

Health Related Quality of Life (HRQOL) in Type 2 Diabetes Patients belonging to Middle and High Income Groups in East Delhi, India

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Abstract: ***Aim:** To assess the Health related Quality Of Life of Diabetes patients with Type 2 Diabetes belonging to middle and high income groups in the age group of 30 - 64 years. **Methodology:** It was a hospital based cross sectional study conducted in the Diabetes clinic of a tertiary care hospital. The investigator collected information from 150 type 2 diabetes patients belonging to middle and high income groups using a disease specific validated tool developed in India - Quality Of Life Instrument for Indian Diabetes Patients (QOLID). Data was analyzed using software SPSS 23.0 version. **Results:** The range of score of HRQOL among study subjects in the present study ranged from a lowest of 106 to highest at 162 with a mean of 142 + 12.2 and median of 145 (IQR=135 - 150.7). Descriptive tables were made for each domain covered in the study tool. The most affected domains in our study were diet satisfaction, general health and treatment satisfaction. Lowest scores pertained to diet satisfaction. **Conclusion:** Diabetes mellitus affects daily life of the patients to a great extent. The management should include not only glycemic control but the occupation and day to day life should also be considered so that quality of life in such chronic diseases can be improved.*

Keywords: HRQOL, QOL, Type 2 diabetes, QOLID

1. Introduction

The measurement of health is no more limited to the traditional health indicators such as mortality and morbidity only. Other aspects of health are also being given importance like the impact of disease and impairment on daily activities and disability / functional status measures. Quality of life measurement becomes more important in chronic or life long diseases like Diabetes Mellitus. There is a risk of developing a number of serious and life - threatening complications in Diabetes leading to an increased need for strict drug intake, lifestyle modifications, and undue stress on patients as well as families. An ideal treatment regimen for chronic diseases like diabetes should be aimed at not only physiological treatment but also on the overall day to day life of the patient.

A large number of generic, health related and disease specific quality of life questionnaires have been developed in many countries of the world. Most of the existing quality of life questionnaires have been developed in western population, which are socially, culturally and economically different from Indian participants. We used a reliable and validated disease specific quality of life instrument, QOLID [1] i. e. Quality of life instrument for Indian Diabetes patients developed in India by Nagpal et al to assess the health related quality of diabetes patients.

2. Material and Methods

Type of study: Hospital based cross sectional study.

Study subjects: Type 2 Diabetes patients attending Diabetes center at GTB Hospital.

Inclusion criteria: Type 2 diabetes patients aged 30 - 64 years who belonged to middle and high income groups.

Exclusion criteria: Patients with gestational diabetes and diabetes patients who were mentally unfit to comprehend questions and respond.

Sample size: On the basis of published hospital based studies from India, the overall average good quality of life in diabetic subjects was found to be around 50%. Thus, taking the prevalence of good QOL as 50% at an absolute precision of 8% and at 95% confidence level, the sample size came out to be 150.

Study tool: Quality Of Life Instrument for Indian Diabetes Patients (QOLID) developed by Nagpal J et al [1], a reliable and valid questionnaire, was used to assess the quality of life in type 2 diabetes patients. The questionnaire consisted of 34 items on likert scale covering eight domains which comprehensively covered aspects of quality of life namely role limitations due physical health (6 items), physical endurance (6 items), general health (3 items), treatment satisfaction (4 items), symptom botherness (3 items), financial worries (4 items), emotional or mental health (5 items), and diet satisfaction (3 items). All these domains and items have high internal consistency (Cronbach's alpha of 0.894). All items were rated on a 5 point likert scale from 1 to 5 where '1' indicated poorest quality of life and '5' denoted the best quality of life.

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A self - prepared semi - open ended proforma was prepared by the Investigator to record information of socio - demographic profile of respondents, detailed disease history including complications, co - morbidities and diabetic treatment profile etc.

Ethical consideration: Clearance was taken from the Institutional Ethics Committee–Human Research (IEC - HR) of University College of Medical Sciences, Delhi.

3. Data Analysis

The collected data was entered into a computer - based spreadsheet (Microsoft Excel 2013) and cleaned. The cleaned data was transferred to software SPSS 23.0 (Statistical Package for Social Sciences) version 23.0 IBM Corporation and then analysed. Descriptive tables were generated for each domain. Mean scores were also calculated for each domain as well as the overall score of the questionnaire.

4. Results

The mean age of study participants was 48.9 + 7.2 years.64% were males and 36 % were females.77.3% of the participants belonged to the middle-income group and 22.7% were from the high-income group.35.3% were taking Single oral hypoglycemic drugs, 50 % were taking Combined oral drugs and 14.7% were on Insulin. In lifestyle modifications, 93.3% of the patients were following dietary control.77.3% did regular exercise and 76% had regular blood sugar testing. Of 18 smokers in our study, 12 had quit smoking after diagnosis of diabetes. The mean age at diagnosis of diabetes among study subjects was 42.4 + 5.8 years

The results of the study tool QOLID are presented in the form of descriptive tables covering specific domains of quality of life regarding diabetes mellitus. We have comprehensively presented the number and proportion of participants responded to each question.

Table 1: Responses by the study participants to the domain of role limitation due to physical health (n=150)

Role Limitation due to Physical Health	1	2	3	4	5
	(Always) n (%)	(Frequently) n (%)	(Often) n (%)	(Sometimes) n (%)	(Never) n (%)
1) How often do you miss your work because of diabetes?	1 (0.7%)	5 (3.3%)	6 (4%)	130 (86.7%)	8 (5.3%)
2) A person with diabetes has the requirement of adhering to a schedule for eating and taking regular medication. How often does this affect your work?	0	4 (2.7%)	10 (6.7%)	28 (18.6%)	108 (72%)
3) How often does diabetes affect your efficiency at work?	0	7 (4.7%)	38 (25.3%)	76 (50.7%)	29 (19.3%)
4) How often do you find diabetes limiting your social life?	1 (0.7%)	3 (2%)	8 (5.3%)	56 (37.3%)	82 (54.70%)
5) To what extent do you avoid traveling (business tour, holiday, general outings) because of your diabetes?	1 (A lot) (0.7%)	6 (Highly) (4%)	22 (Little) (14.7%)	38 (Very little) (25.3%)	83 (Not at all) (55.3%)
6) Compared to others of your age are your social activities (visiting friends/partying) limited because of your diabetes?	0	4 (2.7%)	11 (7.3%)	46 (30.7%)	89 (59.3%)

Table 2: Responses of the study participants to the domain of Physical Endurance (n=150)

Physical Endurance	1	2	3	4	5
	(Always) n (%)	(Frequently) n (%)	(Often) n (%)	(Sometimes) n (%)	(Never) n (%)
1) How often in last three months has your overall health problems limited the kind of vigorous activities you can do like lifting heavy bags/objects, running, skipping, jumping?	1 (0.7%)	2 (1.3%)	32 (21.3%)	46 (30.7%)	69 (46%)
2) How often in last three months has your overall health problems limited the kind of moderate activities you can do like moving a table, carrying groceries or utensils?	0	1 (0.7%)	11 (7.3%)	33 (22%)	105 (70%)
3) How often in last three months has your overall health problems limited you from walking uphill or climbing 1 - 2 floors?	1 (0.7%)	2 (1.3%)	10 (6.7%)	38 (25.3%)	99 (66%)
4) How often in last three months has your overall health problems limited you from walking 1 - 2 km at a stretch?	1 (0.7%)	5 (3.3%)	6 (4%)	11 (7.3%)	127 (84.7%)
5) How often in last three months has your overall health problems limited you from bending, squatting, or turning?	0	1 (0.7%)	1 (0.7%)	20 (13.3%)	128 (85.3%)
6) How often in last three months has your overall health problems limited you from eating, dressing, bathing, or using the toilet?	0	1 (0.7%)	0	3 (2%)	146 (97.3%)

Table 3: Responses to the domain of General Health (n=150)

General Health	1	2	3	4	5
	n (%)	n (%)	n (%)	n (%)	n (%)
1) In general would you say your health is?	2 (1.3%) (Poor)	47 (31.3%) (Fair)	73 (48.7%) (Good)	25 (16.7%) (Very Good)	3 (2%) (Excellent)
2) How well are you able to concentrate in everything like working, driving, reading etc?	1 (0.7%) (Not at all)	2 (1.3%) (a little)	12 (8%) (moderate)	108 (72%) (very much)	27 (18%) (an extreme amount)
3) How many times in the past three months have you had fatigue/ felt very tired?	1 (0.7%) (always)	16 (10.7%) (frequently)	47 (31.3%) (often)	68 (45.3%) (sometimes)	18 (12%) (never)

Table 4: Responses to the domain of Treatment Satisfaction (n=150)

Treatment Satisfaction	1 (very dissatisfied)	2 (moderately dissatisfied)	3 (neither satisfied nor dissatisfied)	4 (moderately satisfied)	5 (very satisfied)
	n (%)	n (%)	n (%)	n (%)	n (%)
1) How satisfied are you with your current diabetes treatment?	0	8 (5.3%)	36 (24%)	77 (51.4%)	29 (19.3%)
2) How satisfied are you with amount of time it takes to manage your diabetes?	0	5 (3.3%)	49 (32.7%)	86 (57.3%)	10 (6.7%)
3) How satisfied are you with the amount of time you spend getting regular checkups (once in 3 months) ?	0	5 (3.3%)	76 (50.7%)	58 (38.7%)	11 (7.3%)
4) A person with diabetes needs to exercise for 35 - 45 min, 4 times a week. Keeping this in mind how satisfied are you with the time you spend exercising?	6 (4%)	16 (10.7%)	11 (7.3%)	85 (56.7%)	32 (21.3%)

Table 5: Responses of the participants to the domain of Symptom Botherness (n=150)

Symptom Botherness	1 (Always)	2 (Frequently)	3 (Often)	4 (Sometimes)	5 (Never)
	n (%)	n (%)	n (%)	n (%)	n (%)
1) How many times in the past three months have you had thirst/dry mouth?	0	2 (1.3%)	11 (7.3%)	66 (44%)	71 (47.4%)
2) How many times in the past three months have you felt excessive hunger?	0	1 (0.7%)	6 (4%)	20 (13.3%)	123 (82%)
3) How many times in the past three months have you had frequent urination related to diabetes management?	0	4 (2.7%)	6 (4%)	18 (12%)	122 (81.3%)

Table 6: Responses of the participants to the domain of Financial Worries (n=150)

Financial Worries	1	2	3	4	5
	n (%)	n (%)	n (%)	n (%)	n (%)
What do you think about the cost involved in your management of diabetes?	8 (5.3%) (very expensive)	46 (30.7%) (little expensive)	30 (20%) (reasonable)	66 (44%) (not at all expensive)	0
To what extent has your priority of expenditure shifted towards diabetes management?	0 (a lot)	2 (1.3%) (highly)	5 (3.3%) (little)	51 (34%) (very little)	92 (61.4%) (not at all)
To what extent has your family budget got affected by the expenses related to the management of diabetes?	0	2 (1.3%)	5 (3.3%)	33 (22%)	110 (73.4%)
To what extent has your diabetes limited your expenditure on other aspects of life (Movies, outings, parties etc) ?	0	3 (2%)	3 (2%)	8 (5.3%)	136 (90.7%)

Table 7: Responses of the participants to the domain of Emotional / Mental health (n=150)

Emotional/Mental Health	1 (very dissatisfied)	2 (moderately dissatisfied)	3 (neither satisfied nor dissatisfied)	4 (moderately satisfied)	5 (very satisfied)
	n (%)	n (%)	n (%)	n (%)	n (%)
How satisfied are you with yourself?	1 (0.7%)	6 (4%)	14 (9.3%)	83 (55.3%)	46 (30.7%)
How satisfied are you with your personal relationships (family, friends, relatives and known to)?	0	1 (0.7%)	1 (0.7%)	21 (14%)	127 (84.6%)
How satisfied are you with the emotional support you get from your friends and family?	0	0	3 (2%)	11 (7.3%)	136 (90.7%)
How often are you discouraged by your health problems?	0 (always)	6 (4%) (frequently)	28 (18.7%) (often)	57 (38%) (sometimes)	59 (39.3%) (never)
All people want to fulfill certain roles and lead their lives in a purposeful manner. To what extent do you feel that you have been able to lead your life in the same way?	0 (not at all)	1 (0.7%) (a little)	8 (5.3%) (moderate)	105 (70%) (very much)	36 (24%) (an extreme amount)

Table 8: Responses of the study participants to the domain of Diet Satisfaction (n=150)

Diet Satisfaction	1	2	3	4	5
	n (%)	n (%)	n (%)	n (%)	n (%)
How often do you feel because of your diabetes a restriction in choosing your food when eating out?	3 (2%) (always)	39 (26%) (frequently)	91 (60.7%) (often)	12 (8%) (sometimes)	5 (3.3%) (never)
As you have diabetes, how much choice do you feel you have in eating your meals or snacks away from home e. g. if you go in a party and there is a buffet where there are also a lot of fried snacks and desserts would you be able to make enough choice?	0 (no choice)	75 (50%) (very little)	66 (44%) (little)	8 (5.30%) (enough)	1 (0.7%) (a lot)
How often do you eat the food items that you shouldn't, in order to hide the fact that you are having diabetes?	1(0.7%) (always)	2 (1.3%) (frequently)	12 (8%) (often)	113 (75.3%) (sometimes)	22 (14.7%) (never)

5. Discussion

The range of scores of qualities of life among study subjects in the present study ranged from a lowest of 106 to highest at 162 with a mean of 142 + 12.2 and median of 145 (IQR=135 - 150.7). Our scores are much higher than the scores obtained in many other studies like Chaturvedi et al [2], Mathew et al [3] and Kumar P et al [4].

The most affected domains in our study were diet satisfaction, general health and treatment satisfaction (Percentage wise). Lowest scores pertained to diet satisfaction. Similar results were also reported by another researcher in Pune, Maharashtra [5] which also showed lowest scores for diet among all eight domains studied with a mean score of 7.7 + 2.6. Gurkova et al [6] in Czech Republic also reported that diabetes had the greatest impact on quality of life on "freedom to eat". Dietary modification is a necessary lifestyle modification required for every diabetic patient. Some patients find it very difficult to control their diet because they have to be very selective in choosing the kind of foods that they have to consume or avoid on a regular routine basis. Moreover, many times patients have little choice in deciding the food that is prepared at home for the whole family. 60% patients reported that they often felt restricted in choosing the food and 75.3% ate food sometimes that they should not have eaten. Similar findings have been reported by the study carried out in Karnataka [4] which found that 52% patients had no choice while eating away from home.

The scores in the domain of 'General health' were also low in our study. Similar results have also been reported by Kamala K et al [7] in their study in Andhra Pradesh in which diabetic patients also reported their general health as poor. In our study however, most of the patients were very much able to concentrate on working, driving and reading etc. In the Kamala K et al [7] study, the majority reported that they were not at all able to concentrate on working, driving and reading and 34% reported that they always felt fatigue in the past three months. The reason for a higher proportion of subjects feeling fatigued might be their type of job. We didn't have any heavy workers in our study, patients were either sedentary or moderate workers. Feeling very tired all the time is most likely to be experienced by heavy workers as compared to jobs involving lesser intensity of work. As far as concentration in driving is concerned, many patients in our study didn't drive on their own, some had hired drivers which they could afford as they belonged to a high socio-economic background. This may not have been the scenario, had we also included diabetic subjects of lower income groups which the South Indian [7] study included. In a study conducted by Patel et al [8] in Gujarat using WHOQOL - BREF questionnaire, app.30% patients each reported their general health to be poor, average and good. Singh et al [9] in their study in USA also found a negative relation of fatigue with QOL.

We also calculated mean scores of each domain and overall score for quality of life. We also found association of socio-demographic, disease and treatment factors with HRQOL and predictors of health-related quality of life in diabetes patients. The results are published as a separate article [10].

Strengths: The study tool that we used is a disease specific validated tool developed in India that is appropriate for Indian day to day life. It comprehensively covers various domains that are affected in diabetes patients. The questions cover not only very specific activities of daily life but also mental health as well as financial issues.

Limitations: This study was done on middle- and higher-income groups of diabetes patients as the study tool was validated for these income groups. Therefore, the findings of our study are generalizable to this income strata only. In addition, for the questions of domains of mental health and financial worries some subjects may have given socially desirable responses. Since it was a questionnaire-based study, some aspects like mental health, finances etc. are sensitive issues and patients are sometimes not comfortable responding to them. Qualitative methods like FGDs may help gain a more in-depth assessment of quality of life in diabetes patients.

6. Conclusion and Recommendations

Diabetes mellitus affects daily life of the patients to a great extent. The management should include not only glycemic control but the occupation and day to day life should also be considered so that quality of life in such chronic diseases can be improved. The study tool that we used was validated for middle- and higher-income group patients only. It is therefore recommended that valid and reliable tools should be made in India for all income groups.

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