QUALITY OF LIFE IN INDIVIDUALS WITH AND WITHOUT DIABETES MELLITUS- A CASE CONTROL STUDY

Anitha Rayirala¹, Krishna Sahithi Jujjavarapu², Kottepogu Sreedhar³, Cuddapah Gaurav Venkat⁴, Yarrarapu Satya Naga Srinivas⁵

¹Associate Professor, Department of Psychiatry, Rajiv Gandhi Institute of Medical Sciences, Adilabad, Telangana, India.

²Assistant Professor, Department of Psychiatry, Kamineni Academy of Medical Sciences and Research Centre, Hyderabad, Telangana, India.

³Consultant Physician and Diabetologist, Department of General Medicine, Vijaya Hospital, Madinaguda, Hyderabad, Telangana, India.

⁴House Surgeon, Kamineni Academy of Medical Sciences and Research Centre, Hyderabad, Telangana, India.

⁵House Surgeon, Andhra Medical College, Vishakhapatnam, Andhra Pradesh, India.

ABSTRACT

BACKGROUND

Diabetes Mellitus (DM) is one of the common chronic medical conditions affecting approximately 347 million people worldwide. The mere presence of diabetes deteriorates a person's Quality of Life (QoL). Diabetic's QoL becomes worse when complications start to develop, or comorbidities co-exist. Numerous studies have recognised diabetes to be adversely affecting the quality of life. Aims- The present study was undertaken to compare the quality of life in type 2 diabetes patients and non-diabetic patients.

MATERIALS AND METHODS

100 cases of type II diabetes mellitus and 100 non-diabetic age-matched controls including both males and females were assessed for quality of life. Quality of sleep was assessed by 36-item Short Form Survey Instrument (SF-36), a self-reporting instrument.

RESULTS

Demographic data was not significantly different between cases and controls. Quality of sleep was significantly lower in cases when compared to controls.

CONCLUSION

The quality of life in diabetics is significantly lower in comparison to non-diabetic patients.

KEY WORDS

Diabetes Mellitus, Diabetics, Non-Diabetics, SF-36.

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BACKGROUND

Currently, India is considered the 'Diabetes Capital' of the world. This is because the largest number of people with diabetes live in this country. The International Diabetes Federation estimated that the number of diabetics in India has doubled between 1995 and 2005, and by 2025 it would reach a figure of about 70 million.^{1,2,3,4} India plays a unique role in the diabetes picture of the world. Compared to any other ethnic groups, Asian Indians have a higher propensity to insulin resistance, diabetes mellitus and coronary artery disease.⁵

Quality of Life (QoL) of the patients with diabetes mellitus represents personal perceptions of life experience, social, vocational and domestic functioning against hope and ideals from aspects of physical, psychological, relationships, environmental and spiritual domains.^{6,7}

A large body of literature has focused on the impacts of diabetes mellitus of both type 1 and type 2 on patients, albeit in vast aspects and contexts of life,^{8,9} and the associations with QoL, self-efficacy and disease control for adult patients with T2D. Moreover, patients who perceived higher levels of QoL also showed that they had better social support, acceptance of the seriousness and consequences of the disease and had less difficulty in managing their diabetes.¹⁰

Aims and Objectives

- To study the Quality of Life in adults with type 2 diabetes.
- To compare the Quality of Life between diabetic and non-diabetic adults.

MATERIALS AND METHODS

Study Design

A case-control study.

Study Site

The study was conducted at Vijaya Hospital, Madinaguda, Hyderabad, India.

Study Sample

100 diabetic patients as cases and 100 non-diabetic patients as controls.

Study Tools

- 36-item Short Form Survey Instrument (SF-36), a self-reporting instrument for measuring quality of life.

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Corresponding Author:

Dr. Krishna Sahithi Jujjavarapu,
C-408, Suha Apartments,
Hanuman Nagar,
Manikonda-500089,
Telangana,
India.

E-mail: krishnasahiti15@gmail.com

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The SF-36 contains 36 items evaluating 8 dimensions of health: Physical functioning, role limitations due to physical problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems and mental health. Each dimension is scored on a 0 to 100 scale with higher scores indicating better functioning. In addition, the SF-36 includes 2 composite summary scores: The Physical Component Score (PCS) and the Mental Component Score (MCS). The PCS and MCS are standardised to a mean (SD) of 50,¹¹ with lower scores indicating more significant dysfunction.

Sampling Technique

The sample size was selected for convenience.

Inclusion Criteria/ Cases

- Type 2 diabetes diagnosed by physician.
- Age > 25, both male and female.
- Duration of diabetes, minimum 1 year.
- On oral or injectable medication.
- Given informed consent.

Controls

- Age > 25, both male and female.
- HbA1c levels < 5.6

Exclusion Criteria

History of diabetes less than 1 year.

Statistical Analysis

- Statistics were done by using means and standard deviations.
- Tests of comparison for continuous variables: Independent student T-test.
- Software tools used were MS-Excel and R programming language.

RESULTS

The mean age of diabetics is (47.7 ± 14.37) yrs. and in Dr. Faith et al study, the mean age is 63.9 years which is not comparable.¹² In our study for non-diabetics, mean age is (37.72 ± 12.87) yrs. Out of 100 diabetic cases 24% of diabetic patients are in 24 to 34 years' age group, 20% in 35 to 44, 22% are in 45 to 54, 18% in 55 to 64 and 16% in 65 and above. Out of 100 control group, 4% of non-diabetic patients are in 24 to 34 years' age group, 26% in 35 to 44, 44% are in 45 to 54, 6% in 55 to 64 and 20% in 65 and above. In diabetic patients 60% are females and 40% are males, whereas in control group 66% are females and 34% are males.

Scale	Items	Alpha	Mean	SD
Physical functioning	10	0.8797	56.45	2.53099
Role functioning/ physical	4	0.85406	68.5	4.38006
Role functioning/ emotional	3	0.7754	62.3333	4.42502
Energy/ fatigue	4	0.65889	60.5	1.72531
Emotional well-being	5	0.48534	69.36	1.78806
Social functioning	2	0.99839	62	0.70318
Pain	2	0.71717	61.5	1.12001
General health	5	0.49475	51.7	1.39453
Health change	1		46.5	1.00629
Diabetics				

Scale	Items	Alpha	Mean	SD
Physical functioning	10	0.92389	64.15	3.2275
Role functioning/ physical	4	0.81793	75	4.23434
Role functioning/ emotional	3	0.82353	70.6667	4.39534
Energy/ fatigue	4	0.7822	69.4	2.52223
Emotional well-being	5	0.64583	67.76	2.02905
Social functioning	2	0.99558	63.75	1.19051
Pain	2	0.64683	64.95	1.67422
General health	5	0.68456	52.1	1.76951
Health change	1		52.5	1.52835
Non-Diabetics				

Life Quality of Non-Diabetics is better than that of Diabetics (with Reference to Mean and SD)

- The physical functioning of Diabetics (56.45 ± 2.53) is less than Non-Diabetics (64.15 ± 3.23).
- The role functioning or physical (4 items) of Diabetics (68.5 ± 4.38006) is less than Non-Diabetics (75 ± 4.23434).
- The role functioning or emotions of Diabetics (62.33 ± 4.42) is less than Non-Diabetics (70.66 ± 4.39).
- The energy of Diabetics (60.50 ± 1.72) is less than Non-Diabetics (69.4 ± 2.52).
- The emotional well-being of Diabetics (69.36 ± 1.78) is more than Non-Diabetics (67.76 ± 2.02).
- The social functioning of Diabetics (62 ± 0.70) is less than Non-Diabetics (63.75 ± 1.19).
- The pain domain of Diabetics (61.50 ± 1.12) is less than Non-Diabetics (64.95 ± 1.67).
- The general health of Diabetics (51.70 ± 1.39) is less than Non-Diabetics (52.10 ± 1.76).
- The health change of Diabetics (46.5 ± 1.00) is less than Non-Diabetics (52.5 ± 1.52).

Age/ PCS

In our study, 16% of diabetic cases are aged 65 and above. Among them, 65% of them are having poor quality of life. In non-diabetic controls 20% of cases are aged 65 and above and among them 60% of them are having poor quality of life.

MCS

In our study, 16% of diabetic cases are aged 65 and above. Among them, 63% of them are having poor quality of life. In non-diabetic controls 20% of cases are aged 65 and above and among them 10% of them are having poor quality of life.

The percentage of diabetic and non-diabetic patients in physical component score aged 65 and above, scoring poor quality of life is nearly similar, whereas in mental component score there is wide range of difference between cases and controls.

Sex/ PCS

In our study, 18% of diabetic cases have poor quality of life and among them 64% are females which is comparable to 55.4% in Aikaterini Trikkalinou's study.¹³ In non-diabetic controls, 22% of cases have poor quality of life and among them 56% are females.

MCS

In our study, 16% of diabetic cases have poor quality of life and among them 50% are females. In non-diabetic controls, 12% of cases have poor quality of life and among them 67% are females.

From this we can infer that females have poorer quality of life in cases as well as controls when compared to males in physical and mental component scoring.

Occupation/ PCS

In our study, 18% of diabetic cases have poor quality of life and among them 67% are unemployed and 22% are employed. In non-diabetic controls, 22% of cases have poor quality of life and among them 45% are employed and 55% are unemployed.

MCS

In our study, 16% of diabetic cases have poor quality of life and among them 47% are unemployed and 25% are employed. In non-diabetic controls, 12% of cases have poor quality of life and among them 67% are employed and 33% are unemployed.

From this we can infer that unemployment is a risk factor, which can affect the quality of life.

Type of Family/ PCS

In our study, 18% of diabetic cases have poor quality of life and among them 78% belong to joint family and 22% belong to nuclear family. In non-diabetic controls, 22% of cases have poor quality of life and among them 64% belong to joint family and 46% belong to nuclear family.

MCS

In our study, 16% of diabetic cases have poor quality of life and among them 50% belong to joint family and 50% belong to nuclear family. In non-diabetic controls, 12% of cases have poor quality of life and among them 17% belong to joint family and 83% belong to nuclear family.

It is inferred that in physical component score the percentage of cases and controls having poor quality of life belong more to joint families, whereas equal when mental component score is taken into account.

Duration of Diabetes/ PCS

In our study, 6% of diabetic cases have 15 years of diabetes and among them 67% have poor quality of life.

MCS

In our study, 6% of diabetic cases have 15 years of diabetes and among them 34% have poor quality of life and 50% are in the age group of 5 years and below among whom 16% have poor quality of life.

From this we can infer that greater the duration of diabetes, poorer the quality of life which indicates a positive correlation.

Type of Medication/ PCS

In our study, 74% of diabetic cases are using oral medication and among them 19% have poor quality of life and 26% are using injectables and among these 15% have poor quality of life.

MCS

In our study, 74% of diabetic cases are using oral medication and among them 19% have poor quality of life and 26% are using injectables and among these 7% have poor quality of life.

From this we can infer that the percentage of individuals using injectables have poor quality of life when compared to those using oral medication similar to Faith et al study.¹²

	PCS Diabetics	PCS Non-Diabetics
Mean	58.09524	63.45952
Observations	100	100
Standard deviation	14.65412	1.703582
P (T <= t) two-tail	0.016671	

PCS of both the diabetics and non-diabetics were compared. Statistics clearly say that NDM have better quality of life compared with DM with p value (0.016671 < 0.05), which is significant and comparable to Dr. Faith et al study.¹²

	MCS_DM	MCS_NDM
Mean	62.42	67.89333
Observations	100	100
Standard deviation	12.30523	1.291280262
P (T <= t) two-tail	0.001742	

MCS of both the diabetics and non-diabetics were compared. Statistics clearly say that NDM have better quality of life compared to DM with p value (0.001742 < 0.05), which is highly significant and comparable to Dr. Faith et al study.¹²

The mean (SD) SF-36 MCS was 62.42 (12.30), which is more than 51.1 (11.2) in Dr. Faith et al study. The mean (SD) SF-36 PCS was 58.09 (14.65), which is more than 42.9 (10.3) according to Dr. Faith et al¹² study, suggesting higher mental than physical health quality of life.

DISCUSSION

In diabetic patients 80% were Hindus, 19% Christians, 1% Jains, whereas in control group 86% were Hindus, 12% Christians and 2% Muslims.

In diabetic patients 98% were married and 2% were unmarried, whereas in control group 82% were married and 8% were unmarried.

In diabetic patients 88% were educated and 12% were uneducated, whereas in control group 92% were educated and 8% were uneducated.

In diabetic patients 58% were unemployed, 40% were employed and 2% were retired, whereas in control group 56% were employed and 44% were unemployed.

72% of diabetic patients were residing in urban areas and 28% in rural areas, whereas 76% of control in urban area and 24% in rural area.

54% of the diabetic patients hailed from nuclear family and 46% from joint family, whereas 60% of controls hailed from nuclear family and 40% from joint families. All the diabetic and non-diabetic patients belonged to middle class. 74% of the diabetic patients are using oral medication and 26% of the cases are using injectables. 96% of the diabetic cases have diabetes under control and 4% are uncontrolled cases. In 4% of uncontrolled diabetic patients, 6% are cardiac complicated and 96% of the cases are uncomplicated.

54% of diabetic patients had less than five years duration of diabetes. 36% had 5 to 10 years of duration of diabetes. 6% cases had above 15 years and 4% had 10 to 15 years duration of diabetes.

Limitations

One limitation of this study was that quality of life was subjectively assessed and no objective measures of QOL were obtained. Consequently, we are unable to ascertain the underlying causes of quality of life in this population. Another limitation is the cross-sectional design, which precludes us from establishing cause and effect in the associations examined.

CONCLUSION

1. The quality of life in diabetics is significantly lower in comparison to non-diabetic patients.
2. Mental parameters are significantly impaired than physical parameters.
3. Female patients have poor quality of life when compared to male patients.
4. There is a positive correlation between unemployment and quality of life in diabetics.
5. Patients on oral medication have a better quality of life when compared to those on injectables.

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