Psychiatric morbidity and quality of life in patients with type 2 diabetes mellitus treated with insulin versus patients treated with oral hypoglycemic agents

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Abstract

Introduction: Chronic medical illness like diabetes mellitus is associated with significant psychiatric co-morbidity. Presence of psychopathology along with the mode of the treatment (insulin versus oral hypoglycaemic agents) can influence the quality of life in these patients. The aim of our study was to study prevalence of psychiatric morbidity and quality of life in patients with diabetes mellitus and its association with mode of treatment.

Materials and Methods: This was a cross sectional observational study conducted at medicine out-patient department of a tertiary care teaching hospital in Navi Mumbai where 100 patients with diabetes mellitus receiving either insulin or oral hypoglycaemic agents (OHA) were assessed for psychiatric morbidity using diagnostic and statistical manual V (DSM V). Patient's quality of life was evaluated using WHOQOL-BREF scale. Data was analyzed using SPSS version 17 using descriptive statistics and unpaired t test.

Results: The psychiatric manifestations were significantly more in patients on Insulin treatment than those on OHA (54% v/s 8%, $p<0.001$). Mean scores of QOL were found to be significantly lower in patients receiving Insulin therapy as compared to those receiving therapy with OHA on domains of physical health, psychological health and environment on WHOQOL-BREF scale.

Conclusion: Mode of treatment in DM influences the occurrence of psychiatric morbidity and quality of life in these patients. There is a need for holistic care of patients with DM by choosing a particular treatment regimen and assessing its overall impact on patient's QOL.

Keywords: Diabetes Mellitus, Insulin, Oral hypoglycemic agents, Psychiatric morbidity, Quality of life.

Introduction

Diabetes Mellitus (DM) is an endocrine system disorder, resulting from diminished insulin action. As per WHO fact sheet, type 2 diabetes (formerly named non-insulin-dependent) is a common form of diabetes which is characterised by body's inability to respond properly to the action of insulin produced by the pancreas. The prevalence of DM is alarmingly increasing all over the world with type 2 diabetes making up about 90% of the cases. Recently compiled data show that approximately 150 million people have diabetes mellitus worldwide, and that this number may well double by the year 2025.[1] The International Diabetes Federation (IDF) also estimates the total number of diabetic patients to be around 40.9 million in India and expected to reach 69.9 million by 2025.[2]

DM is associated with a variety of physical symptoms due to fluctuating sugar levels, resulting in a variety of complications which include nephropathy, retinopathy, neuropathy, ischemic heart disease, stroke, and diabetic foot. Studies show that in addition to the physical discomfort of disease, patients also have to endure mental and social distress arising from financial burdens and problems in family and occupation. Prevalence of psychiatric symptoms or disorders especially depression is common among patients with diabetes as compared to the general population.[3,4] However, many of psychological symptoms are under recognized and under treated.

Diabetes, being a chronic medical condition and carrying physical and psychological complications can be a difficult condition to live with for many patients resulting in a poor sense of well being. The impact of long-term complications can be severe, leading to major changes in the patient's ability to function in daily life. Continuing threat of complications can be overwhelming. Social relationships may be severely affected, and adjustment to the disease is often accompanied by a variety of negative emotional responses such as anger, guilt, frustration and loneliness. Thus, areas of quality of life that could be affected in diabetic patients include physical, psychological and social spheres.[5] Additionally, presence of psychopathology along with the disease process can result in a poor quality of life (QOL).

There are several studies concerning influence of treatment on mortality and other biomedical parameters, few concerning the influence of type of therapy on QOL of patients.

Aims and Objectives

The current study aimed at evaluating and comparing the psychiatric morbidity and quality of life in diabetic patients on different treatment modalities i.e. on insulin therapy and OHA.

Inclusion Criteria:

1. Patients of age 18- 60 years, diagnosed with type 2 DM and started on either oral hypoglycaemic agents or insulin injections (since at least two years).
2. Patients willing to give informed consent
3. Patients with no major psychiatric disorder diagnosed before the diagnosis of DM.

Exclusion Criteria:

1. Presence of any serious physical illness hampering the interview process
2. Presence of severe psychiatric illness or cognitive impairment interfering with the interview process.
3. Patients receiving both insulin and oral hypoglycemics were excluded.

Scales used

a. Socio-demographic data was collected using a self-designed questionnaire.
b. Diagnostic and statistical Manual 5 (DSM 5) [6] was used to assess psychiatric morbidity in the patients.
c. WHOQOL-BREF scale: Is a generic quality-of-life instrument with excellent reliability and validity that has been validated to be applicable to people living across various cultures.[7] The instrument comprises of 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. In addition, the WHOQOL-BREF is proposed to be of use in the assessment and evaluation of treatment efficacy.

Materials and Methods

This was an analytical, cross- sectional, comparative study conducted at the medicine out-patient department of a tertiary care teaching hospital in Navi Mumbai. Study subjects were enrolled using convenient sampling method. Hundred adult patients diagnosed with Type 2 DM and receiving treatment for the same, fulfilling the inclusion and exclusion criteria were included in study and were assigned to two groups: Group A - 50 patients on insulin therapy; Group B - 50 patients on OHA after obtaining informed consent. Institutional ethics committee approved of the study. Patients were evaluated for any psychiatric disorders using the DSM 5 criteria and quality of life was evaluated using WHOQOL-BREF scale. Data was analyzed using SPSS version 17 using descriptive statistics and unpaired 't' test. For tests of significance used, the p value was set at 0.05.

Results

Table 1 describes socio-demographic profile of the study sample. Mean age of the patients in the two groups was 50.36 and 45.80 years respectively. Majority of the patients in both groups were married males having secondary & higher education and were employed.

In our study, mean duration of DM type 2 was 3.61yrs (SD=1.01yrs) in group A while it was 2.81yrs (SD=1.37yrs) in group B. Approximate treatment cost per month incurred by patients of group A was Rs. 4226 whereas that was Rs.881 in group B.

Table 1: Socio-demographic profile of the patients

Socio-demographic parameters		Group A (N=50)	Group B (N=50)
Age	Mean	50.36	45.80
	SD	6.00	9.92
Sex	Male	28 (50.9%)	27 (49.1%)
	Female	22 (44%)	23 (46%)
Education	Illiterate	10 (20%)	7 (14%)
	Primary	1 (2%)	4 (8%)
	Secondary & Higher	39 (78%)	39 (78%)
Occupation	Unemployed	13 (26%)	12 (24%)
	Employed	37 (74%)	38 (76%)
Marital status	Married	49 (98%)	43 (86%)
	Others	1 (2%)	7 (14%)
Duration since diagnosis	Mean	3.61	2.81
	SD	1.01	1.37
Approximate treatment cost per month in Rs.	Mean	4226.0	881
	SD	1832.3	227.9

Prevalence of psychiatric morbidity was observed to be 31% overall (Fig. 1). On comparing the prevalence of psychiatric morbidity across both the groups, it was seen that the psychiatric manifestations were more in patients on Insulin treatment than those on OHA alone (54% v/s 8% respectively). Which was found to be statistically significant. ($p<0.001$). (Table 2)

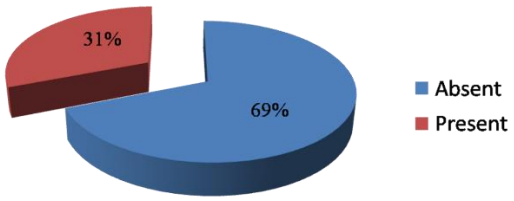

Fig. 1

Table 2: Association of psychiatric morbidity with mode of treatment

		Group A	Group B	p Value
Psychiatric morbidity	Absent	23 (46%)	46 (92%)	<0.001*
	Present	27 (54%)	4 (8%)	
Total		50 (100%)	50 (100%)	

*statistical test: unpaired 't' test,p<0.05

In our study, the scores on all domains of WHOQOL-BREF scale were low showing poor quality of life in general. Mean scores of QOL were found to be significantly lower in patients receiving Insulin therapy as compared to those receiving therapy with OHA on domains of physical health, psychological health and environment. (Table 3)

Table 3: Association of QOL scores with mode of treatment

Domain on WHOQOL-BREF	Mode of treatment	Mean	SD	P Value
Physical health (Mean score- 11.58 ± 1.23)	Group A	10.80	0.86	0.00*
	Group B	12.35	1.02	
Psychological health (Mean score- 11.24 ± 1.32)	Group A	10.73	1.25	0.00*
	Group B	11.74	1.20	
Social relation (Mean score- 12.83 ± 2.41)	Group A	13.20	1.83	0.12
	Group B	12.45	2.84	
Environment (Mean score- 10.70 ± 1.37)	Group A	9.95	1.41	0.00*
	Group B	11.43	0.83	

*statistical test: unpaired 't' test.p<0.05

Discussion

The quality of life of the patients is adversely affected due to the course of illness, restriction of diet and activity, closely monitored treatment schedules and the continued risk of acute and chronic life threatening complications.[8] The mode of the treatment influencing parameters like cost incurred due to treatment, feasibility of drug administration, and side effects of the drugs can also influence the quality of life in these patients.

Our study observed mean age of the patients in both groups to be 50.36 and 45.80yrs respectively with majority being married males and having secondary & higher education. These findings are in accordance with that of a study by Chaudhary et al[9] reporting that most of the patients of DM type 2 were above the age of 50 years and educated up to matriculation.

The interface of diabetes and psychiatry is fascinating, sharing a bidirectional relationship.[10] Research highlights that approximately one-third of patients with diabetes have a diagnosable psychological problems at some point during their lifetime.[11] Variety of psychiatric conditions are reported to be associated with DM, of which mood and anxiety disorders are the most common diagnoses and occur significantly more often in patients with diabetes than in the general population. The etio-pathogenesis of depression in DM can be explained on bio-psycho-social model where dysfunction of hypothalamic pituitary adrenal axis, neuroglycopenic symptoms due to fluctuating sugar levels forms the biological domain,[12] distress due to physical symptoms can add to the psychological domain and the inability to carry out social and occupational functioning, financial burdens and disability can be implicated in the social aetiology of depression. Overcorrection of sugar levels with insulin sometimes can produce neuroglycopenic symptoms which mimics anxiety symptoms. Some studies show that treatment with hypoglycemic medicines may also lead to severe anxiety.[13]

Our finding of 31% of the patients having psychiatric morbidity is in accordance with previous research. Studies have found prevalence of psychiatric disorders to be ranging from 26.6% to 42.5%in DM type 2 patients.[14,15]

Among both the groups, association of occurrence of psychiatric morbidity with mode of treatment was significant. Our findings are consistent with that of study by Noh JH et al who reported that, overall, 32.4% of the diabetic subjects showed depressive symptoms. Compared to the oral drug group, the insulin group showed a significantly higher frequency of depressive symptoms (insulin group, 48.0%; oral drug group, 27.3%; $p<0.01$).[16]

In contrast to our findings, Raut N et al, reported that 46% (N-23) of patients on insulin and 40% (N-20) patients taking oral hypoglycemics had significant psychopathology. No significant difference was found on any of the subscales of SCL-90 in groups using insulin and oral hypoglycaemic agents.[17] Another Indian study also showed that, there was no significant difference in both the prevalence of depression and anxiety in the groups taking insulin or oral agents. Unlike our study these studies show that the mode of treatment (oral or injectable) had no bearing on the symptoms of anxiety and depression in diabetic patients.[10] This significant difference in psychiatric morbidity among both the groups in our study may be explained by the fact that apart from glycemic control achieved by the treatment, other factors like financial burden, poor treatment acceptance, feasibility of administration of the treatment, physical complications and poor social support may impact the occurrence of psychiatric morbidity in diabetic patients with different modality of treatments.

Quality of life in terms of health relates to functioning and sense of well being across variety of domains including physical, psychological, and social functioning which is affected by the disease and its treatment. It can be considered as an indicator of how well a patient is benefited or affected by one's illness or it's treatment influencing the subjective sense of well-being and overall functioning in one's personal, social and financial aspects of life. Any assessment of advantages and disadvantages of any therapy should include evaluation of its impact on patient's QOL.

Low scores on all the domains of the QOL- BREF scale in our study highlights negative impact of type 2 DM on life of patients in general. Presence of various medical and psychiatric morbidities in DM may lead to substantial decrease in the patients' QOL. A study by Bosić et al also showed significantly lower scores in all domains of quality of life scale in diebetic patients.[18]

In our study, mean scores of QOL were found to be significantly lower in patients receiving insulin therapy as compared to those receiving therapy with OHA on domains of physical health, psychological health and environment. Similar research has reported a higher assessment of quality of life in the patients treated with OHA in somatic and environmental domains.[19]

In contrast, a study found that Insulin therapy in poorly controlled type 2 diabetic patients resulted in a significant clinical improvement of glycaemia control, accompanied by a reduction of hyperglycaemic complaints, without an adverse influence on quality of life.[20]

Although it is postulated that insulin therapy has better glycaemic control and can result in symptomatic improvement in patient, can eventually lead to lower QOL due to discomfort, worry related to insulin administration.[21]

An Indian study, in contrast, concluded that the type of treatment modality does not seem to affect quality of life in diabetics but glycaemic control does affect it.[17] Another study assessing effects of three types of intervention in diabetic patients, found little difference in the quality of life between these three groups.[22]

While, a study showed that patients on insulin had lower quality of life than those taking oral medications or diet restriction,[23] another study reported that patients taking oral hypoglycaemic agents worried more about their condition than patients receiving insulin alone or those treated by diet modification only. Same study also reported that insulin treatment of type-2 diabetes mellitus leads to decreased satisfaction with health related quality of life and reduced general well-being.[24,25]

The differences in the observations related to impact of mode of treatment on overall quality of life can be attributed to various factors like the socio- economic variations, availability of social support, duration of illness, scales used and the presence of diabetes related co-morbid health complications etc. In our study, presence of significantly more psychiatric morbidity in insulin treated patients might have led to increased disease burden due to poor glycemic control and impairment in diabetes monitoring, increased risk of diabetes related complications and eventually decreased quality of life.

Conclusion

The current study highlights that the mode of the treatment in DM significantly influences the occurrence of psychiatric morbidity and QOL.

There is a need for holistic care of patients with DM while choosing a particular treatment regimen. Screening regularly for associated psychiatric morbidity and assessing its overall impact on patient's QOL is desirable.

Limitations

The limitations of the current study are that the sample is not community based and it's a cross-sectional study. Also various socio-demographic and DM related laboratory parameters were not studied for its influence on patients QOL.

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