Abstract

Background: India has the largest number of diabetic populations in the world, Depression is common among people with diabetes, and it is associated with worse diabetes outcomes, non-adherence to medication is potentially one of the most serious problems facing diabetes care delivery. The objective of the study was to assess depression among type II diabetes patients and to assess adherence to therapy among type II diabetes patients.

Methodology: This cross-sectional community-based study was conducted in the urban field practice area of the Department of Community Medicine, SSMC, Tumkur. A total of 200 type II diabetes patients were selected by simple random sampling method from the database of Urban Health Training Centre and were traced to their homes for data collection. Data analysis was done using descriptive statistics like proportion and inferential statistics like Chi-square test. P-value less than 0.05 was taken as statistically significant.

Results: Out of 200 diabetic subjects, 80 (40%) belongs to age group 50-59 years, females were 132 (66%), Most of them 66 (33%) were having diabetes for duration of 6-10 years, most of them 176 (88%) were on oral hypoglycaemic agents. Out of 200 study subjects 93 (46.5%) had low adherence, 106 (53%) had medium adherence. 34 (17%) study subjects had depression using PHQ9 questionnaire. When we studied association of depression with other factors, it showed statistically significant results with gender (P=0.003), glycaemic status (P=0.01) and adherence to drugs (P=0.03). Association of drug adherence with depression showed statistically significant results (P=0.01).

Conclusion: Health care professionals can play a major role in improving adherence to therapy in patients of DM which prevents complication and improve Quality of life.

Keywords: Diabetes Mellitus, Drug adherence, Depression

Introduction

Diabetes Mellitus (DM) is one of the most common chronic diseases worldwide. The World Health Organization projected that 300 million people will suffer from diabetes by 2025. India has the largest number of diabetic populations in
the world and it is expected that there will be 69.9 million diabetic populations in India by 2025.¹

Depression is common among people with diabetes, and it is associated with worse diabetes outcomes. The prevalence of depression is higher in patients with diabetes who have long-term complications.²⁻³ Depression may contribute to poor diabetes-related outcomes, diabetes and its complications may also contribute to poor depression outcomes.⁴

Non-adherence to medication is potentially one of the most serious problems facing diabetes care delivery, particularly in type 2 diabetes. Diabetes is a challenging disease to be managed successfully. It requires frequent self-monitoring of blood glucose (SMBG), dietary modifications, exercise, and administration of medications as per schedule. So, regimen adherence problems are common in individuals with diabetes, thus making glycemic control is difficult to attain.⁵⁻⁶

The present study aims at assessing depression and drug adherence among type II diabetes patients residing in Urban field Practice area of Sri Siddhartha Medical College Tumkur.

Materials & Methods

This cross-sectional community-based study was conducted in the urban field practice area of the Department of Community Medicine, SSMC, Tumkur from May 2018 to August 2018.

A total of 200 type II diabetes patients aged above 30 yrs were selected by simple random sampling method from the database of Urban Health Training Centre and were traced to their homes for data collection.

Twenty extra random numbers were generated anticipating the migration or nonavailability of subjects during data collection. The final list of study subjects along with their contact information was prepared. The houses of these subjects were visited and details regarding their socio-demographic characteristics was collected using Pretested semistructured questionnaire, depression using PHQ-9 scale, adherence to therapy using Morisky Medication Adherence Scale were collected by interview technique.

Statistical Analysis

Statistical analysis was done using descriptive statistics like proportion and inferential statistics like Chi-square test. P-value less than 0.05 was taken as statistically significant.

Results

Socio-demographic Characteristics

Study included 200 diabetic subjects, among them 80(40%) belongs to age group 50-59 years, most of them were females 132 (66%), majority were Nonliterate 129 (64.5%), 115 (57.5%) were unemployed, majority 135 (67.5%) belongs to lower class according to BG Prasad scale (Table 1).

Disease Profile

Most of them 66 (33%) were having diabetes for 6-10 years. (Table 2), 91 (45.5%) had hypertension as comorbidity. (Table 3), most of them 176 (88%) were on Oral hypoglycaemic agents. (Table 4), Most of them had ear, nose and dental infections 39 (19.5%) as Complications, 10% of study subjects had developed neuropathy (Table 5) 130 (66%) had Uncontrolled glycaemic status (Table 6).

Adherence to drugs and Depression in Diabetes

Out of 200 study subjects 93 (46.5%) had low adherence, 106 (53%) had medium adherence (Table 7). 34 (17%) study subjects had Depression using PHQ9 questionnaire (Table 8).

When we studied Association of Depression with other factors, it showed statistically significant results with Gender (P value=0.003), Glycaemic status (P=0.01) and Adherence to drugs (P=0.03) (Table 9).

Association of Drug Adherence with depression showed statistically significant results (P-0.01) (Table 10).

Table 1.Distribution of study subjects based on socio-demographic characteristics

| Determinants     | Frequency | Percentage (%) |
|------------------|-----------|----------------|
| Age              |           |                |
| 30-39            | 17        | 8.5            |
| 40-49            | 37        | 18.5           |
| 50-59            | 80        | 40.0           |
| 60&>             | 66        | 33.0           |
| Gender           |           |                |
| Male             | 34.0      | 68             |
| Female           | 66.0      | 132            |
| Education        |           |                |
| Illiterate       | 129       | 64.5           |
| Middle school    | 28        | 14.0           |
| High school      | 32        | 16.0           |
| Puc              | 4         | 2.0            |
| Degree           | 7         | 3.5            |
| Occupation       |           |                |
| Unemployment     | 115       | 57.5           |
| Unskilled        | 25        | 12.5           |
| Semiskilled      | 53        | 26.5           |
| Socioeconomic status  | Frequency | Percentage (%) |
|-----------------------|-----------|----------------|
| Upper                 | 1         | 0.5            |
| Upper middle          | 4         | 2.0            |
| Middle                | 11        | 5.5            |
| Lower middle          | 49        | 24.5           |
| Lower                 | 135       | 67.5           |

| Marital status        | Frequency | Percentage (%) |
|-----------------------|-----------|----------------|
| Married               | 170       | 85.0           |
| Widow                 | 26        | 13.0           |
| Single                | 4         | 2.0            |
| Total                 | 200       | 100.0          |

Table 2. Distribution of study subjects based on duration of diabetes

| Duration in years   | Frequency | Percentage (%) |
|---------------------|-----------|----------------|
| 1-5 years           | 95        | 47.5           |
| 6-10 years          | 66        | 33.0           |
| >10 years           | 39        | 19.5           |
| Total               | 200       | 100.0          |

Table 3. Distribution of study subjects based on co-morbidities

| Co-morbidities       | Frequency | Percentage (%) |
|----------------------|-----------|----------------|
| No co-morbidities    | 79        | 39.5           |
| Hypertension         | 91        | 45.5           |
| Hypertension & CVD   | 23        | 11.5           |
| CVD                  | 4         | 2.0            |
| Thyroid              | 3         | 1.5            |
| Total                | 200       | 100.0          |

Table 4. Distribution of study subjects based on medication

| Medication          | Frequency | Percentage (%) |
|---------------------|-----------|----------------|
| Oral drugs          | 176       | 88.0           |
| Insulin             | 16        | 8.0            |

| Oral drugs & insulin| Frequency | Percentage (%) |
|---------------------|-----------|----------------|
| 06                  | 3.0       |
| Diet                | 2         | 1.0            |
| Total               | 200       | 100.0          |

Table 5. Distribution of study subjects based on complications

| Complications     | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| No complications  | 115       | 57.5           |
| Retinopathy       | 8         | 4.0            |
| Nephropathy       | 1         | 0.5            |
| Neuropathy        | 20        | 10.0           |
| Diabetic foot     | 1         | 0.5            |
| Infections(Ear,Nose,dental) | 39 | 19.5 |
| Retinopathy and nephropathy | 16 | 8.0 |
| Total             | 200       | 100.0          |

Table 6. Distribution of study subjects based on glycaemic status

| Glycaemic status | Frequency | Percentage (%) |
|------------------|-----------|----------------|
| Controlled       | 68        | 34.0           |
| Uncontrolled     | 132       | 66.0           |
| Total            | 200       | 100.0          |

Table 7. Distribution of study subjects based on adherence to drugs

| Adherence to drugs | Frequency | Percentage (%) |
|--------------------|-----------|----------------|
| Low Adherence      | 93        | 46.5           |
| Medium adherence   | 106       | 53.0           |
| High Adherence     | 1         | 0.5            |
| Total              | 200       | 100.0          |

Table 8. Distribution of study subjects based on depression

| Depression | Frequency | Percentage (%) |
|------------|-----------|----------------|
| Yes        | 34        | 17.0           |
| No         | 166       | 83.0           |
| Total      | 200       | 100.0          |
Table 9. Distribution of study subjects based on association of depression with other factors

|                  | Depression | No Depression | Total | Chi-square value | p-value |
|------------------|------------|---------------|-------|------------------|---------|
| **Age**          |            |               |       |                  |         |
| 30-39            | 5          | 12            | 17    | 4.34             | 0.2     |
| 40-49            | 8          | 29            | 37    |                  |         |
| 50-59            | 14         | 66            | 80    |                  |         |
| 60+              | 7          | 59            | 66    |                  |         |
| **Gender**       |            |               |       |                  |         |
| Male             | 19         | 49            | 68    | 8.74             | 0.003   |
| Female           | 15         | 117           | 132   |                  |         |
| **Education**    |            |               |       |                  |         |
| Illiterate       | 22         | 107           | 129   | 6.35             | 0.17    |
| Middle school    | 2          | 26            | 28    |                  |         |
| High school      | 9          | 23            | 32    |                  |         |
| Puc              | 1          | 3             | 4     |                  |         |
| Degree           | 0          | 7             | 7     |                  |         |
| **Duration (years)** |      |               |       |                  |         |
| 1-5              | 21         | 74            | 95    | 6.35             | 0.17    |
| 6-10             | 10         | 56            | 66    |                  |         |
| >10              | 3          | 36            | 39    |                  |         |
| **Co-morbidities** |        |               |       |                  |         |
| Yes              | 19         | 102           | 121   | 0.36             | 0.5     |
| No               | 15         | 64            | 79    |                  |         |
| **Medication**   |            |               |       |                  |         |
| Oral drugs       | 33         | 143           | 176   | 3.33             | 0.3     |
| Insulin          | 0          | 6             | 6     |                  |         |
| Oral drugs & Insulin | 1       | 15            | 16    |                  |         |
| Diet             | 0          | 2             | 2     |                  |         |
| **Glycaemic status** |   |               |       |                  |         |
| Controlled       | 18         | 52            | 70    | 5.79             | 0.01    |
| Uncontrolled     | 16         | 114           | 130   |                  |         |
| **Adherence to drugs** |    |               |       |                  |         |
| Yes              | 10         | 84            | 94    | 5.08             | 0.03    |
| No               | 24         | 82            | 106   |                  |         |
| Total            | 200        |               |       |                  |         |

Table 10. Distribution of study subjects based on association of adherence with depression

|                  | Adherence | No adherence | Total | Chi-square value | p-value |
|------------------|-----------|--------------|-------|------------------|---------|
| **Depression**   |           |              |       |                  |         |
| Yes              | 10        | 24           | 34    | 5.08             | 0.01    |
| No               | 84        | 82           | 166   |                  |         |
| Total            | 94        | 106          | 200   |                  |         |
Discussion

Depression and non-adherence are the problems associated with longer the duration people live the diabetes. knowledge about the disease and following the instructions given by the care giver have long way to prevent these problems.

A total of 200 type II diabetes subjects were studied, 34 (17%) study subjects had no depression, 154 (77%) had minimal and moderate depression and 12(6%) moderate depression.

When we studied association of depression with other factors, it showed statistically significant results with gender (P=0.003), glycaemic status (P=0.01) and adherence to drugs (P=0.03).

Studies have shown that advancing age is usually associated with depressions and more so in patients with T2DM. But in our study, there was no association between depression and age.

Studies from the West have suggested the higher prevalence of depression in women as compared to men. Higher the prevalence of depression in women may be because of multiple tasking, socio-cultural influences, hormonal effects. proper care and education can prevent depression in diabetes.

Many other studies have shown strong association between obesity and depression. Diabetes might increase the risk of depression and anxiety because of feelings of threat and loss related to the announcement of the diagnosis and the need to make lifestyle changes.

Many other studies have shown the association between mood disorders and diabetes can be partly explained by the existence of comorbidities. Studies have shown strong association between depression and glycaemic status.

Out of 200 study subjects 93 (46.5%) had low adherence, 106 (53%) had medium adherence. When we studied Association of Drug Adherence with depression, showed statistically significant results (P=0.01).

Two studies showed that adherence to oral medications in patients with type 2 diabetes was 53% and 67% when measured by electronic monitoring. The DAWN study showed patient-reported adherence rates for medication in type 1 and type 2 diabetic patients of 83% and 78%, respectively.

Patient may be taking multiple medications to treat several coexisting conditions. This creates a complex situation wherein the patient has to be on multiple drug therapy with complicated dosing schedules that is likely to result in low adherence to the medication plan.

Adherence to the medication schedule is of utmost importance in successful management of chronic diseases.

Conclusion

It was observed from the study that, there is association between depression and gender, glycaemic status and adherence to drugs.

Educating the people regarding Importance of adherence to drugs, regarding disease & complications associated with it in uncontrolled glycaemic status should be addressed to give better quality services and reducing the burden of disease.

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Conflict of Interest: None

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