Research Article

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Comparative study Assess the Level of Stress and Quality of Life among Type 1 and Type 2 Diabetic Mellitus Patients at Bagalkot

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ABSTRACT

Background: India has been known as a house for people with non-communicable diseases. According to World Health Organization, diabetes cases are increasing rapidly in India, with an estimated 8.7% diabetic population in the age group of 20 and 70 years. Stress and Hyperglycaemia complement each other, ultimately hindering the Quality of life of a person. The study aimed to assess and compare the stress level and quality of life among Type 1 and Type 2 Diabetic Mellitus patients.

Methods: The data was collected from 100 diabetic patients (50 type 1 & 50 type 2). By using Convenient sampling technique data was selected. Stress Scale was used to assess the level of stress & WHO Bref-26 Quality of Life Scale was used to assess quality of life. The comparison of stress and quality of life was done using the 't' test and the association was determined using the Chi-square test.

Results: 70% of patients with diabetic mellitus (DM) Type 1 had high level of stress, 20% had moderate and 10% had low level of stress. In type II DM patients, 92% had moderate stress levels and 8% had low stress level. Negative correlation between stress and quality of life among type 1 and type 2 diabetic mellitus patients.

Conclusion: A statistically negative correlation exists between stress and quality of life among type 1 and Type 2 patients.

Key-words: Blood sugar level, Quality of life, Stress, Type I Diabetic mellitus, Type II Diabetes mellitus

INTRODUCTION

India has been known as a house for people with non-communicable diseases. According to the World Health Organization, diabetes cases are increasing rapidly in India, with an estimated 8.7% diabetic population in the age group of 20 and 70 years. [1]

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Stress and Hyperglycaemia complement each other, ultimately hindering the Quality of life of a person. [2] The study aimed to assess and compare the stress level and quality of life among Type 1 and Type 2 DM patients. India houses around 17% of Diabetic patients globally [3]. India is called a capital for patients with DM [4].

Diabetes mellitus is a chronic disorder that affects the patient physiologically and psychologically. Diabetes mellitus can have a serious psychological and emotional impact. [5] Once a person is announced to be diabetic, the lifestyle and mental peace will be blundered. The person starts to assume uncertainties and adapts extremely conservative measures to protect self. This shifting of lifestyle is not easy for everyone, the sacrifice in liberty food consumption and daily tasks. When a diabetic patient fails to meet the targets or if they have

hyperglycemia, it will lead them to be more frustrated angry, and in turn can prolong negative feelings and mental states such as depression, anxiety and stress. [6]

The overall effect is on the quality of life of a person. The impact on mental health will be modest if the new ailments are managed expertly. Disease provokes stress in the person; it will affect the quality of living and deteriorate health. Stress and diabetes seem to be related in several significant ways. Specifically, stress is both a cause and a result of diabetes. [7] A descriptive study found that the patients with DM had a high level of stress (34.8%) compared to the non-diabetic group, rate 6.8% [8]. A study conducted in a sub-Himalayan region of India among 300 Diabetic patients, it was found that 10% of patients had very poor quality of life, 13% had poor, 11% had average, 16% had good, and 50% had very good quality of life. [8]

Stress is negatively correlated with the quality of life of people with DM. DM has a significant impact on QoL. [9] Psychological and physical stress are relevant triggering factors for the onset of type 1 diabetes (T1D) and type 2 diabetes (T2D).[10] Diabetes mellitus has many harmful consequences if the blood sugar level is not maintained within normal limits. The person will always be apprehensive about the blood sugar levels and their impact on the retina, kidney and peripheral nerves. These uncertainties provoke stress, hindering the normal physiological functions of the body.

Though diabetes is a disorder evidenced by high blood sugar levels, there is a lot of difference in the psychological health status of Type 1 and T2D mellitus patients. The daily calculated dose of insulin among Type 1 DM patients makes the situation more dependent and bounded. In a study conducted to determine the relationship of Type 1 and T2DM with anxiety, it was found that 94.2% of male and 96.8% of female patients were found with severe anxiety group. Anxiety scores among both male and female patients were higher among Type 2 DM than T1DM patients.[11] It is important to compare and differentiate the stress and quality of life of both Type of DM patients to understand the psychological aspects of the health of Diabetes patients. Stress does not cause diabetes mellitus but can affect blood sugar levels. Stress is how our body and mind react to new or difficult situations. It might be something short-term, like worrying about a presentation us giving at work the next day. [12]

MATERIALS AND METHODS

Study design and participants- The present study is a comparative study. Data were collected for 30 days from 12/06/2022 to 11/07/2022 in Medicine OPD of HSK Hospital Bagalkot. The study was conducted among 100 diabetic patients (50 type I, 50 type II diabetes mellitus) selected from the diabetic clinic of HSK Hospital and Research center, Bagalkot. The sample was chosen by using a convenient sampling technique. The researcher approached the Diabetic clinic of HSK hospital, obtained administrative permissions and enrolled all the patients approaching OPD service. The study was explained to prospective participants; their consent was obtained and enrolled. The same procedure of enrolment of subjects was carried out until the required number of subjects was enrolled.
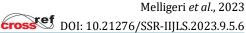
Inclusion Criteria- The study includes the type I & type II Diabetic mellitus patients attending the OPD bases in HSK Hospital Bagalkot. Available during the period of data collection. Willing to participate in the study. Able to Speak, Read and write Kannada or English language.

Exclusion Criteria- The participants not willing to participate in the study and unable to speak, read and write Kannada or English language were excluded from the study.

Sample size estimation- The sample size was estimated by the results (mean and standard deviation) of a previous similar study conducted in Bangalore, Karnataka, India, to assess the diabetes stress and Quality of life among type I and type II diabetic mellitus patients at the level of confidence was 95% (=9.5%) and Z= 1.96.

The power of the test was considered 80%. The sample size estimated by statistician was 90 i.e. (50 type I diabetic mellitus and 50 type II diabetic mellitus patients). Considering the availability of subjects, the researcher enrolled 100 subjects i.e. 50 type I and 50 type II diabetic mellitus patients.

Statistical analysis- The data was analyzed using Microsoft Excel and SPSS version 18. The master sheet was prepared in an Excel sheet after decoding the data. The descriptive analysis was done in Microsoft excel and Inferential analysis in SPSS-18. The data was organized and presented using frequency and percentage

distribution tables. The results were described with Arithmetic mean, standard deviation and median. The comparison of stress and Quality of life was done using.

Ethical Clearance- Ethical Clearance certificate obtained from the ethical clearance committee of B.V.V.S Sajjalashree Institute of Nursing Sciences Navanagar Bagalkot, India.

RESULTS

Sociodemographic Profile of Type I diabetic mellitus patients- The majority (44%) of diabetic patients were in the age group of 36-50 year. (64%) of diabetic patients were females. (60%) of diabetic patients have no formal education. (46%) of diabetic patients were housewife, (68%) of diabetic patients had income Below 10,000 Rs, (74%) of diabetic patients were married**,** (84%) of Diabetic patients were from the nuclear family, (70%) of diabetic patients were from Rural Area, (60%) of diabetic patients were continuing their Yoga and Physical Exercise due to diabetes, and (88%) of Diabetic patients were in Uncontrolled Diabetic status.

Sociodemographic profile of type II diabetic mellitus patients- The Majority of (58%) of diabetic patients were in the age group of 51& above**,** (52%) of diabetic patients were females, (56%) of diabetic patients had no formal education, (46%) of diabetic patients were housewife, (66%) of diabetic patients were having with income below Rs 10000**,** (86%) of diabetic patients were Married, (80%) of diabetic patients were from nuclear family**,** (50%) of diabetic patients were living in rural area & another 50% diabetic patients were living in urban area, (58%) of diabetic patients were continuing there Yoga or Physical Exercise due to diabetes, (96%) of diabetic patients were in Controlled diabetic Status.

In Type I diabetic mellitus Patients the Majority (70%) of diabetic patients belongs to high stress level, 20% of diabetic patients belongs to moderate stress level & 10% of Diabetic patients were belongs to low stress level. In Type II diabetic mellitus patients were 92% of diabetic patients belongs to moderate stress level, 8% 0f diabetic patients belongs to low stress level and there is no any high stress level 0% (Table 1).

Table 1: Assessment of level of stress among type 1 and type 2 diabetic mellitus patients

Level of stress	Range of score	Level of Stress among Type 1 (%)	Level of Stress among Type 2 (%)
Mild stress	0-13	10	8
Moderate stress	14-27	20	92
Severe stress	28-40	70	0

In Type I diabetic mellitus patients' majority (80%) of diabetic patients have low Quality of life and 20% of diabetic patients have High Quality of life & In Type II diabetic mellitus patients have 70% high quality of life and 30% diabetic patients have low Quality of life (Table 2).

Table 2: Assessment of quality of life among type 1 and type 2 diabetic mellitus patients

QOL	Range of score	QOL of Type I diabetic mellitus (%)	QOL of Type II diabetic mellitus (%)
Poor QOL	<60	80	30
Good QOL	>60	20	70

QOL- Quality of life*

Association between stress and quality of life among Type 1 & Type 2- Calculated "r" value is (-0.013) there is a negative correlation between stress and quality of life among type 1 diabetic mellitus patients.

Therefore **H$_1$**: is accepted. & Calculated "r" is (-0.225) there is a negative correlation between stress and quality of life among type II diabetic mellitus patients. Therefore **H$_1$**: is accepted.

The calculated 't' value (7.81) was more than t-value (1.96). Hence it is clear that there is a statistically significant difference between level of stress among type 1 and type 2 diabetic mellitus patients (Table 3).

Table 3: Significant difference between level of stress among Type 1 and Type2 diabetic mellitus patients

Group	Mean stress score	SD stress	t	Df	Mean difference	SE difference	p-value
Type 1 DM	27.58	6.97	7.81	98	8.84	1.13	0.00
Type 2 DM	18.74	3.92					

α =5%

The calculated 't' value (6.60) was more than t-table value (1.96). Hence it is clear that there is a statistically significant difference between quality of life among type 1 and type 2 diabetic mellitus patients (Table 4).

Table 4: Significant difference between quality of life among Type 1 and Type2 diabetic mellitus patients

Group	Mean Quality of score	SD stress	t	Df	Mean difference	SE difference	p-value
Type 1 DM	62.9000	9.57942	6.60	98	18.56	2.81	0.00
Type 2 DM	81.4600	17.42413					

α =5%

The calculated chi square value for the all-sociodemographic variable, for Chi-square table value is 3.84. Here Chi-square calculated value is lesser than the t-value. This indicates there is no significant association found between quality of life with sociodemographic variables (p<0.05) (Table 5).

Table 5: Association between the Quality of life of T1DM patients with their selected sociodemographic variables

S.No	Sociodemographic variables of T1DM Patients	X^2- Calculated Value
1	Age	0.99
2	Gender	0.02
3	Education	0.48
4	Marital status	0.00
5	Type of family	3.22
6	Yoga or physical exercise	1.08
7	Status of diabetes	0.44

DF= degree of freedom=1; *p<0.05 (Significant); T1DM= Type I diabetic mellitus

The calculated chi-square value for the all-sociodemographic variable for the Chi-square table value is 3.84. Here Chi-square calculated value is lesser than the t-value. This indicates no significant association between quality of life and sociodemographic variables (p<0.05) (Table 6).
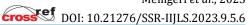
Table 6: Association between the Quality of life of Type II diabetic mellitus patients with their selected sociodemographic variables

S.No	Sociodemographic Variables of T2DM patients	X^2-Calculated Value
1	Age	2.05
2	Gender	0.28
3	Education	0.32
4	Occupation	0.08
5	Marital status	0.16
6	Yoga or physical exercise	0.73
7	Status of diabetes	0.01

DISCUSSION

The present study's finding is supported by the study conducted by Magalapalli *et al.* [13] to assess the study stress and quality of life among diabetic mellitus patients. The finding reveals that type 1 diabetic patients experience more stress and less quality of life than T2D patients. Present study finding related to comparing stress and quality of life among T1DM & T2DM patients. The study concludes that stress is more and less quality of life among T1DM patients.

The present study's findings are supported by the study conducted by Dhillon *et al.* [14] to determine quality of life and associated factors among T2D patients. The finding reveals that those who scored ≤85 points were included in the poor-moderate category, while those who scored ≥86 was classified as having an excellent QOL. Overall, 41

(37.3%) subjects fell into the poor-moderate QOL category, while 109 (72.7%) fell into the good-excellent QOL category. This present study is related to determining the quality of life among T1DM & T2DM patients. The study discussed that in T1DM, the majority (80%) of diabetic patients have a low Quality of life, and 20% of diabetic patients have High Quality of life & In Type II diabetic mellitus patients have 70% high quality of life and 30% diabetic patients have low Quality of life.

The findings of the present study are supported by Bhavani V. [15] to assess the level of Stress among patients with T2DM patients. The findings reveal that half the 52-54% of the samples were stressed about medication follow-up and exercise. 66% of patients showed severe stress. 18-42%. Of patients, who showed moderate stress with regard to all these five areas, severe stress with regard to disease was seen only in 46% of the samples. This present study is related to finding out the level of stress among T1DM & T2DM patients, In T1DM patients, the majority (70%) of diabetic patients belongs to high stress level, 20% of diabetic patients belongs to moderate stress level & 10% of Diabetic patients were belongs to low stress level.

The findings of the present study are supported by the study conducted by Arora *et al.* [16] to assess the Knowledge, Stress Level and Coping Strategies among Mothers of Children with T1DM. The finding reveals that most mothers of T1DM children (79%) had moderate stress, followed by severe stress, 13% and only 8% of mothers had mild stress. It was also found that the majority of the mothers of type 1 diabetes mellitus children (84%) were having above-average stress. This present study is related to the stress level among T1DM & T2DM patients. In Type I diabetic mellitus patients, the majority (70%) of diabetic patients belong to high-stress level, 20% of diabetic patients belongs to moderate stress level & 10% of Diabetic patients belong to low-stress level. In T2DM patients, 92% of diabetic patients belong to the moderate stress level, 8% 0f diabetic patients belong to low-stress level, and no high-stress level 0%. A similar study was also conducted by Messier *et al.* [17] to assess Stress levels among patients with Diabetes Foot in the Al-Najaf Al-Ashraf Governorate. The result of the study shows that the majority of the study group participants (63.2%) suffered from moderate stress.

A similar study was also conducted by Amelia *et al.* [18] to assess Stress levels and self-concept among type 2 diabetes mellitus patients in Indonesia. The study revealed, 83% of subjects reported experiencing moderate stress, while 9 subjects (9%) experienced severe stress; most subjects had a fair self-concept (61%). Five of the eight subjects who experienced mild stress had a fair self-concept. Similarly, 51 of the 83 subjects with moderate stress levels had a fair self-concept (51%), while 5 of the 9 subjects, who experienced severe stress had a fair self-concept (5%). But this present study finding is related to the stress level among T1DM & T2DM patients. In T1DM patients, the majority (70%) of diabetic patients belong to high-stress level, 20% of diabetic patients belongs to moderate stress level & 10% of Diabetic patients belong to low-stress level. In T2DM patients, 92% of diabetic patients belong to the moderate stress level, 8% 0f diabetic patients belong to low-stress level, and no high-stress level 0%.

CONCLUSIONS

In T1DM patients, the majority (70%) of diabetic patients have high stress levels. In T2DM patients 92% of diabetic patients belongs to moderate stress levels. In Type I diabetic mellitus patients' the majority (80%) of diabetic patients have low Quality of life and in Type II diabetic mellitus patients have 70% high quality of life. A statistically negative correlation exists between stress and quality of life among type 1 and Type 2 patients and there is a significant difference between the level of stress among type 1 and T2D patients & there is a significant difference between quality of life among type 1 and T2D patients.

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Data analysis and Interpretation- Anuradha G melligeri

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Critical review & Article editing - Anuradha G melligeri
Final approval- Anuradha G melligeri, Deelip S Natekar

REFERENCES

[1] Sinha A. World Diabetes Day. Can blood sugar patients take health insurance? Check policy conditions, premium, and other details. Available at: https://zeenews.india.com/personal-finance/world-diabetes-day-2022-can-blood-sugar-patients-take-health-insurance-check-policy-conditions-premium-other-details-2534957.html, 2022.

[2] Surwit RS, Schneider MS, et al. Stress and diabetes mellitus. Diabetes Care, 1992; 15(10): 1413-22.

[3] TIMESOFINDIA. Why india is diabetes capital of the world. Available at; https://timesofindia.indiatimes.com/india/why-india-is-diabetes-capital-of-the-world/articleshow/95509990.cms, 2022.

[4] Malik R. India is the diabetes capital of the world! Mumbai mirror. Available: https://timesofindia. india times.com/life-style/health-fitness/health-news, 2016.

[5] Diabetes research and wellness foundation. The psychological impact of diabetes. Available at: https://www.drwf.org.uk/news-and-events/news/the-psychological-impact-of-diabetes, 2019.

[6] Krupa N. Psychological Effects of Diabetes on Patients. How to Overcome?. Here is How diabetes affects you mentally. Available at: https://possible.in/psychological-effects-of-diabetes-on-patients.html, 2020.

[7] Faisal GG, Radeef AS. Depression, Anxiety and Stress among Diabetic and Non-Diabetic patients with Periodontitis. J Int Dental Med Res., 2017; 2(1): 248-52.

[8] Gupta J, Kapoor D, Sood V. Quality of Life and its Determinants in Patients with Diabetes Mellitus from Two Health Institutions of Sub-Himalayan Region of India. Indian J Endocrinol Metab., 2021; 25: 211-19.

[9] Alamri W, Alhofaian A, Mersal N. Quality of Life (QoL) among Health Care Workers with Diabetes Mellitus: A Literature Review. Clin Pract., 2021; 11(4): 801-26.

[10] Ingrosso DMF, Primavera M, Samvelyan S, et al. Stress and Diabetes Mellitus: Pathogenetic Mechanisms and Clinical Outcome. Horm Res Paediatr., 2023; 96(1): 34-43.

[11] Bulut A, Bulut A. Evaluation of anxiety condition among type 1 and type 2 diabetic patients. Neuropsychiatr Dis Treat., 2016; 12: 2573-79.

[12] Diabetes UK. Stress and Diabetes. Available at: https://www.diabetes.org.uk/guide-to-diabetes/emotions/stress.

[13] Tirumalesh M, Chandraiah K. Stress and Quality of Life among Diabetes Mellitus Patients. Int J Indian Psychol., 4(4): 96-102.

[14] Dhillon H, Nordin RB, Ramadas A. Quality of Life and Associated Factors among Primary Care Asian Patients with Type 2 Diabetes Mellitus. Int J Environ Res Public Health, 2019; 16(19): 3561.

[15] The Tamil Nadu Dr MGR Medical University. Bhavani V. To assess the Level of Stress among patients with Type II Diabetes Mellitus in relation to level of blood sugar at a selected Hospital in Coimbatore, 2010. Thesis. Available at: http://repository-tnmgrmu.ac.in/2641/.

[16] Arora R, Shaiju B, Hashmi S. A Study to Assess the Knowledge, Stress Level and Coping Strategies among Mothers of Child with Type-1 Diabetes Mellitus (T1DM). Int J Nurs Midwif Res., 2019; 6(4): 28-33.

[17] Messier MJ, Hasan AA, Mohamed SS. Assessment of Level of Stress among Patients with Diabetes Foot in Al-Najaf Al-Ashraf Governorate. Turk J Physiother Rehabil 2022; 33: 33231-43.

[18] Amelia R, Binti S, et al. Stress level and self-concept among type 2 diabetes mellitus patients in Indonesia. Fam Med Prim Care Rev., 2020; 22(2): 111–15. doi: 10.5114/fmpcr.2020.95313.