

# Health-related Quality of Life among Diabetics visiting RajaRajeswari Medical College and Hospital, Bengaluru

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## ABSTRACT

**Introduction:** Diabetes mellitus is independently associated with lower levels of health-related quality of life (HRQoL). Quality of life (QoL) is an important aspect in diabetes because poor QoL leads to diminished self-care, which in turn leads to worsened glycaemic control, increased risks for complications, and exacerbation of diabetes overwhelming in both the short run and the long run.

**Objective:** To assess the HRQoL among diabetics aged 18 years and above visiting the Medicine Outpatient Department at RajaRajeswari Medical College and Hospital, Bengaluru.

**Materials and methods:** We conducted a hospital-based study using a generic instrument, Audit of Diabetes Dependent Quality of Life 18 (ADDQoL 18) to measure the QoL of diabetic subjects aged  $\geq 18$  years. One hundred and forty diabetics, including 68 males and 72 females, were selected from the Medicine Outpatient Department at RajaRajeswari Medical College and Hospital. Data was analyzed using Statistical Package for the Social Sciences for Windows, version 22.

**Results:** The mean age of the participants was  $55.7 \pm 12.5$  years. Majority of them (75.7%) were Hindu by religion and most of the study participants (60%) had received formal education. Majority (48.6%) belonged to grade 3 socioeconomic status. Diabetic patients who were employed constituted 52.9%. On the type of diabetes, 91.4% of the participants had type 2 diabetes, while 8.6% had type 1 diabetes. The mean duration of diabetes since diagnosis was  $8.2 \pm 6.5$  years.

With regard to presence or absence of complications, 38.6% of the participants suffered from complications of diabetes, while 61.4% did not. With regard to treatment, 59.3% of them were consuming only oral hypoglycemic, whereas 40.7% were on insulin. It was observed that diabetes had a negative impact on the present QoL with a mean negative impact of  $-0.45$  and a mean negative average weighted impact of  $-5.16$  on the individual life domains. The negative impact of diabetes on the QoL was greater among those receiving insulin  $\pm$  oral hypoglycemic agents and among those who had complications. The domains "freedom to eat," "freedom to drink," "enjoyment of food," and "working life" had the greatest negative impact in all patient subgroups. It was observed that male diabetics had a poorer QoL as compared with female diabetics, but this was found to be not statistically significant.

**Conclusion:** Diabetes had an adverse effect on the QoL of these study subjects.

**Keywords:** Audit of diabetes dependent quality of life, Diabetes, Quality of life.

**How to cite this article:** Komal SS, Sridyda V. Health-related Quality of Life among Diabetics visiting RajaRajeswari Medical College and Hospital, Bengaluru. *J Med Sci* 2016;2(2):31-35.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Diabetes mellitus is independently associated with lower levels of health-related quality of life (HRQoL).<sup>1</sup> Quality of life (QoL) has been defined by World Health Organization as: "Quality of life is defined 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>2</sup> Quality of life is an important aspect in diabetes because poor QoL leads to diminished self-care, which in turn leads to worsened glycaemic control, increased risks for complications, and exacerbation of diabetes overwhelming in both the short run and the long run. Thus, it is apparent that the QoL issues are imperative and predict how well an individual would be able to handle the disease and maintain long-term health and well-being. It is also important for the assessment of patients' perceived burden of their chronic disease condition, to see the trends of health overtime, and quantify the effect of treatment.<sup>3</sup> Several studies have demonstrated that diabetes has a strong negative impact on HRQoL, especially in the presence of complications. In developing countries, the morbidity associated with diabetes and its complications is certainly higher as compared with developed countries, which adversely affects the HRQoL of these patients.<sup>4</sup> Insulin treatment has been associated with reduced satisfaction with diabetes and greater impact of the disease on social and personal lives.<sup>5</sup>

## OBJECTIVES

- To assess the HRQoL among diabetics aged 18 years and above visiting the Medicine Outpatient Department at RajaRajeswari Medical College and Hospital, Bengaluru.
- To compare the QoL among diabetics with and without complications, and between diabetics who are dependent on insulin and those who are dependent on oral hypoglycemic agents.

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## MATERIALS AND METHODS

A hospital-based study was carried out at RajaRajeswari Medical College and Hospital, Bengaluru for a period of 2 months, July to August 2015, and included adults with types 1 and 2 diabetes mellitus with or without comorbidities aged 18 years and above, visiting the Medicine Outpatient Department and who have given consent to participate in the study. Diabetics with duration of diabetes less than 6 months at the time of the interview, pregnant women with gestational diabetes, and diabetics with a known history of psychiatric disorders were excluded from the study. Complete enumeration of all diabetic patients attending the Medicine Outpatient Department during the study period were included after they fulfilled the eligibility criteria. At the end of the study period, the total number of study subjects was 140. Institutional Ethical Committee approval was obtained for conducting the study. Data was collected using a pre-designed validated Audit of Diabetes Dependent Quality of Life (ADDQoL) questionnaire by interview method. The ADDQoL questionnaire includes two introductory questions and 18 specific items, with the purpose of assessing, according to the patient's perspective, how much better would his or her life be if they did not have diabetes and how important each of these 18 aspects of life are for the individual. The scales range from -3 to 3 for QoL perceptions and from 0 to 3 in attributed importance, both being considered in order to obtain a weighted score (-9 to +9). The ADDQoL questionnaire<sup>6</sup> has some important advantages over other questionnaire-based instruments, allowing patients to indicate which aspects of life apply to them and which are not, impact of diabetes on that aspect of life and whether the impact is positive or negative, and the perceived importance of each aspect of life for their QoL. Apart from perceived QoL, data on patients' demographic characteristics, time since diabetes diagnosis, diabetes type, existing diabetic complications, and prescribed medicines were collected.

### Statistical Analysis

Statistical analysis was performed using Statistical Package for the Social Sciences version 22.0 software. Descriptive analysis was done for demographic and clinical data and the mean ADDQoL score and the average weighted impact (AWI) score for each domain was calculated to assess the impact of diabetes on the individual life domains. The difference between the mean impact scores for males and females, mean impact scores for complications and no complications as well as mean impact scores for those taking insulin and oral hypoglycemics was assessed by Kruskal-Wallis test.  $p < 0.05$  was taken significant for all tests.

## RESULTS

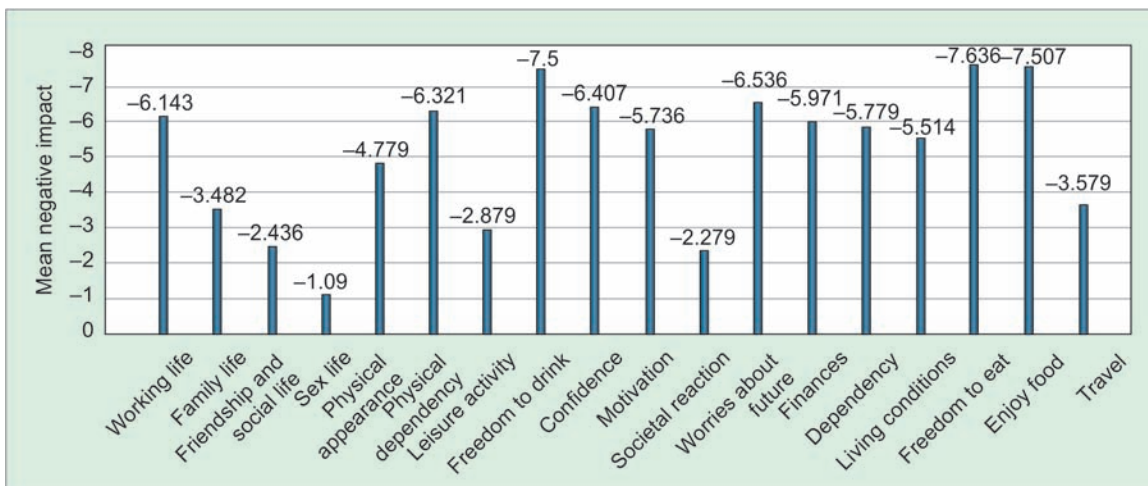
In this study, the mean age of the participants was  $55.7 \pm 12.5$  years. Females constituted 72 (51.4%) of the study participants, whereas males were 68 (48.6%). Majority of them Hindus 106 (75.7%) by religion, followed by Muslims 20 (14.3%), and Christians 14 (10%). Majority, 84 (60%), of the study participants had received formal education while 56 (40%) of them were not literate. Most of the study participants belonged to grade 3 (48.6%) socioeconomic status according to modified BG Prasad classification, 2014. Majority, 74 (52.9%), were employed, followed by 64 (45.7%) homemakers and 2 (1.4%) students. Majority of the participants, 134 (95.7%), were married, while 6 (4.3%) were not married.

With regard to type of diabetes, 128 (91.4%) of the participants had type 2 diabetes, while 12 (8.6%) had type 1 diabetes. The mean duration of diabetes since diagnosis was  $8.2 \pm 6.5$  years. By complications, 54 (38.6%) of the participants suffered from complications of diabetes, while 86 (61.4%) did not. By treatment type, 83 (59.3%) of them were consuming only oral hypoglycemic whereas 57 (40.7%) were on insulin.

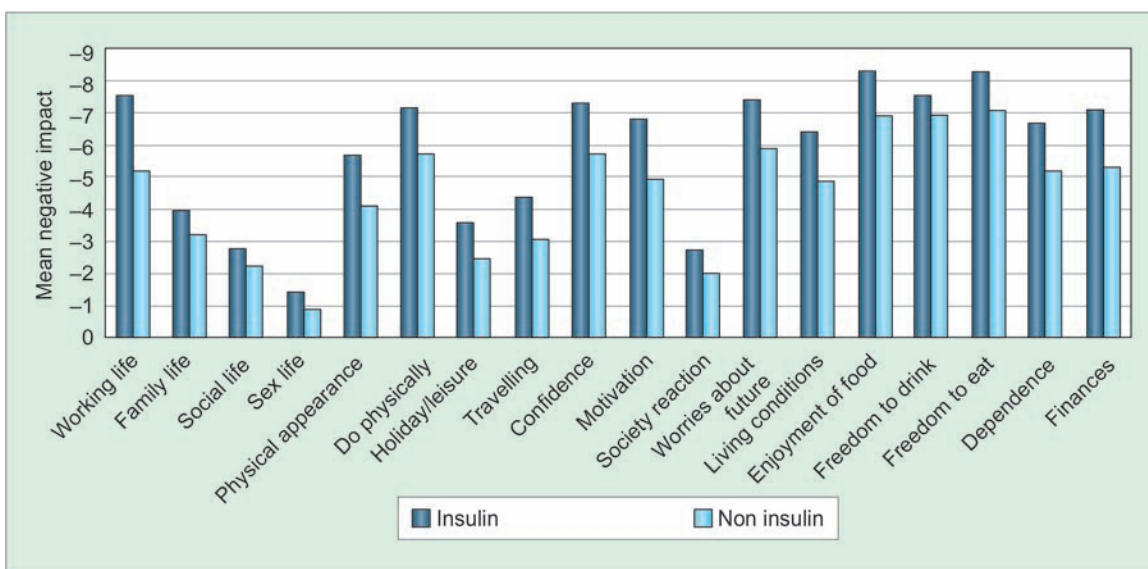
Overall, diabetes had a negative impact on the QoL of all the participants (Graph 1). There was a greater negative impact on insulin treated patients' QoL for all the 18 items, and the difference was statistically significant for the domain "working life" (considering a 5% significance level) ( $p < 0.05$ ) (Graph 2). Similarly, there was a greater negative impact on the QoL of patients reporting diabetic complications for all the 18 items. The impact of each item for these two subgroups is illustrated in Graph 3. The item "freedom to eat" had the greatest negative impact in all patient subgroups. Patients with diabetic complications reported a worse QoL (greater negative impact) on the first overview item, present QoL ( $p < 0.05$ ) as illustrated in Graph 4. Males diabetics were found to have a poorer QoL compared with females, but this was not found to be statistically significant ( $p = 0.582$ ) (Graph 5). The mean negative impact of diabetes on the QoL was more in 9 out of 18 domains among females than males (Graph 6). Cronbach's alpha for internal consistency was 0.909.

## DISCUSSION

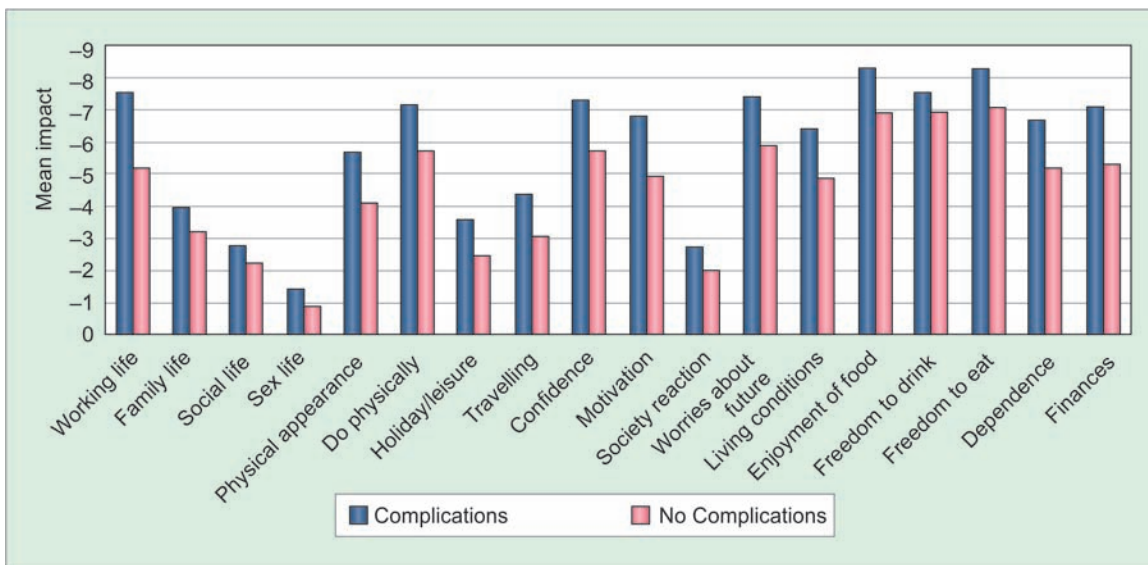
In this study, it was found that diabetes had a negative impact on the present QoL with a mean negative impact of -0.45 and a mean negative AWI of -5.16 on the individual life domains. There was a greater negative impact on the QoL of patients reporting diabetic complications for all the 18 domains. This finding is in accordance with a study done by Singh where all aspects of life were reported to be more negatively impacted.



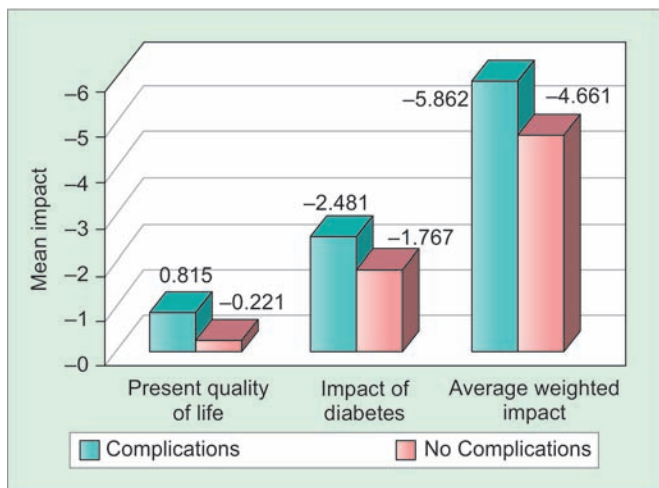
Graph 1: Overall negative impact of diabetes on all the individual life domains



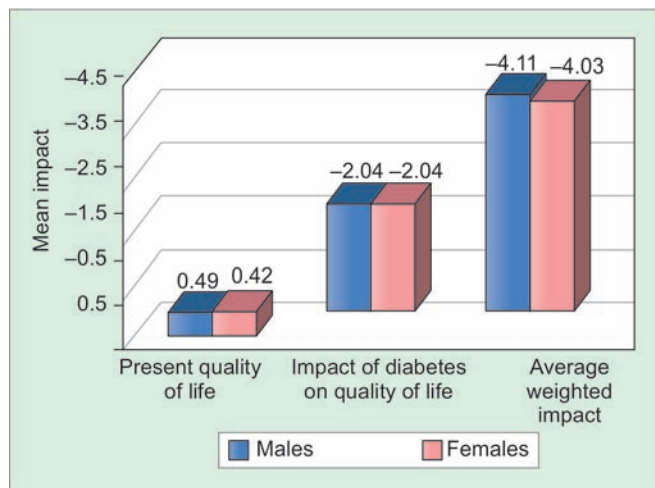
Graph 2: Negative impact of diabetes on individual life domains in insulin and noninsulin treated diabetics



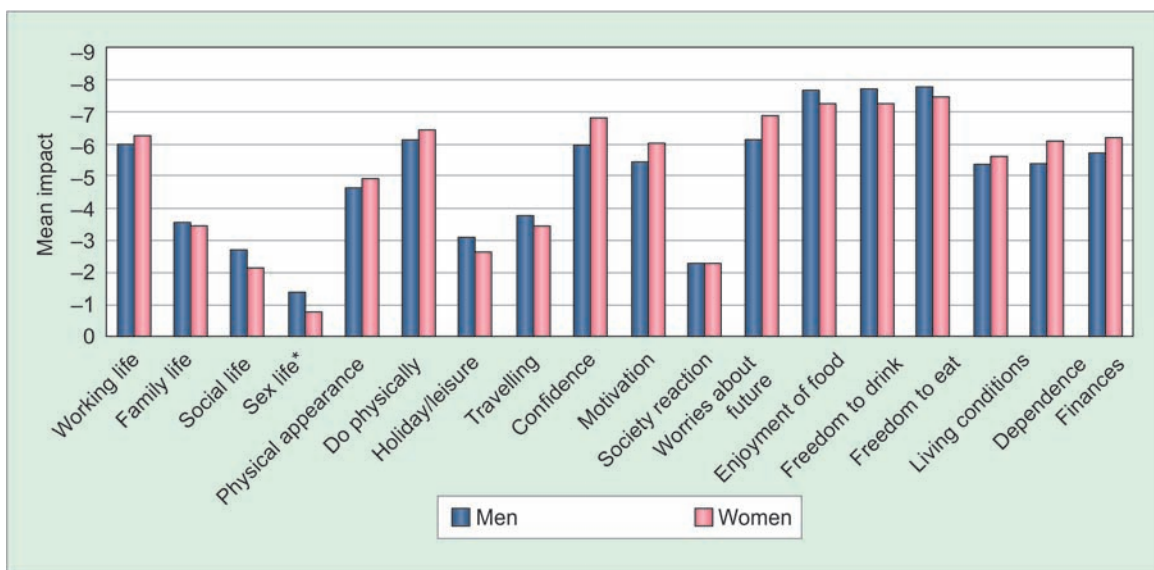
Graph 3: Negative impact of diabetes on individual life domains among diabetics with and without complications



**Graph 4:** Negative impact on the quality of life of patients reporting complications compared to no complications



**Graph 5:** Negative impact of diabetes on the quality of life among males and females



**Graph 6:** Negative impact of diabetes on individual life domains among males and females

The negative impact of diabetes on the QoL in all the domains was greater among those receiving insulin. A study by Costa et al<sup>7</sup> found that patients on insulin reported a greater negative impact of diabetes on their QoL ( $Z = -1.94$ ;  $p = 0.053$ ).

There was a greater negative impact on the QoL of patients reporting diabetic complications for the first overview item, present QoL. This is in contrast to a study done by Costa et al,<sup>7</sup> where patients without diabetic complications reported a worse QoL (greater negative impact) on the first overview item, present QoL ( $Z = -2.25$ ;  $p = 0.024$ ).

The domains “freedom to eat,” “freedom to drink,” “enjoyment of food,” and “working life” had the greatest negative impact in all patient subgroups. These findings are similar to a study done by Costa et al,<sup>7</sup> whereas a study done by Singh conducted at Postgraduate Institute of Medical Education and Research, Chandigarh found

that all the domains “family life” and “self-confidence” were more negatively impacted.<sup>8</sup>

In this study, it was observed that male diabetics had a poorer QoL as compared with female diabetics, but this was found to be not significant, whereas in a study done by Gautam et al,<sup>9</sup> it was found that female diabetics had a significantly poorer QoL than males.

**CONCLUSION**

Developing countries like India are witnessing a rapid surge in the prevalence of lifestyle diseases including diabetes. Given the ethnic predisposition of Indians to develop diabetes and to have poor HRQoL, as evidenced by various studies, more efforts must be taken to tackle this problem of diabetes and the burden it places.



## LIMITATIONS

One of the limitations of this study was a lack of access to patients' clinical records, which meant the bias could not be explored by verifying the date of diagnosis and the complete clinical file at that time. It would be important to have this possibility in future studies as it is general knowledge that diabetes is on average diagnosed between 5 and 7 years after its onset in people with type 2 diabetes.

The fact that the sample was not randomly selected may have had an impact on presented data, patients with complications and other diabetes-related problems are probably overrepresented in this study. The possible effects are on distribution of scores but do not present any problem with the principal component analysis or the internal consistency.

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