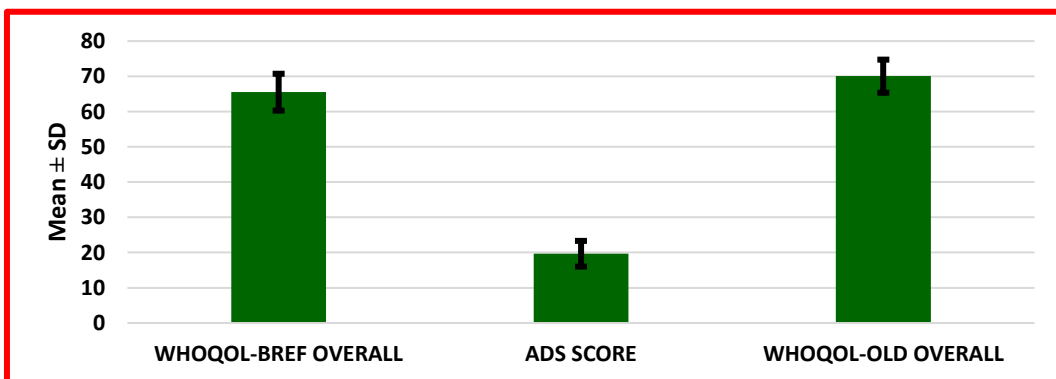


Figure 3C: WHOQOL-BREF overall, ADS and WHOQOL-OLD overall score of T2DM patients

Table 2: Clinical parameters and laboratory characteristics of Type 2 Diabetes Mellitus patients (n=182)

Parameters	n=182
BMI	19.87±2.86
Waist Circumference (Cm)	92.89±3.71
Hip Circumference (Cm)	96.11±3.05
Waist Hip ratio	0.97±0.03
HbA1C	7.23±1.25
FPG	146.7±53.79
SBP	142.96±18.56
DBP	84.06±9.67
Duration of Diabetes Mellitus	13.00±5.69
Family History of Diabetes: No/Yes	70 (38.46%)/112 (61.54%)
Co-morbidity: Yes/No	117 (64.29%)/65 (35.71%)
Complication: No/Yes	168 (92.31%)/14 (7.69%)
Insulin Use: Yes/No	27 (14.8%)/155 (85.2%)
Oral antidiabetic medication	
Metformin	15 (8.2%)
Metformin + Glimepiride/Gliclazide	100 (54.9%)
Metformin+Glimepiride+ Dapagliflozin	3 (1.6%)
Metformin+Voglibose	7 (3.8%)
Metformin+Glimepiride+ Teneligliptin+Voglibose	6 (3.3%)
Metformin+Glimepiride+ Pioglitazone	32 (17.6%)
Metformin+Glimepiride+ Pioglitazone+Vildagliptin	13 (7.1%)
Metformin+Glimepiride+ Voglibose	4 (2.2%)
Metformin+Pioglitazone	2 (1.1%)

The mean scores in physical health, Psychological Health, Personal Relationship, Environment, and WHOQOL-BREF Overall of WHOQOL-BREF domains are 18.75±1.92, 15.28±1.72, 8.45±1.19, 23.00±2.08, and 65.50±5.23 respectively. The mean value of the ADS score is 19.66±3.65. The mean values of Sensory abilities (SAB), Autonomy (AUT), Past, present & future (PPF), Social participation (SOP), Death and dying (DAD), Intimacy (INT), and WHOQOL-OLD Overall of WHOQOL-OLD facets are 13.68±1.09, 11.00±1.29, 11.64±1.48, 12.65±1.50, 14.03±1.24, 7.01±1.23, and 70.04±4.70 respectively (Table 3 and Figure 3A-3C).

DISCUSSION

As seen in Table 1 and Figure 1, the mean age of the study cohort was 65.51±4.12 years, with the male sex (67%) being more than the female (33%). The mean duration of diabetes mellitus was 13.00±5.69 years. Majority of the patients being married (84.62%), rest being the widowed (15.38%). In our study, 74.18% patients possess mixed pattern of diet and 25.82% being vegetarian diet. In this study, majority of the patients belongs to rural areas (60.99%) and 39.01% in urban areas. Majority of the patients in this study lives in

joint family (75.27%) and 24.73% belongs to nuclear family. In this study, majority of the patients belongs to lower middle class (41.8%) followed by upper middle class (23.6%), upper lower class (20.3%), and lower class (14.3%). Majority of the patients in this study is educated till high school (32.4) followed by primary school (24.7%), graduate (22%), illiterate (13.7), and intermediate (7.1%). Also, in this study, majority of the patients belongs to unskilled worker (32.4%) followed by skilled and semi-skilled (24.7%), homemaker (24.2%), and professional and semi-professional (18.7%). Similar findings were observed in the studies of Lima et al⁵, Asimwe et al⁹, and Leroith et al¹⁰ where the mean age of diagnosis of Diabetes mellitus was between 55-65 years and the mean duration of diabetes mellitus being between 9-15 years respectively. Also, in the study of Vahedi S¹¹, male patients were more involved as compared to female. Al-Abadla Z¹², in their study observed that mean duration of diabetes mellitus was 7-13 years. Mohammadi et al¹³, in their study found that male diabetic patients in comparison to female diabetic patients, non-insulin treated as compared to insulin treated diabetic patients had better quality of life (QOL). Patients with HbA1c <7% showed significant better quality of life in comparison to patients with HbA1c >7% which show higher possibilities of worsen quality of life in elderly diabetic patients. Arosemena CM et al¹⁴ in their study observed that age is significantly different between controlled and uncontrolled diabetes group, other parameters such as gender, level of education, marital status, socioeconomic status, BMI, diet, exercise, and treatment were insignificant between controlled and uncontrolled diabetes group. Ganesh Kumar et al¹⁵ in their study also observed that after applying binary logistic regression model, age, education, marital status, and family type differed significantly between the type 2 diabetes mellitus patients with impaired quality of life (QOL), thus all those above-mentioned parameters are identified as independent risk factors for impaired quality of life (QOL) in type 2 diabetes mellitus patients of elderly population. Similarly, in the study of Singh A et al¹⁶ on binary logistic regression analysis there was a highly significant relationship between age, gender, marital status, education, and socio-economic status.

CONCLUSION

Older age is associated with increased challenges in disease management, higher risk of complications, and declining physical function, all of which can negatively impact QOL in diabetes patients. Patients who are widowed or living alone may experience reduced social support and psychological distress, affecting their emotional and social well-being and contributing to lower QOL. Higher HbA1c levels reflect poorer glycaemic control and are linked to increased diabetes-related complications, leading to symptoms that impact physical and emotional well-being and contribute to lower QOL. Longer disease duration is associated with a higher likelihood of developing complications and treatment fatigue, which can diminish satisfaction with life and overall QOL.



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