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**Research Article**

# Comparison of psychiatric morbidity and disease specific quality of life in patients of diabetes treated with insulin versus oral hypoglycemics

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## ABSTRACT

**Background:** Psychiatric co-morbidity along with other disease and treatment related factors including treatment modality (i.e. insulin versus oral agents) affect the quality of life of diabetic patients significantly. The aim and objectives of the study was to study psychiatric morbidity and quality of life and relationship between these factors in patients of type-2 diabetes being treated with insulin versus oral hypoglycemics.
**Methods:** A cross sectional study with patients of type-2 diabetes 50 each taking insulin and oral hypoglycemics was carried out in the endocrinology outpatient department and wards of the tertiary teaching municipal medical institute in Mumbai. Subjects were assessed using QOLID (quality of life instrument for Indian diabetic patients) and SCL-90R (symptoms checklist 90 revised). Software used was SPSS-19. Data was analyzed using Pearson's bivariate correlation and unpaired t-test according to applicability.
**Results:** 76% of subjects on insulin while 82% on oral hypoglycemics had satisfactory quality of life. There was no statistically significant difference in the two groups on quality of life. (t= -1.130, p=0.261). 46% of patients on insulin and 40% on oral hypoglycemics had significant psychopathology. Highest scores were found on depression, somatization and obsessive compulsive symptoms in both groups; however there was no significant difference in the two groups on either global score or the subscales of SCL-90R. Increase in psychopathology was associated with decrease in quality of life (negative correlation) in diabetics as a whole (R= -0.748, p=0.000) as well as on all subscales. Female gender was associated with better quality of life while male gender, age, duration of illness, blood glucose levels and presence of associated complications with poor QOL.
**Conclusion:** Treatment modality does not seem to affect quality of life or psychopathology in diabetic patients and increased psychopathology is associated with poor quality life in them.

**Keywords:** Diabetes, Insulin, Oral hypoglycemics, Disease specific quality of life

## INTRODUCTION

Diabetes mellitus, often simply referred to as diabetes is a group of metabolic diseases in which a person has high blood sugar, either because the body does not produce enough insulin, or because cells do not respond to the insulin that is produced. This high blood sugar produces the classical symptoms frequent urination, increased thirst and increased hunger.[1]

The prevalence of diabetes is rapidly rising all over the world at an alarming rate.[2] As of 2000 at least 171 million people i.e. 2.8% of the population worldwide suffer from diabetes. The diabetes epidemic is more concerning for India as World Health Organization

(WHO) reports show that 32 million people had diabetes in the year 2000.[1] The international diabetes federation (IDF) also estimates the total number of diabetic patients to be around 40.9 million in India and this is further expected to rise to 69.9 million by the year 2025.[3] Though there is an increase in the prevalence of type-1 diabetes also, the major reason for the epidemic is the type-2 diabetes, which accounts for more than 90 per cent of all diabetes cases.

Healthcare professionals and researchers are becoming increasingly aware of the need to assess quality of life as important measure of health outcome in diabetic patients.[4] Studies have shown that diabetes individually and in combination with co-existing chronic medical conditions significantly impairs the health-related quality of life of individuals with diabetes mellitus.[5,6] A study has shown that socio-demographic factors like sex, race, level of education and employment status affect quality of life in diabetes. Also among disease related factors, increasing number of medications, insulin use, duration and presence of depression have also been found to be associated with decreased health related quality of life.[7]

Approximately one-third of patients with diabetes have diagnosable psychological problems at some point during their lifetime.[8] Mood and anxiety disorders are the most common diagnoses and occur significantly more often in patients with diabetes than in the general population. These disorders can lead to poor diabetes control and impairment in diabetes self-care and thus decreased quality of life.

Major depression affects approximately one of every five patients with diabetes and severely impairs quality of life and all aspects of functioning.[9] It has added importance in patients of diabetes due to its association with poor treatment adherence, poor glycaemic control, and increased risk for micro and macro-vascular disease complications.[10]

Though psychotic disorders are relatively less prevalent than mood and anxiety disorder; the association of psychotic disorders (including schizophrenia) and diabetes is well established. Overall risk of type 2 diabetes in people with schizophrenia is between two and four times that in the general population. It has been also seen that people with diabetes and schizophrenia have higher mortality rates and mortality risk in patients with schizophrenia.[11]

Thus we can say that co-occurrence of psychiatric disorders not only impairs quality of life of an individual but it has also been found to be associated with increased cost of care, poor treatment adherence, poor glycaemic control, increased risk of diabetic ketoacidosis, higher frequency of hospitalization, and higher rate of absenteeism from work.[12]

By now we know the factors affecting quality of life in diabetics. The type of treatment patients receive also determine their quality of life. A study found little difference in the quality of life between patients treated by diet restriction, oral agents or insulin therapy.[13] While a study showed that patients on insulin had lower quality of life than those taking oral medications or diet restriction.[14] Also a study reported that patients with type-2 diabetes mellitus taking oral 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 greater impact of illness.[15]

In all, we may infer that factors like psychiatric co-morbidity along with other disease related factors affect the quality of life of diabetic patients significantly. Also research in past is lacking regarding effect of treatment modality i.e. insulin and oral hypoglycemics and other factors on quality of life and more so in Indian context. So this study aims to compare diseased specific quality of life and factors affecting it in patients (especially psychiatric morbidity) of type 2 diabetes on treatment with insulin versus oral hypoglycemics and also to study relationship of these factors with quality of life in diabetics.

Objectives of the study is to assess the quality of life in patients of type-2 diabetes mellitus treated with insulin versus oral hypoglycemic, to assess the psychiatric morbidity and other factors (socio-demographic and disease related) affecting quality of life in patients of type-2 diabetes mellitus treated with insulin versus oral hypoglycemic and to assess relationship between psychopathology and other factors affecting quality of life with quality of life in patients of type-2 diabetes mellitus.

## METHODS

The study was conducted in the endocrinology outpatient department and wards of the tertiary teaching municipal medical institute in Mumbai.

100 consecutive patients diagnosed with type-2 diabetes mellitus on either insulin or oral hypoglycemics (not both) for at least 12 weeks.[16]

### *Inclusion criteria*

- Patients diagnosed with type-2 diabetes mellitus by endocrinologist being treated with either insulin or oral hypoglycaemic, aged between 18-60 years and duration of disease at least two years.
- Patients willing to participate in the study and willing to give informed consent for the study.

***Exclusion criteria***

- Patients suffering from any chronic medical/physical illness not related to diabetes, prior to or in addition having diabetes mellitus.
- Patients of type II diabetes receiving both insulin and oral agents.

***Materials***

Semi-structured proforma, to collect demographic and disease related variables of subjects, Scales.

***Symptom check list 90 r (scl90-r)***

It is a screening instrument for general psychopathology/symptoms. It is developed by derogatis LR, and is widely used screen for global psychopathology and general symptom measure. It consists of 90 self-rated items. Each item asks respondent to report how much discomfort he/she experienced over past week and past day selected symptoms/psychological states. Responses are scored on 0 to 4 continuums. The scl90-r cover nine symptoms dimension, somatisation, obsessive compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism. Also have a global severity index, and has proven reliability and validity. The cut off for global severity index was kept at 0.57 for significant psychopathology.[17]

***Quality of life instrument for Indian diabetes patients (Qolid)***

Developed by Jitender Nagpal and colleagues. The questionnaire developed and validated consists of 34 items covering eight domains which comprehensively covers aspects of quality of life namely role limitations due physical health, physical endurance, general health, treatment satisfaction, symptom frequency, financial worries, mental health, and diet advice satisfaction. All these domains and items had high internal consistency (Cronbach's alpha of 0.894). The psychometric strength of the questionnaire is further enhanced by the use of a standard likert scale across all questions. In summary qolid is a reliable, valid and sensitive tool for the assessment of diabetes specific quality of life in Indian subjects. For the purpose of dividing the subjects into those having good and poor quality of life the 50% of maximum possible score i.e. 87.5 (total score 175) was taken as cut off value.[18]

## RESULTS

***Disease related variables***

Average duration of illness in patients taking insulin was 8.22 years while for patients taking oral hypoglycemics the duration being 7.84 years.

Family history of diabetes was present in 44% of patients taking insulin and 33% of patients taking oral hypoglycemics.

Among patients taking insulin the average number of units of insulin taken were 59.6.While among patients taking oral hypoglycemics 28% were on single oral hypoglycemic while rest i.e. 72% were taking 2 agents.

The mean fasting and post-prandial blood glucose levels in patients taking insulin was 138 and 197.6 while in the groups taking oral hypoglycemics was 117.3 and 177.6 respectively. The difference being statistically significant for fasting blood glucose levels ($p<0.01$) using unpaired t-test and though patients taking insulin had more mean post-prandial sugar the difference was not statistically significant (Table 2).

**Table 1: Socio-demographic and illness related variables.**

| | Insulin N (%) | Oral hypoglycemics N (%) |
|---|---|---|
| **Sex** | | |
| Females | 18(36) | 20 (40) |
| Males | 32(64) | 30 (60) |
| **Type of family** | | |
| Nuclear | 42 (84) | 38 (76) |
| Joint | 8 (16) | 12(24) |
| **Socio-economic status** | | |
| Middle | 27(54) | 27(54) |
| Lower | 23(46) | 23(46) |
| Duration of illness | | |
| Years | 8.22 | 7.84 |
| **Family history** | | |
| Present | 22(44) | 17(34) |

**Table 2: Mean fasting and post-prandial blood glucose levels in the two groups.**

| Blood glucose levels | Mean | t value | p value |
|---|---|---|---|
| Patients on insulin (fasting) | 138 | 2.749 | 0.007** |
| Patients on oral hypoglycemics (fasting) | 117.3 | | |
| Patients on insulin (post-prandial) | 197.6 | 1.887 | 0.062 |
| Patients on oral hypoglycemics (post-prandial) | 177.6 | | |

On assessing presence or absence of complications it was found that 62% of patients on insulin and 52% of patients on oral hypoglycemics showed some or other complications associated with diabetes. The most common complication noted overall was neuropathy followed by vascular complications like stroke ,Ischaemic heart disease and thrombophlebitis and retinopathy (Figure 1).

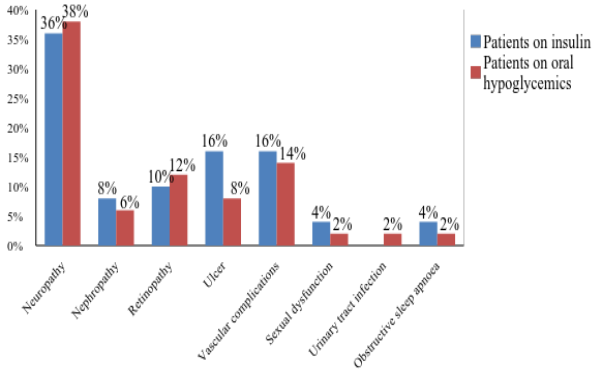


**Figure 1: Mean fasting and post-prandial blood glucose levels in the two groups.**

***Quality of life***

About 76% of the subjects on insulin while 82% of the patients on oral hypoglycemics had satisfactory quality of life (Figure 2) the cut off being 87.5 (50% of total possible score i.e.175) the rest of them having poor quality of life.

Mean of total quality of life scores for patients taking insulin was 107.5 while of those taking oral hypoglycemics was 112.1, the difference being not significant statistically (Table 3).

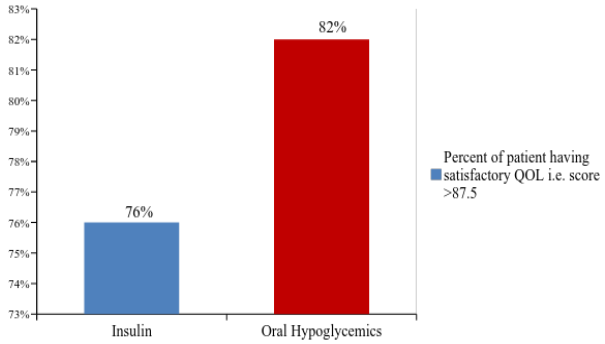


**Figure 2: Percent of patient having satisfactory QOL.**

**Table 3: Comparison of quality of life scores in the two groups.**

| Quality of life score | Mean score of patients taking insulin | Mean score of patients taking oral hypoglycemics | t-value | p-value |
|---|---|---|---|---|
| Role limitation due to physical health | 20.1 | 20.9 | -0.783 | 0.436 |
| Physical endurance | 20 | 19.8 | 0.211 | 0.833 |
| General health | 8.5 | 9.4 | -1.907 | 0.059 |
| Treatment satisfaction | 11.9 | 12.4 | -1.076 | 0.284 |
| Symptom botherness | 10.1 | 10.7 | -1.537 | 0.127 |
| Financial worries | 11.5 | 12.1 | -1.37 | 0.174 |
| Emotional/mental health | 16 | 16.9 | -1.184 | 0.239 |
| Diet satisfaction | 9.2 | 9.7 | -1.046 | 0.298 |
| Total Score | 107.5 | 112.1 | -1.13 | 0.261 |

***Psychopathology***

With cut off score being 0.57 for Global Severity Index (GSI), we found that 46% (N-23) of patients on insulin and 40% (N-20) patients taking oral hypoglycemics had significant psychopathology (Table 4).

Highest scores were found on depression, somatization and Obsessive compulsive in both groups while lowest

scores were for paranoid ideation in insulin group and psychoticism in oral hypoglycemics group. The percent of subjects having scores more than mean in depression were 27 and 21, somatization were 26 and 24, obsessive compulsive were 22 and 23 and anxiety were 18 and 16 for the insulin and oral hypoglycemics group respectively. No significant difference was found on any of the subscales of SCL-90 in groups using insulin and oral hypoglycemics (Table 5).

**Table 4: Percentage of subjects from the two groups having significant psychopathology (GSI>0.57).**

| Presence of significant psychopathology(>0.57) | | GSI | | | | Total |
|---|---|---|---|---|---|---|
| | | <0.57 | | >0.57 (significant psychopathology) | | |
| | | N | % | N | % | |
| Group | Insulin | 23 | 46 | 27 | 54 | 50 |
| | Oral hypoglycemics | 20 | 40 | 30 | 60 | 50 |

**Table 5: Comparison of scores of subscales and GSI of SCL-90 in the two groups.**

| Psychopathology | Mean score of patients taking insulin | Mean score of patients taking oral hypoglycemics | t-value | p-value |
|---|---|---|---|---|
| Somatization | 0.81 | 0.85 | -0.445 | 0.657 |
| Obsessive compulsive | 0.67 | 0.65 | 0.118 | 0.907 |
| Interpersonal sensitivity | 0.28 | 0.24 | 0.637 | 0.526 |
| Depression | 1.29 | 1.17 | 0.900 | 0.370 |
| Anxiety | 0.65 | 0.60 | 0.582 | 0.562 |
| Anger hostility | 0.48 | 0.42 | 0.521 | 0.603 |
| Phobic anxiety | 0.45 | 0.45 | 0.049 | 0.961 |
| Paranoid ideation | 0.18 | 0.19 | -0.142 | 0.888 |
| Psychoticism | 0.20 | 0.15 | 1.630 | 0.106 |
| GSI | 0.57 | 0.55 | 0.404 | 0.687 |

***Correlations***

***Socio-demographic variables and quality of life***

*Age:* Increasing age was associated with poor overall quality of life ($p<0.05$, Pearson's correlation) in whole group.

*Gender:* Males had significantly lower overall quality of life ($p<0.05$, independent t-test) as compared to females and the difference was statistically significant.

*Family type:* There was no difference in total quality of life in patients living in joint or nuclear families however those living in nuclear families had better diet satisfaction.

*Socioeconomic status:* our study showed that there was no difference in quality of life as a whole or on the subscales in lower and middle socioeconomic class ($p>0.05$),meaning that socioeconomic status does not seem to have a bearing on quality of life in diabetic patients.

***Disease related variables and quality of life***

*Duration of illness:* We found that duration of illness had no significant association with total quality of life score, however it was associated negatively with two quality of life subscales significantly ($p <0.05$) namely general health and physical endurance, meaning that long duration of illness is associated with poor general health and physical endurance.

*Treatment:* We found that in patients taking insulin the number of units of insulin were associated negatively with overall quality of life ($p<0.05$) and also subscales like role limitation due to physical health and physical endurance ($p<0.01$). However there was no difference in quality of life in oral hypoglycemics group in those taking one or more than one agent.

*Blood glucose levels:* On studying relationship between fasting and post-prandial blood glucose levels with quality of life using Pearson's bivariate correlation it was found that both were negatively associated with quality of life total scores($p <0.05$) meaning that increasing blood sugar levels either fasting or post-prandial are associated with poor quality of life.

*Presence of complications*: It was seen that patients in the population having some or other diabetes associated complication had no significant difference in the total scores on quality of life when compared with those not having any complications, however those having them had poor score on subscales like general health, symptom botherness and diet satisfaction($p < 0.05$).

*Family history of diabetes mellitus:* our study found that there was no statistically significant difference in overall quality of life in those having family history of diabetes and those not having it.

**Table 6: Relationship between global severity index (GSI) and quality of life.**

| Quality of life | R | p-value |
|---|---|---|
| Role limitation due to physical health | -0.679 | 0.000** |
| Physical endurance | -0.639 | 0.000** |
| General health | -0.622 | 0.000** |
| Treatment satisfaction | -0.395 | 0.000** |
| symptom botherness | -0.492 | 0.000** |
| Financial worries | -0.590 | 0.000** |
| Emotional/Mental health | -0.738 | 0.000** |
| Diet satisfaction | -0.497 | 0.000** |
| Total | -0.748 | 0.000** |

**p <0.01; R=Coefficient of correlation.

**Table 7: Relationship between subscales of scl-90 and subscales of quality of life significant negative correlation (p<0.05).**

| Psycho-pathology / Quality of life | Somatization | Obsessive Compulsive | Inter-personal sensitivity | Depression | Anxiety | Anger Hostility | Phobic Anxiety | Paranoid Ideation | Psychoticism |
|---|---|---|---|---|---|---|---|---|---|
| Role Limitation Due to Physical Health | ↓ | ↓ | ↓ | ↓ | ↓ | | ↓ | ↓ | ↓ |
| Physical Endurance | | | | | | | | | |
| General Health | | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| Treatment satisfaction | ↓ | | ↓ | ↓ | ↓ | | ↓ | | ↓ |
| Symptom botherness | ↓ | ↓ | ↓ | ↓ | ↓ | | ↓ | | ↓ |
| Financial Worries | ↓ | ↓ | ↓ | ↓ | ↓ | | ↓ | ↓ | ↓ |
| Emotional /Mental Health | ↓ | ↓ | ↓ | ↓ | ↓ | | ↓ | ↓ | ↓ |
| Diet Satisfaction | ↓ | ↓ | ↓ | ↓ | ↓ | | ↓ | ↓ | ↓ |

Significant negative correlation (p<0.05)

## DISCUSSION

Results of the study showed that about 76% of the subjects on insulin while 82% of the patients on oral hypoglycemics had satisfactory quality of life while 24% of patents on insulin and 18% patients on oral hypoglycemics had poor quality of life. The mean total quality of life scores for patients taking insulin and oral hypoglycemics were 107.5 and 112.1 respectively. A study on the other hand showed that 20.7% had good quality of life, 65.4 had fair quality of life and 13.9 had poor scores overall.[19]

Also there was no significant difference in the two groups on total quality of life score or the subscale scores namely role limitation due to physical health, physical endurance, general health, treatment satisfaction, symptom botherness, emotional/mental health and lastly diet

satisfaction. In contrary a study found that patients with insulin had better quality of life on psychological domain while patients taking oral hypoglycemics had better quality of life on environmental and somatic domains.[20]

However the study used WHO-QOL BREF which measures overall quality of life while we used QOLID which measures quality of life related specifically to diabetes and associated factors which may account for the variation. Another study done in India to validate the QOLID similarly found no difference in the groups using insulin or other modes of therapies on any subscale using the same instrument.[18]

Diabetes and psychiatric disorders share a bi-directional relationship influencing each other in many ways. Psychopathology was assessed using SCL-90 scale on which we found that 46% patients on insulin and 40% patients on oral agents had significant psychopathology. In a hospital based survey in New Delhi, nearly one third of subjects of diabetes had a psychiatric illness.[21]

Though prior research shows that lesser degree of psychological distress not amounting to psychiatric morbidity is more common in diabetics our study found the percent of subjects having significant scores on depression were 27 and 21, somatization were 26 and 24, obsessive compulsive were 22 and 23 and anxiety were 18 and 16 for the insulin and oral hypoglycemics group respectively. But the difference not being statistically significant. An Indian study showed that prevalence of depression in diabetics ranges from 8.5 to 32.5% which is similar to what we found and of anxiety disorder up to 30% which is significantly higher than our findings.[21] A German based study showed lower figures than our study for prevalence of somatization disorders which was around 7.9% which was no higher than non-diabetic population.[22]

A study in India also showed that, there was no significant difference in both the prevalence of depression and anxiety in the groups taking insulin or oral agents like what we found. This shows that the mode of treatment (oral or injectable) has no bearing on the symptoms of anxiety and depression in diabetic patients.[21]

Diabetes is a life-long illness. In our study we found that Increasing age was associated with poor overall quality of life ($p < 0.05$, Pearson's correlation) in whole study group. Also all subscales except symptom botherness and financial worries correlated negatively with age meaning that with increasing age quality of life related to diabetes decreases on all the aspects. The reason may be same as for duration of disease moreover as age increases occurrence of other co-morbidities increases which may further impair health and quality of life. A study similarly showed that age was associated negatively with almost all aspects of quality life in diabetics using SF-36 scale. However unlike our study it showed no effect on general health subscale with which we found negative association.[22]

Males had significantly lower overall quality of life ($p<0.05$, independent t-test) as compared to females and the difference was also significant on subscales like role limitation Due to physical health, treatment satisfaction symptom botherness, Financial worries and emotional/mental health. A study done in Delhi (India) showed contrary results which reported better quality of life using SF-36 In males on almost all the subscales.[22] The reason for our findings may be more occurrence of risk factors like obesity, raised cholesterol, history of smoking and drinking in males which impair outcome in diabetes adversely.[23]

A number of demographic and social factors have been found to impact on the illness development and health outcomes in diabetes.[24] However our study found that factors like family type, number of family members and socioeconomic status did not affect quality of life significantly, only those living in nuclear families had better diet satisfaction. Prior research in India supports our finding regarding relationship between family type and quality of life but showed that people belonging to lower socio-economic status had poor quality of life on all the aspects.[23]

Duration of illness had no significant association with total quality of life score, however it was associated negatively with two quality of life subscales significantly ($p < 0.05$) namely general health and physical endurance. A study done in India showed that duration of disease affected all aspects except mental health, physical functioning and general health.[23] The negative association between duration and general health and physical endurance subscales in our study may be due the fact that occurrence of diabetes related complications increase as duration increases which obviously will affect general health and physical ability.[25]

Studies investigating the relationship between insulin therapies on quality of life in type-2 diabetes have produced conflicting results in past ranging from no effect to improving the quality of life items.[26] In our study we found that patients taking more units of insulin had poorer quality of life overall and also on subscales like role limitation due to physical health and physical endurance. Which may be due to the fact that higher doses of are insulin required in those with advanced disease and poor glycaemic control which are associated with poorer health outcomes.[27] A study similarly found that though factors like improved hyperglycaemic symptoms may initially hide the unfavourable aspects of insulin self-administration, their effect wanes and a lower quality of life supervenes after few years.[28]

Among subjects taking oral hypoglycaemic agents 28% were on single oral hypoglycemic while rest i.e. 72% were taking 2 agents. This may be attributed to the fact

that with monotherapy, it is impossible to achieve proper glycaemic control, and combination therapy appears to be the only option available to fine-tune glycaemic control.[29] Our study however found no difference in quality of life in oral hypoglycemics group in those taking one or more than one agents.

Though we found no significant difference in total quality of life in patients having and not having diabetes associated complications, quality of life on subscales namely general health, symptom botherness and diet satisfaction was poorer in patients having complications. A study similarly reported that complications negatively affect physical function, physical role difficulty and the quality of life in general health domain.[3]

The long-term health benefits of good glycaemic control in diabetes patients have been well documented in prior research.[31] Diabetes management typically focuses on glycaemic control to prevent acute and chronic complications while enhancing quality of life. Our study found that with increase in fasting and post-prandial glucose levels were associated with poor total quality of life and same was true for subscales like Role Limitation Due to Physical Health, Physical endurance, General health, diet satisfaction, and emotional/mental health and treatment satisfaction. In addition post-prandial levels also correlated negatively with symptom botherness subscale. A study similarly showed that patients having high blood glucose levels had poor quality of life on almost all aspects of quality of life.[23] Glycaemic control is one of the most important factors determining quality of life as poor glycaemic control leads to diabetes related complications which are associated with poor quality of life.[32]

Our study found that there was no statistically significant difference in overall quality of life in those having family history of diabetes and those not having it. There are scares data to compare our findings but a study showed that family history of diabetes is more likely to be present in males and is associated with poor disease outcomes like quality of life.[33]

***Psychopathology and quality of life***

Comorbidity of mental disorders with chronic health conditions like diabetes has emerged as a matter of considerable clinical and policy interest. Diabetes is considered one of the most psychologically demanding of the chronic medical illnesses because it requires very much effort from the patients themselves for strict daily management of the treatment.

In our study increased Global Severity Index (GSI) scores were associated with poor quality of life overall and also on all the subscales i.e. Role limitation due to physical health, physical endurance, general health, diet satisfaction, and Emotional/Mental Health, Symptom botherness, Financial worries and treatment satisfaction; also increased score on subscales of SCL-90 were associated with decreased quality of life on all the subscales of quality of life.

Also on comparing the quality of life in patients having GSI score >0.57 (suggestive of significant psychopathology) and those having scores below it was found that the group having GSI scores <0.57 had better quality of life.

A study assessing relationship of psychiatric disorders and symptoms with quality of life in diabetics found that quality of life in diabetes was influenced by the level of current psychiatric symptoms and presence of current or past co-morbid psychiatric disorder and these effects were found consistently across all aspects of quality of life. Finally increased severity of psychiatric symptoms was correlated with decreased health related quality of life in patients even without current, recent, or past psychiatric diagnosis like our study reported.[34] Taken individually relationship between depression, anxiety disorders, phobias, psychotic disorders like schizophrenia and poor health outcomes like quality of life by altering various disease related variables like glycaemic control and adherence to treatment has been shown by different studies in the past.[35-37]

Thus our study along with above supporting literature shows the consistent, independent contribution of psychiatric symptoms and illnesses to the health related quality of life of patients with diabetes.

## CONCLUSION

Psychiatric co-morbidities affect quality of life in diabetics significantly hence all patients of diabetes should be screened for presence of psychiatric disorders.

Socio-demographic variables like gender, age & disease related variables like duration, complications etc. also affect QOL, So they should be considered while managing a patient with diabetes

Though the type of treatment modality does not seem to affect quality of life in diabetics but glycaemic control does affect it, so physicians need to individualise the treatment so as to achieve optimal glycaemic control and a better quality of life for patients of diabetes.

The limitations of the study was to sample was not community based, cross sectional nature of the study, use of blood glucose levels as indicator of glycaemic control. (Hb1ac is better indicator).

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