Comparison of Quality of Life in Patients with Diabetes Mellitus Treated with Oral Hypoglycemics and Insulin

Ashok Goyal[1], Ashok Kumar Agarwal[2], Abdul Sajid Mansoori[3]

[1]Associate Professor, Department of Psychiatry, American International Institute of Medical Sciences, Bedwas, Udaipur (Rajasthan)

[2]Assistant Professor, Department of Medicine, Geetanjali Medical College and Hospital, Udaipur (Rajasthan)

[3]Assistant Professor, Department of Psychiatry, American International Institute of Medical Sciences, Bedwas, Udaipur (Rajasthan)

Abstract

Background: Diabetes is a chronic disease in etiology and occurs when the pancreas does not produce enough amount of insulin or when there is resistance towards its action on the body. The present study aimed to evaluate factors affecting the quality of life among patients diagnosed with type-2 diabetes mellitus and taking treatment with insulin and oral hypoglycemic drugs.

Material & Methods: 200 patients who were diagnosed with type-2 diabetes mellitus and taking either insulin or oral hypoglycemics drugs for at least 12 weeks who were attending outpatient department enrolled for the present study by simple random sampling. Written informed consent was taken from each study participant. Patients who had chronic illnesses other than diabetes and patients who were being treated by both insulin and oral hypoglycemics drugs were excluded from the study. **Results:** About 68% of the patients were on insulin while 76% of the patients who were on oral hypoglycemics had a satisfactory quality of life. The cut-off value was being 87.5 i.e. the 50% of the total possible mean score value. Based on the mean quality of life score among study participants it was found that mean the quality of life score values among patients on oral hypoglycemic drugs was 115.3 and mean the quality of life score values among patients on insulin was 105.9. This difference was statistically non-significant (P-value >0.05). **Conclusion:** We concluded from the present study that patients who were on oral hypoglycemics had a satisfactory quality of life in comparison to the patients on insulin therapy. The poor quality of life scores was significantly (P-value <0.05) associated with lower socioeconomic status, lesser physical activity and lesser education, duration of illness, and positive family history.

Keywords: diabetes mellitus, quality of life, oral hypoglycemic drugs.

Introduction

In 2014, WHO reports that 8.5% of adults aged 18 years or above had been diagnosed with diabetes. In 2016, WHO reports that diabetes was directly

responsible for 1.6 million mortality occurred worldwide. It was estimated that by the year 2030 diabetes will become the seventh leading cause of mortality worldwide.[1] Diabetes is a chronic disease in etiology and occurs when the pancreas does not produce enough amount of insulin or when there is resistance towards its action on the body.[2] In India, the prevalence of diabetes is increasing and imposing challenges on the health care infrastructure of the country.[3] The prevalence of non-communicable diseases is increasing compared to communicable diseases. Among the non-communicable diseases, diabetes mellitus is rapidly increasing globally and affecting all the age groups.[4]

According to the WHO reports stated that there is a considerable burden of psychiatric morbidity among all ages.[5] Worldwide, there are various programs initiated to increase awareness and linking people to health care services focusing on mental health. All of these programs are bases upon firm research and focused on mental health services that are efficient, effective, sustainable, and replicable in different setups globally.[6] The overall disease burden of mental health and behavioral disorders was reported in various community-based cross-sectional epidemiological studies in India, which report that the overall prevalence of psychiatric diseases was ranging from 10% to 20%.[7]

We conducted the present study to evaluate the quality of life among patients diagnosed with type-2 diabetes mellitus and taking treatment with insulin and oral hypoglycemic drugs. The present study aimed to evaluate factors affecting the quality of life among patients diagnosed with type-2 diabetes mellitus and taking treatment with insulin and oral hypoglycemic drugs.

Materials & Methods

The present cross-sectional prospective study was conducted at our hospital with a study duration of one year from June 2017 to May 2018. The sample size of 200 was calculated at a confidence interval of 95% and an acceptable margin of error of 10% with the 95% study power. 200 patients who were diagnosed with type-2 diabetes mellitus and taking either insulin or oral hypoglycemics drugs for at least 12 weeks who were attending outpatient department enrolled for the present study by simple random sampling. Written informed consent was taken from each study participant. Patients who had chronic illnesses other than diabetes and patients who were being treated by both insulin and oral hypoglycemics drugs were excluded from the study.

Data was collected by a pretested questionnaire format to evaluate and record the sociodemographic data. The general physical and clinical examination was followed by mental health and psychiatric morbidity evaluation. Quality of life evaluation was done by using a pretested Performa have domains related to due physical health, general health, physical endurance, symptom frequency, treatment satisfaction, mental health, financial worries, and diet advice satisfaction. All of these domains had high internal consistency (Cronbach's alpha of 0.894). The strength of the questionnaire was enhanced by the standard Likert scale. Hence, the questionnaire was a valid and sensitive tool for the assessment of the quality of life in diabetic patients. We further divide the subjects based upon having good and poor quality of life by the 50% of maximum possible score taken as cut-off value. Data analysis was carried out using SPSS v22. All tests were done at an alpha (level significance) of 5%; means a significant association was present if the p-value was less than 0.05.

Results

In the present study, we enrolled 200 diagnosed patients with type 2 diabetes mellitus from the outpatient department based on laboratory diagnosis. Most of the

study participants 150 (75%) have belonged to the group of oral hypoglycemic drugs and 50 (25%) belonged to the group of insulin recipients. The mean age of study participants was 44.5 years. Out of the total 136 (68%) were males and 64 (32%) were females. 68 (34%) of the study participants were from nuclear families and 132 (66%) were from joint families. Based on positive family history 76 (38%) of study participants had a positive family history. (Table 1)

Table 1: Distribution of study participants based on sociodemographic data.

Sociodemographic variables		Patients (%)
Mean Age (years)		44.5 years
Sex	Male	136 (68%)
	Female	64 (32%)
Family type	Nuclear	68 (34%)
	Joint	132 (66%)
Mean duration of illness		7.2 years
Family history	Present	76 (38%)

In the present study, on the basis of mean blood glucose levels among study participants, it was found that mean fasting blood glucose levels among patients on oral hypoglycemic drugs was 120.1 mg/dl, and mean fasting blood glucose levels among patients on insulin was 136 mg/dl. This difference was statistically significant (P-value <0.05). The mean post-prandial blood glucose levels among patients on oral hypoglycemic drugs were 192.5 mg/dl and mean post-prandial blood glucose levels among patients on oral hypoglycemic drugs were 186.4 mg/dl. This difference was statistically significant (P-value <0.05). (Table 2)

Table 2: Distribution of study participants on the basis of blood glucose levels.

Blood glucose levels		Mean value (mg/dl)	p-value
Fasting	Patients on insulin	136	<0.05
	Patients on oral hypoglycemics	120.1	
Post-prandial	Patients on insulin	186.4	<0.05
	Patients on oral hypoglycemics	192.5	

In the present study, based on the quality of life scores among study participants it was found that About 68% of the patients were on insulin while 76% of the patients who were on oral hypoglycemics had a satisfactory quality of life. The cut-off value was being 87.5 i.e. the 50% of the total possible mean score value. On the basis of the mean quality of life score among study participants, it was found that mean the quality of life score values among patients on oral hypoglycemic drugs was 115.3 and mean the quality of life score values among patients on insulin was 105.9. This difference was statistically non-significant (P-value >0.05). (Table 3)

Table 3: Distribution of study participants on the basis of the quality of life scores.

Quality of life score	Mean score of patients taking insulin	Mean score of patients taking oral hypoglycemics	p-value
Role limitation due to physical health	20	20.7	>0.05
Physical endurance	19.9	19.6	>0.05
General health	8.2	10.1	>0.05
Treatment satisfaction	10.8	13.5	>0.05
Symptom botherness	9.9	11.4	>0.05
Financial worries	11.3	12.6	>0.05
Emotional/mental health	15.7	16.5	>0.05
Diet satisfaction	10.1	10.9	>0.05
Total Score	105.9	115.3	>0.05

Discussion

In the present study, we enrolled 200 diagnosed patients with type 2 diabetes mellitus from the outpatient department on the basis of laboratory diagnosis. Most of the study participants 150 (75%) belonged to the group of oral hypoglycemic drugs and 50 (25%) have belonged to the group of insulin recipients. The mean age of study participants was 44.5 years. Out of the total 136 (68%) were males and 64 (32%) were females. 68 (34%) of the study participants were from nuclear families and 132 (66%) were from joint families. Based on positive family history 76 (38%) of study participants had a positive family history. Similar results were obtained in a study conducted by Gautam Y et al among patients of diabetes mellitus for the assessment of the quality of life and it was found that the female gender had poor quality of life in comparison to the male gender. They found that poor quality of life scores was significantly (P-value <0.05) associated with lower socioeconomic status, lesser physical activity, and lesser education.[8] Similar results were obtained in a study conducted by Huang M et al among patients of diabetes mellitus for the assessment of the quality of life and it was found that the female gender had poor quality of life in comparison to the male gender. They found that poor quality of life scores was significantly (P-value <0.05) associated with lower socioeconomic status.[9] Similar results were obtained in a study conducted by Garratt A et al among patients of diabetes mellitus for the assessment of the quality of life and it was found that poor quality of life scores was significantly (P value<0.05) associated with lower socioeconomic status and female gender.[10]

In the present study, on the basis of mean blood glucose levels among study participants, it was found that mean fasting blood glucose levels among patients on oral hypoglycemic drugs was 120.1 mg/dl, and mean fasting blood glucose levels among patients on insulin was 136 mg/dl. This difference was statistically significant (P-value <0.05). The mean post-prandial blood glucose levels among patients on oral hypoglycemic drugs were 192.5 mg/dl and mean post-prandial blood glucose levels among patients on oral hypoglycemic drugs were 186.4 mg/dl. This difference was statistically significant (P-value <0.05). Similar results were obtained in a study conducted by Davis T et al among patients of type 2 diabetes

mellitus for the assessment of the quality of life with insulin therapy.[11] Similar results were obtained in a study conducted by Leahy J et al among patients of type 2 diabetes mellitus for the assessment of the quality of life with insulin therapy.[12] Similar results were obtained in a study conducted by Mori Y et al among patients of type 2 diabetes mellitus for the assessment of the quality of life with oral hypoglycemic drugs.[13]

In the present study, on the basis of the quality of life scores among study participants, it was found that About 68% of the patients were on insulin while 76% of the patients who were on oral hypoglycemics had a satisfactory quality of life. The cut-off value was being 87.5 i.e. the 50% of the total possible mean score value. On the basis of the mean quality of life score among study participants, it was found that mean the quality of life score values among patients on oral hypoglycemic drugs was 115.3, and mean the quality of life score values among patients on insulin was 105.9. This difference was statistically non-significant (P-value >0.05). Similar results were obtained in a study conducted by Nagpal J et al among patients of type 2 diabetes mellitus for the assessment of the quality of life and reported 8 domains and 34 items for assessment of the quality of life among patients with diabetes mellitus.[14] Similar results were obtained in a study conducted by Fal A et al among patients of type 2 diabetes mellitus for the assessment of the quality of life and reported the patients who were on oral hypoglycemics had a satisfactory quality of life.[15]

Conclusion

We concluded from the present study that patients who were on oral hypoglycemics had a satisfactory quality of life in comparison to the patients on insulin therapy. The poor quality of life scores was significantly (P-value <0.05) associated with lower socioeconomic status, lesser physical activity and lesser education, duration of illness, and positive family history.

References

1. León LE, Rani S, Fernandez M, Larico M, Calligaris SD. Subclinical detection of diabetic cardiomyopathy with microRNAs: challenges and perspectives. J Diabetes Res. 2016 Dec 6;2016:6143129. doi: 10.1155 /2016/6143129, PMID 26770988.

2. American Diabetes Association AD. Diagnosis and classification of diabetes mellitus. Diabetes Care. 2009 Jan;32(Supplement_1);Suppl 1 [Suppl:S62-7]:S62-7. doi:10.2337/ dc09-S062.

3. Tracy JA, Dyck PJB. The spectrum of diabetic neuropathies. Phys Med Rehabil Clin N Am. 2008 Feb;19(1):1-26, v, v. doi: 10.1016/j. pmr. 2007.10.010, PMID 18194747.

4. Gupta A, Chaturvedi P, Shrivastava SK, Dubey PK. Glitazones for the treatment of diabetes Type-2. Asian J Res Chem. February 2012;5 (2): 164-70.Available on: https://ajrconline.org/AbstractView.a spx?PID=2012-5-2-2.

5. WHO. WHO [Internet]; 2016. Child and Adolescent Mental Health. Available from: https://www.who.int /mental_health/resources/child/en/.

6. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. Arch Gen Psychiatry. 2005 Jun 1;62(6):593-602. doi: 10.1001/archpsyc.62.6.593, PMID 15939837.

7. Math SB, Srinivasaraju R. Indian Psychiatric epidemiological studies: learning from the past. Indian J Psychiatry. 2010 Jan;52(Suppl 1); Suppl 1:S95-S103. doi: 10.4103/ 0019-5545.69220, PMID 21836725.

8. Gautam Y, Sharma A, Agarwal A,

Bhatnagar M, Trehan RR. A cross-sectional study of QOL of diabetic patients at tertiary care hospitals in Delhi. Indian J Community Med. 2009 Oct;34(4):346-50. doi: 10.4103 /0970-0218.58397, PMID 20165632.

9. Huang MF, Courtney M, Edwards H, McDowell J. Factors that affect health outcomes in adults with type 2 diabetes: A cross-sectional study. Int J Nurs Stud. 2010 May;47(5):542-9. doi: 10.1016/j.ijnurstu.2009.10.012, PMID 19932477.

10. Garratt AM, Schmidt L, Fitzpatrick R. Patient-assessed health outcome measures for diabetes: a structured review. Diabet Med. 2002 Jan;19 (1) 1-11.doi:10.1046/j.14645491.2002. 00650.x,PMID 11869297.

11. Davis TM, Clifford RM, Davis WA, Fremantle Diabetes Study. Effect of insulin therapy on quality of life in type 2 diabetes mellitus: the Fremantle Diabetes Study. Diabetes Res Clin Pract. 2001 Apr;52(1):63-71. doi: 10.1016/s0168-8227(00)00 245-x, PMID 11182217.

12. Leahy JL. Insulin therapy in type 2 diabetes mellitus. Endocrinol Metab Clin North Am. 2012 Mar 1;41(1): 119-44. doi: 10.1016/j.ecl.2012.03. 004, PMID 22575410.

13. Mori Y. [Exploring an optimal approach to the use of oral hypoglycemic agents based on CGM results: implications for combination therapy with oral hypoglycemic agents]. Nihon Rinsho. 2011 Aug; 69(8):1505-14. PMID 21838054.

14. Nagpal J, Kumar A, Kakar S, Bhartia A. The development of 'Quality of Life Instrument for Indian Diabetes patients (QOLID): a validation and reliability study in middle and higher income groups. J Assoc Physicians India. 2010 May;58:295-304. PMID 21117348.

15. Fal AM, Jankowska B, Uchmanowicz I, Sen M, Panaszek B, Polanski J. Type 2 diabetes quality of life patients treated with insulin and oral hypoglycemic medication. Acta Diabetol. 2011 Sep 30;48(3): 237-42. doi: 10.1007/s00592-010-0244-y, PMID 21191622.