

A Study on Prevalence of Diabetes and Its Impact on Quality of Life Of Patients in Bangladesh

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ABSTRACT

Background: Diabetes management requires a fundamental change in the lifestyle of a patient and quality of life is one of the core consequences. This analysis attempted to determine the Diabetes Quality of Life (DQoL) score; a measurement developed for WHO's Diabetes Control and Complications Trial (DCCT) and analyzed the factors related to it in diabetes.

Objectives: The main objective of the study is to assess the impact of physiological, biological, medical and co-morbidity measures on the quality of life of patients with diabetes.

Methods: This was a cross sectional method conducted in Birdem, Hospital, and the study duration was from October 2018 to September 2019. The research site was at BIRDEM, where the study population was available. A total of 750 sample of patients were chosen for the study using a statistical method. Patients with diabetes diagnosed for at least 1 year period were considered for the research. Severely ill patients with numerous co-morbid conditions have been removed.

Results: In this sample, 51% of patients were female and 49% were male. About 96% patients had type 2 diabetes, 65% had completed their graduation and 70% were from lower middle to middle class families. Approximately 76.9% of patients were either overweight or obese, 52% had mobility problems, 27% had self-care issues, 49.2% had normal activities, 74.4% had pain and 76.3% had depression problems. Results showed that age, gender, lower - middle income, and HbA1c were

significantly ($p < 0.05$) associated with mobility. Self-care was significantly linked ($p < 0.05$) to age, family history and period of diabetes mellitus (DM).

Conclusions: Most patients had problems with pain / discomfort and anxiety / depression; half had problems with mobility and usual activities; and three in ten had problems with self-care. Age, gender, employment, education, family history and length of DM and prescription care are important factors associated with diabetes quality of life in diabetes.

Keywords: Diabetes Mellitus (DM), Impact, Co-Morbidity, Assessment.

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INTRODUCTION

Diabetes Mellitus (DM) has been shown to have a significant impact on the physical and psychological well-being of the patient.¹ The psychological well-being assessment should therefore be an important objective of any conventional diabetes management programme. Quality of life (QOL) assessment is an important tool for measuring psychological well-being and patient satisfaction and is therefore more consistent with the World Health Organization (WHO) concept of health.² The QOL assessment directs the modulation of treatment plans and functions as one of the tools to determine treatment outcomes.² Nevertheless, the QOL assessment is perhaps the most overlooked aspect of patients care, especially in patients with chronic diseases such as DM, which can only be managed but not cured. Not only is it

critical for patients with DM to have good glycaemic control to avoid microvascular and macrovascular complications of diabetes, maintaining good QOL will result in better patient satisfaction and compliance, all of which will lead to lower patient morbidity and mortality. Numerous instruments have been used to determine QOL in DM,¹ which can be widely defined as standardized and common to all health conditions (e.g. Clinical Outcomes Study Short-form General Health Survey, SF-36) or particular diabetes (e.g. the Diabetes Quality of Life score) (DQoL), a measure developed for the Diabetes Control and Complication Trial (DCCT).^{3,4} The advantage of a standardized QOL assessment tool is that it offers a broader picture and can be used to compare the QOL of individuals with various disorders, such as the QOL of

patients with coronary artery disease compared to individuals with malignancies. Nonetheless, because they are general instruments for the overall assessment of QOL, they frequently fail to detect the effect of the finer aspects of a particular disease on QOL and are less prone to identify small changes in QOL.⁵ Here comes the function of the disease specific QOL questionnaire, which was designed to address specific issues related to a particular disease and can therefore track small changes in QOL over a period of time when the disease improves. Questionnaires are self-governing instruments for the evaluation of QOL. The benefit of the questionnaire over the interview sheet given to the patient by the interviewer is that it is free from a variety of prejudices associated with the interview sheet. Since a patient fills out a privacy questionnaire, it is more likely that the answers would be a better representation of the individual's state of mind. Most of the QOL assessment tools have been developed in English in the USA or Europe and could not be used directly in our country, as English is not the language that the local population of our country is talking to. Furthermore, their cross-cultural compatibility has not been checked, making it difficult for them to be used in our culture and set up. The adaptation and translation of these QOL resources into local vernacular is therefore necessary before they can be used in our region. The use of a questionnaire in the local vernacular can improve the patient's ease of administration. Bangla is the most widely spoken language in Bangladesh and it was therefore agreed to use the resources of Bangla QOL in our research. The WHOQOL questionnaire is a standardized QOL evaluation tool in English, produced jointly by WHOQOL Team, Division of Mental Health and Prevention of Drug Abuse, WHO Geneva, in 15 centers around the globe.^{6,7} Now it is one of the most popular standardized QOL instruments used worldwide.⁷ The WHO-BREF-QOL-Bangla Questionnaire is easier to administer and is more useful for regular QOL tests over a period of time.⁶ Therefore, the WHOBREF-QOL-Bangla Questionnaire is used as a standardized QOL assessment tool for patients with DM in our research. The four domains of the WHO-BREF-QOL Bangla questionnaire are: Domain 1, which includes assessment of physical health; Domain 2 includes assessment of psychological well-being; Domain 3 concerns social relations; and Domain 4 concerns the environment. Subjects were to score all objects on the Likert-type 5-point scale. Average would be obtained from the scores of each of the four individual domains to obtain the WHO-BREF-QOL score. Lower score means lower QOL where higher score means better / higher QOL. In this study, the Bangla translation of the Multidimensional Questionnaire (MDQ) as a specific tool for the assessment of QOL among patients with diabetes has been validated. The original MDQ questionnaire consists of three parts concentrating on general perceptions of diabetes and related social support, social opportunities, self-efficiency and outcomes expectations for self-care activities.⁵ The validation process consisted of 4 steps, including translation of the English questionnaire to Bangla, assessment of the reliability and validity of the pilot cohort of patients, followed by forward and backward translation.⁵ Diabetes significantly increases the patient's risk of developing blindness, end-stage renal failure, lower limb amputations, as well as increased mortality due to coronary artery disease, cerebrovascular or peripheral vascular disease. A considerable number of DM patients are potentially at risk of developing acute and chronic micro-and macro-vascular

complications, including retinopathy, nephropathy, neuropathy, peripheral vascular disease, coronary heart disease, and stroke. Consequently, the incidence of each of the parameters listed above was noted in our patients and their effect on QOL was assessed. Patients with long standing type 2 DM and patients with type 1 diabetes require several doses of insulin daily to ensure good glycemic control. In our community, however, there is generally resistance to insulin initiation in the management of diabetes, particularly in the setting of type 2 DM. This may be due to needle phobia, the need for regular blood glucose monitoring using glucometers, myths such as insulin that has been initiated with type 2 diabetes, and some other socio-cultural factors. The effect of insulin administration on QOL in DM patients has not been studied in our country. We also used the methods described above to assess the effect of insulin injections on QOL in patients with type 1 and type 2 diabetes.

OBJECTIVES

The main objective of the study

is to assess the impact of physiological, biological, medical and co-morbidity measures on the quality of life of patients with diabetes.

Specific Objectives

- 1) To assess the quality of life in patients of diabetes on insulin therapy of generic quality of life (QOL).
- 2) To evaluate the impact of clinical parameters like type of diabetes, duration of diabetes, presence of co-morbidities (retinopathy, neuropathy, nephropathy, coronary artery disease, cerebrovascular disease and peripheral vascular disease) on QOL.
- 3) To evaluate the impact of QOL on glycemic control in patients of diabetes managed with insulin and the impact of biochemical parameters (blood glucose values, HbA1c, lipid parameters) on QOL.

METHODS

Consecutive stable ambulatory patients, >18 years age, attending the Diabetes Clinic of the department was considered. Patients with diabetes diagnosed for at least 1-year duration was considered for the study. For patients on insulin therapy, patients on some form of insulin therapy for at-least 6 months was considered for this study. Severely ill patients with multiple co-morbid states was excluded. The period of the study was from October 2014 till September 2016. Approval from the Institute's ethics committee was sought before initiation of the project. The study protocol was explained to the patients, and only those who gave informed written consent was included in the study. The patients who gave consent attended the Endocrine Clinic of the department. An expert, who was proficient in both English and Bangla administered the WHO-BREF-Bangla questionnaire and the MDQ English questionnaire to the patients. The patients filled the questionnaires in a cool, well-lit, quiet, peaceful and secluded room in the Endocrinology clinic. The patients got the option of clarifying any doubts from the expert during filling of the questionnaires. Thereafter a physician interacted and evaluated the patients. Information regarding demographics and bio data was collected. Data was collected regarding the duration of diagnosis, the duration of pharmacotherapy for diabetes and types of medications used was also collected. Socio demographic data like educational status, job, annual income, family size and place

of residence was collected. The details have elaborated in the Figure- 1. All patients had undergone detailed clinical assessment, which included anthropometry assessment (height, weight, BMI, waist and hip circumference), blood pressure, screening for foot complication of diabetes, 10 gram Semmes Weinstein monofilament test, ankle jerk and pin prick assessment to rule out neuropathy. Biochemical data was noted from the patient's recent records (with in the previous 1 month), fasting blood glucose (FBG), post-prandial blood glucose (PPBG), HbA1c, lipids, creatinine, hemoglobin, electrolytes, liver function and urine albumin creatinine ratio.

Sample Size Calculation

The regular enrollment of outdoor BIRDEM is more than 2,000 patients. Nearly 20% of patients in the diabetic clinic are on some form of insulin therapy. Keeping the power at 80% and type-I error

at 5%, it has been determined that we need to recruit at least 750 patients in our sample. Finally, we picked 600 samples for the test.

$$n = z^2 \cdot \frac{p \cdot (1-p)}{d^2}$$

p = anticipated population proportion (viz. 0.2)

d = precision required on either side of proportion (5% or 0.05)

Study Duration

From October 2018 to September 2019.

Statistical Analysis

The normality of the variables was evaluated using the Komologrov Smirov test. Among variables normally distributed, the Student's t test was used for continuous variable analysis, the Fisher's exact test for binary variables, and the Percent 2 test for categorical variables. $P < 0.05$ would be considered statistically significant. Version 20 of the SPSS was used for data analysis.

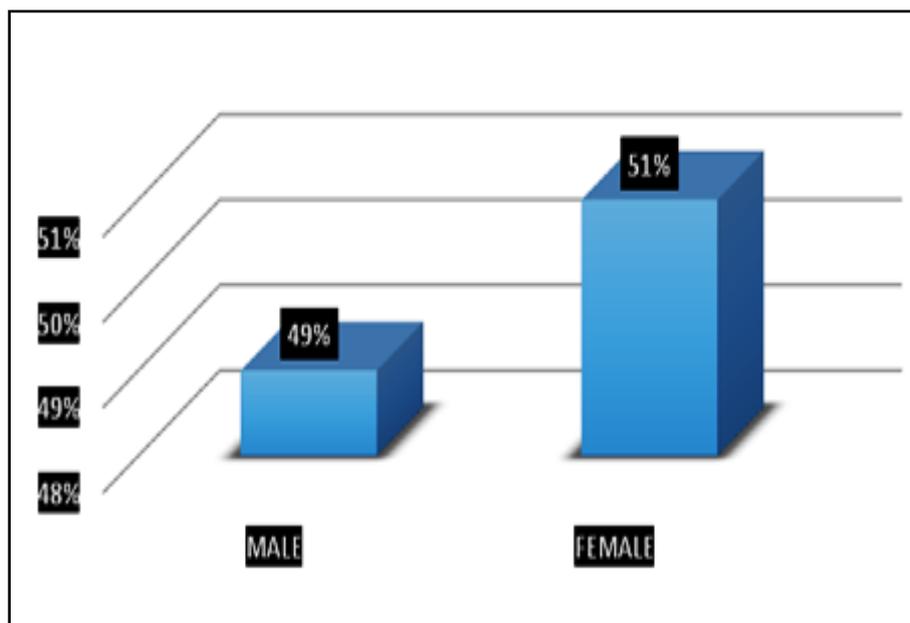


Figure 1: Sex of the patients

Table 1: Socio demographic characteristics of participants (N=600):

Gender	Male	294(49%)
	Female	306 (51%)
Types of Diabetes	Type1	24 (4%)
	Type2	576 (96%)
Weight (kg) 35-102 (Male)	Normal/ Underweight 38-54	96(16%)
	Moderate 55-79	450(75%)
	Obese 80-105	54 (9%)
Weight (kg) 35-102 (Female)	Normal/ Underweight 38-54	102 (17%)
	Moderate 55-79	438 (73%)
	Obese 80-105	60 (10%)
Education	Graduate	390 (65%)
	Post Graduate	210 (35%)
Occupational Class	No Job	120 (20%)
	Part time	270 (45%)
	Full time	150 (25%)
	Retired	60 (10%)

Table 2: Clinical Profile of the Patients

Description	Percent
Problems in mobility	52%
Overweight	76.9%
Self-care	27%
Usual activities	49.2%
Pain discomfort	74.4%
Anxiety/depression	76.3%

Table 3: Various Effects of Diabetes in patient's life style

Description	Not at all %	Minimum %	Some %	Moderate %	Most of the time %	Extreme %	Very extreme %
Influence of diabetics	0.6	1.8	4.3	5.9	42	33.2	12.2
Getting help from life partner	12.2	9	11.1	4.9	27.2	33.2	2.4
Harmfulness of diabetics in life	1.9	2.4	4.8	17.1	46.8	21	6
Decrease social pleasure	3	2.4	7.2	19.2	46.8	14.4	7
Getting help from family member	3	12.4	9.2	7	44	21	3.4
Family worry about diabetics	1.2	2	5.4	28.6	42.8	7	2
Influence of work	4	2.4	4.6	23.4	42.6	13	10
Influence physical relation with life partner	24	3	16.5	7.6	26.4	13.5	9
Worry about diabetics	2.2	2.8	4.6	11	39.2	31.4	8.8
Take care by life partner due to diabetics	13.6	9.6	9.4	3.2	13.8	45.6	4.8
Influence of diabetics on movement	3	2.8	4	8.8	54.2	19.6	7.6
Doctors care of your diabetics	2.4	2.6	4.6	12	47	19	12.4
Impact of diabetics on concentration of work	2.6	1.6	6.6	22	34.8	23	9.4
Influence on motivation of work	2.8	4.4	5.2	25.8	33.6	13	15.2

Table 4: Status of care of diabetics by life partner or other family members

Description	Not at all %	Minimum %	Some %	Moderate %	Most of the time %	Extreme %	Very extreme %
Appreciation of taking balance diet	13.6	9.6	9.4	3.2	13.8	45.6	4.8
Compel to take drug	12.4	13.8	8.4	14	9.4	35	7
Appreciate sugar check	9.4	13	13.2	7.6	7.2	36.4	3.2
Compel to exercise	12.2	9	11.1	4.9	27.2	33.2	2.4
Foot care reminder to him/her	13.2	14	7	7.2	6.4	36.8	15.4
Appreciation during timely taken food	18	9	11	12	4.6	31.6	13.8
Keep my food in balance diet during exercise	12.2	9	11.1	4.9	27.2	33.2	2.4
Compel to take balance meal	12	14	9	6.2	7	39	12.8
Organize my routine to take medicine timely	51.6	12.2	6.6	11.6	8	5.8	4.4
Compel me to take blood sugar reading	52.2	15.2	5.8	15	4	5.2	2.6

Table 5: Patients involvement of various activities to take care diabetics

Description	No faith %	Moderate faith %	Very High faith %
Faith on balance diet	3.4	19	77.6
Faith on self to check blood sugar	25	7.6	67.4
Faith on association for regular exercise	25	11.9	63.1
Self-faith on diet control	27	33.7	39.3
Self-faith on sugar control	6.2	32.9	60.9
Self-faith to control attractive food	29.5	33.2	37.3
Self-faith on recovery from diabetes	26.4	19.7	53.9

RESULTS

The age of the patients were between 18-95 years. The majority of patients were around 50 years old. About 51% patients were female and 49% were male. (Figure 1)

About 96% patients had type 2 diabetes, 65% had completed their graduation, and 70% were from lower middle to middle class families. (Table 1)

The clinical profile of patients shows that about 76.9% of patients were either overweight or obese. Approximately 52% had mobility problems, 27% had self-care issues, 49.2% had normal activities, 74.4% had pain and 76.3% had depression problems. (Table 2)

Table 3 is showing how diabetes influence the patients in their day to day life style.

Table 4 is showing the status of care of diabetic patients by life partner or other family members.

Table 5 is showing the patients involvement of various activities to take care diabetics.

In Figure 2 the importance of medicine and other activities to control diabetes has been shown.

Figure 3 has given a significant view of the clinical profile of diabetes patients. A considerable number of DM patients are potentially at risk of developing acute and chronic micro-and macro-vascular complications, including retinopathy, nephropathy, neuropathy, peripheral vascular disease, coronary heart disease, and stroke.

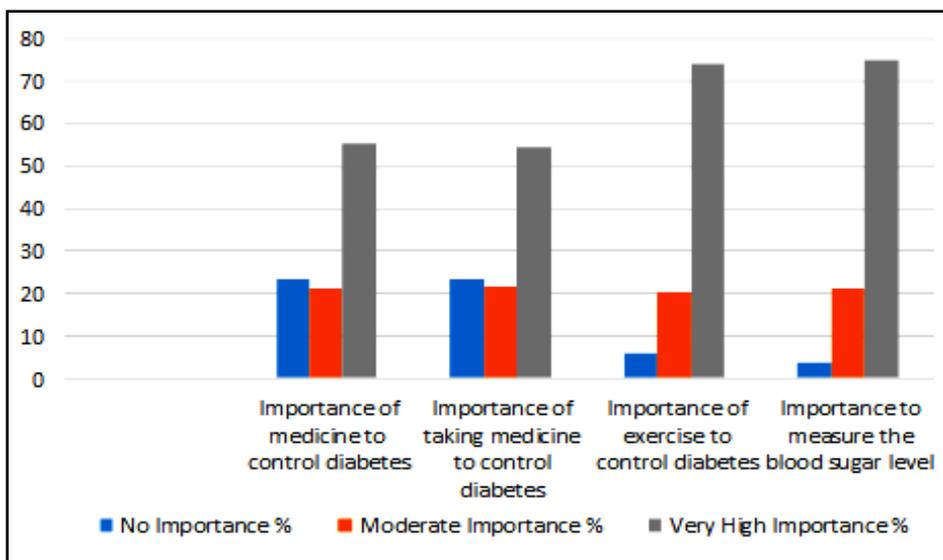


Figure 2: Importance of medicine and other activities to control diabetes

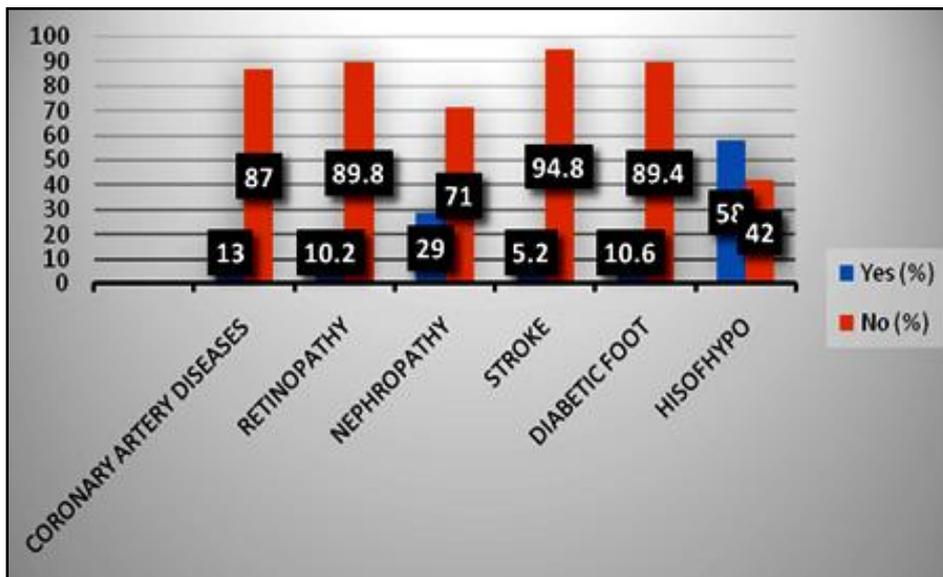


Figure 3: Clinical profile of diabetes patients

DISCUSSION

Life quality is increasingly gaining popularity as a clinical or physiological outcome parameter. This research presents the perspective of HR-QoL among Bangladeshi patients with type 2 diabetes. In this study, more than half of individuals with type 2 diabetes registered some difficulties in pain (74.4%) and depression (76.3%) measurements, compared to 52% in mobility

and normal activities and 27% in self-care. The percentage of mobility, daily tasks and self-care was relatively low compared to the other two dimensions. This result was incompatible with the records of Japan⁸, Korea⁹ and Singapore.¹⁰ The number of Japanese patients registered difficulties was 21.2% for mobility, 2.8% for self-care, 17.3% for usual activities, 35.7% for pain and

19.7% for depression.⁸ Some improvements in HR-QoL among patients with diabetes have been reported in Korea.⁹ 13% of Singapore patients have pain / discomfort and anxiety / depression problems.¹⁰ Patients with type 2 diabetes had high HR-QoL in Oman.¹¹ Differences in outcomes with other populations may be due to HR-QoL which is a time-dependent variable and should be tested regularly in patients with type 2 diabetes to ensure accurate estimates. Discontinuation of patient follow-up, the quality of diabetes care and the availability of support services could be the explanation for noticing the improvement in HR-QoL. We also expected that the HR-QoL will decrease due to some other factors. Evidence shows that HR-QoL is correlated with age^{8,9,11-13} and gender.^{9,12,13} In the present study, female patients had a 3-5 times higher risk of reduced mobility and normal activity compared to male patients.

CONCLUSION

Most of the patients had pain and stress issues; half of the patients had mobility problems and daily activities; and three patients out of ten had self-care problems. Age, gender, jobs, education, family history, duration of DM and prescribed treatment are important factors in the quality of life of diabetes.

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