

# QUALITY OF LIFE ASSESSMENT AMONG TYPE 2 DIABETIC PATIENTS IN RURAL TERTIARY CENTRE

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## ABSTRACT

**Background:** Quality of life assessment is considered as important measure of outcome in chronic disease management. With increase in prevalence of Diabetes in India it becomes important to assess the quality of life for better care and control.

**Aims & Objective:** Hence this study was conducted with the objectives to assess the Quality of life (QoL) among diabetic patients with respect to anthropometry and blood investigations and assess the influence of risk factors on Quality of Life among Diabetic patients.

**Materials and Methods:** Cross-sectional study was conducted for a period of 2 months among 180 type 2 diabetes mellitus patients attending rural tertiary care centre. A pretested and structured questionnaire was used to obtain the information on socio- demographic profile, diabetic history. Quality of life was assessed by WHOQOL-BREF. Statistical analysis was carried out by using EPI Info 7 software. Correlations, Students t test and logistic regression analysis are the statistical tests.

**Results:** The mean age of males was  $59.56 \pm 9.64$  and females was  $60.90 \pm 7.51$ . Mean scores of Quality of life with respect to physical, psychological, social and environmental domains were significantly higher among females compared to males ( $p < 0.01$ ). Quality of life domains and other continuous variables showed that there is significant positive correlation between age and physical, psychological, social and environmental domains ( $r = 0.864, 0.396, 0.549, 0.420$  respectively and  $p < 0.001$ ). Logistic regression showed that increase in age and HbA1c acts as independent factors to assess the Quality of life.

**Conclusion:** Quality of life among diabetics needs improvement with proper treatment regimens ensuring good glycemic control.

**Key Words:** Quality of Life; Diabetes Mellitus; WHO Quality of Life-BREF (WHOQOL-BREF)

## Introduction

Quality of life is defined by WHO as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.<sup>[1]</sup> Diabetes is a chronic non-communicable disease, leading to many complications which lead to disability. Complications in diabetes include micro vascular (nephropathy, retinopathy, and neuropathy) and macro vascular (CVD, CVA, and diabetic foot) with co morbidities it leads to a substantial decrease in the patients' quality of life (QoL).<sup>[2]</sup> Quality of life assessment is considered as important measure of outcome in chronic disease management. There is also good evidence among diabetics that psychosocial factors such as depression are stronger predictors of medical outcomes such as hospitalization and death than are physical and metabolic factors such as presence of complications, body mass index, or HbA1c level.<sup>[3]</sup> Quality of life issues are important, because they predict the individual's capacity to manage his disease and maintain long-term health and well-being. Quality of life is also increasingly recognized as an important health outcome in its own right, representing the ultimate goal of all health interventions.<sup>[4]</sup> With increase in prevalence of Diabetes in India it becomes important to assess the

quality of life for better care and control. Hence this study was conducted with the objectives to assess the Quality of life among diabetic patients with respect to anthropometry and blood investigations and to assess the influence of risk factors on Quality of Life among Diabetic patients.

## Materials and Methods

Type 2 diabetic patients attending outpatient department of medicine and gave valid informed consent was included in the study. Severe complications of diabetes such as heart, liver or kidney disease, foot ulcers etc. were excluded. Cross sectional study was carried out for a period of 2 months after obtaining institutional ethical clearance. A sample size of 180 was obtained after considering the prevalence of diabetes in Karnataka as 10.22%. Sample size was calculated using the formula,  $N = 4pq/L^2$ .  $N = 146$  with 5% permissible error. Expecting 20% Noncompliance the total sample size =  $146 + 30 = 176$  diabetic patients  $\approx 180$  patients. A pretested and structured questionnaire was used to obtain the information on socio- demographic profile, diabetic history. The quality of life was assessed by WHOQOL-BREF5 scale. The WHOQOL-BREF (World Health Organization Quality of Life - Brief) is a validated tool to assess QoL in people with type 2 diabetes and it is also appropriate for use across different nationalities.<sup>5</sup> The

four domains measured are: physical, psychological, social and environment, through a set of 26 items that can be self-administered. Responses to the questions use a 5-point Likert scale, inquiring 'how much', 'how satisfied' or 'how completely' the respondent felt in relation to the domain being investigated. The WHOQOL-BREF has been validated to measure the psychometric properties and is reliable. The scores obtained were transformed to 0 - 100 scores.<sup>[6-9]</sup> The anthropometric measurements Weight, height, Waist and Hip circumference of all the subjects was measured. Statistical Analysis was done using EPI Info 7 software. Pearson correlation between two quantitative variables was carried to find the correlation coefficient (r). Student's t test is the test of significance for difference in means between two continuous variables. Binary logistic regression was used to assess the influence of factors and WHOQOL-BREF transformed scores. p value <0.05 is considered as statistically significance.

**Results**

A total of 180 patients (90 males and 90 females) were included in the study. The mean age of males was 59.56 ± 9.64 and females was 60.90 ± 7.51. The anthropometric profile (BMI, Waist circumference and Waist hip ratio), FBS, PPBS and HbA1c between males and females was matched i.e. there was no significant difference between the two groups. Females had higher levels of cholesterol and LDL than males (p<0.01) and no difference was observed with other lipid parameters [Table 1]. All the four domains of QoL had a mean value greater than 50 suggesting decreased QoL among diabetics. Females had higher mean scores of physical, psychological, social and environmental domains compared to males and the difference was statistically significant (p<0.01) [Table 2]. Correlation between Quality of life domains and other continuous variables showed that there is significant positive correlation with age for physical, psychological, social and environmental domains (r = 0.864, 0.396, 0.549, 0.420 respectively and p<0.001). Cholesterol, LDL, FBS, PPBS and HbA1c were positively correlated at a significant level with respect to physical domain. Only LDL was

positively correlated with psychological domain (r = 0.166, p = 0.02). Cholesterol, LDL, FBS and HbA1c were positively correlated to social domain and only FBS was positively correlated with environmental domain (r = 0.173, p = 0.02) [Table 3]. Logistic regression showed that increase in age and HbA1c acts as independent factors to assess the Quality of life. There is 10.22 odds for physical domain and 3.52 odds for psychological domain with increase in age and 3.33 odds for physical domain and 3.12 odds for social domain with increase in HbA1c. There was no significance with other variables. [Table 4].

**Table-1: Profile of Type 2 Diabetic Patients**

Parameters	Mean ± SD		p value
	Male (n=90)	Female (n=90)	
Age	59.56 ± 9.64	60.90 ± 7.51	0.298
BMI	26.75 ± 3.85	26.23 ± 3.99	0.379
Waist Circumference	96.64 ± 9.76	98.38 ± 9.61	0.232
Waist/Hip ratio	1.019 ± 0.14	1.032 ± 0.10	0.298
Cholesterol	167.9 ± 37.1	183.1 ± 42.8	0.012**
Triglycerides	173.1 ± 92.0	183.3 ± 85.6	0.491
HDL	38.17 ± 6.35	38.39 ± 4.36	0.784
LDL	92.88 ± 36.8	107.4 ± 37.4	0.009**
FBS	149.5 ± 30.8	151.7 ± 30.5	0.635
PPBS	185.9 ± 39.1	187.6 ± 38.6	0.768
HbA1c	7.172 ± 0.618	7.138 ± 0.57	0.699

\*\* p value significant at 0.01 level. BMI: Body mass index; HDL: High density lipoprotein; LDL: Low density lipoprotein; FBS: Fasting blood sugar; PPBS: Postprandial blood sugar.

**Table-2: Profile of Type 2 Diabetic Patients**

Parameters	Mean ± SD		p value
	Male (n=90)	Female (n=90)	
Physical	60.73 ± 14.44	65.83 ± 11.56	0.010**
Psychological	60.79 ± 14.78	66.36 ± 13.43	0.009**
Social	52.87 ± 21.98	62.57 ± 19.30	0.002**
Environment	70.26 ± 11.55	75.40 ± 10.43	0.002**

\*\* p value significant at 0.01 level.

**Table-3: Correlation between QOL Domains and Continuous variables**

Parameters	Physical (n=180)	Psychological (n=180)	Social (n=180)	Environment (n=180)
Age	0.864**	0.396**	0.549**	0.420**
BMI	-0.009	0.015	-0.016	0.068
Waist circumference	-0.043	0.012	0.046	0.124
Waist/Hip ratio	-0.113	-0.138	-0.100	-0.035
Cholesterol	0.202**	0.142	0.169*	0.128
Triglycerides	0.106	0.009	0.090	0.077
HDL	-0.010	-0.049	0.009	-0.015
LDL	0.164*	0.166*	0.171*	0.110
FBS	0.402**	0.121	0.200**	0.173*
PPBS	0.334**	0.094	0.144	0.102
HbA1c	0.363**	0.038	0.169*	0.099

\*\* p value significant at 0.01 level, \* p value significant at 0.05 level

**Table-4: Logistic regression analysis between QOL domains and Continuous variable**

	Physical Domain		Psychological Domain		Social Domain		Environmental Domain		
	OR (CI)	p	OR (CI)	p	OR (CI)	p	OR (CI)	p	
Age	<60 >60	10.22 (3.5 - 29.45)	0.01*	1.52 (0.76-3.01)	0.22	3.52 (1.81-6.86)	0.01*	5.83 (1.17-28.9)	0.03**
FBS	<110 >110	2.36 (0.50-10.9)	0.27	0.99 (0.20-4.79)	0.99	0.69 (0.15-3.08)	0.63	1.84 (0.14-23.1)	0.63
PPBS	<140 >140	0.38 (0.07-1.93)	0.24	0.46 (0.09-2.38)	0.35	0.51 (0.11-2.28)	0.38	3.32 (0.31- 34.7)	0.31
HBA1c	<6.5 >6.5	3.33 (1.96-11.5)	0.01*	0.68 (0.21- 2.20)	0.52	3.12 (1.92-10.5)	0.01*	0.22 (0.01- 3.12)	0.26

OR: Adjusted Odds Ratio; CI: Confidence Interval; \*\* p value significant at 0.01

## Discussion

In the study among 180 diabetic patients, Quality of Life based on four domains physical, psychological, social and environmental was assessed with respect to quantitative variables like age, anthropometric parameters (BMI, waist hip ratio, waist circumference), lipid parameters (Total cholesterol, triglycerides, LDL and HDL) and blood sugar parameters (FBS, PPBS and HbA1c). There was no significance between males and females with respect to the quantitative variables studied except for Cholesterol and LDL, i.e. females had a higher cholesterol and LDL levels. Males had lower score (better QoL) with all the four domains compared to females. Eljedi A et al observed that females has lower QoL than males which is in concordance to our study.<sup>10</sup> Similarly Rubin RR observed that men generally report better quality of life than women and younger people report better quality of life than older people.<sup>141</sup> Increase in age was correlated positively among four domains of QoL at a significant level i.e. Quality of life is decreased with age. Similarly positive correlation was observed between Cholesterol, LDL, FBS, PPBS and HbA1c with physical domain. Psychological domain was affected by LDL positively ( $r = 0.166$ ,  $p = 0.02$ ). Cholesterol, LDL, FBS and HbA1c played a significant role with respect to social domain and FBS was affecting environmental domain ( $r = 0.173$ ,  $p = 0.02$ ). Whereas Andrzej M. Fal et al, observed that psychological domain was affected by high BMI value and WHR.<sup>122</sup> Similarly in a study by Akinci F et al, overweight and obesity (BMI >25 and >30, respectively) have been found both as important negative factors in determining the QoL.<sup>131</sup>

Quantitative factors which can affect the Quality of life independently was assessed by Logistic regression. It was observed that only age was affecting physical, psychological and environmental domains significantly and HbA1c was affecting physical and social domain significantly. Though the other variables had an odds of more than one, it was not statistically significant to act as independent factor to assess the Quality of Life. Hence diabetic patients are likely to have decreased quality of life with increase in age and irregular control of glucose over a period of time irrespective of FBS, PPBS and Lipid parameters. This can be attributed to the chronicity of the disease and lifelong treatment and care in diabetes. In patients who are treated can also develop side effects of drugs by which the QoL can be affected.

**Limitations:** As this study was conducted in a rural tertiary care centre the results may not hold good to other tertiary care centre located in metropolitans/urban areas.

## Conclusion

QoL has become an important outcome measurement in the success of treatment which in diabetic patients is affected by many factors like sex, type of treatment (Insulin & Oral hypoglycemic agents), comorbid conditions and glycemic control over a period of time. The current study focused on the quantitative variables which affect the QoL in diabetics and it was found that Age and HbA1c played a significant role in QoL. Physical domain and Social domain were affected by both age and HbA1c. Correlations revealed that there is positive correlation with QoL domains and most of the variables measured. Hence it is important to improve the quality of life among diabetics with proper treatment regimens ensuring good glycemic control.

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