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## **A study to assess the perceived diabetic distress and self – efficacy among patients with type 2 diabetes mellitus in a selected diabetic clinic in Bengaluru**

**Manjula GB, Neera Chettri, Tashi Ongmu Bhutia and Saraswoti Giri**

### **Abstract**

**Introduction:** It has been estimated that the global burden of type 2 diabetes mellitus (T2DM) for 2010 would be 285 million people which is projected to increase to 438 million in 2030. Roughly 80% of people with diabetes are in developing countries, of which India and China share the larger contribution. Being a chronic disease, Type2 diabetes mellitus is mostly self managed which often leads to frustration and related distress. This in-fact affects the patient's level of confidence in performing self care management.

**Objective:** This study was undertaken to assess the perceived diabetes distress and self-efficacy among patients with type2 diabetes mellitus and to identify the relationship between perceived diabetes distress, self-efficacy. The association of perceived diabetes distress, self-efficacy with selected socio demographic variables was also studied.

**Methodology:** Descriptive cross sectional design was adopted for the study. The study used purposive sampling technique. The sample consisted of 30 adults. The study was carried out by assessing socio-demographic Performa, disease specific data, diabetes distress and diabetes self-efficacy. Data was analysed using descriptive and inferential statistics.

**Findings:** Mean age of study subjects were 60.43±11.41 years. Majority of study participants were females, Hindu, married, nuclear family, illiterate, unemployed and income were in between 16020-32049. Majority of study participants were on oral anti diabetes treatment and had no complications. Majority of study participants had dyslipidemia and family history of diabetes. Majority had mild diabetes distress. Self- efficacy was moderate in majority. Diabetes distress was associated with religion and monthly income and not associated with age, gender, marital status, education and occupation. Self-efficacy was associated with gender and education and not associated with age, occupation, marital status and monthly income. Diabetes Distress was negatively correlated with self-efficacy. Self-efficacy was positively correlated with distress.

**Keywords:** Percieved diabetic distress, self- efficacy and type 2 diabetes mellitus

### **1. Introduction**

Around the world, more people are living in large towns and cities, more people are being born and more people are living longer lives. At the same time, people are taking less exercise and eating less healthy types of food in larger quantities than they ever did before. The result is that the total number of people in the world with diabetes is spiralling out of control. According to the World Health Organization (WHO) reports, obesity affects 1.1 billion adult individuals worldwide, and 300 millions of whom are clinically obese with a body mass index (BMI) of  $\geq 30$  kg /m<sup>2</sup>. It can cause several health problems, including hypertension, stroke, and ischemic heart disease <sup>[1]</sup>.

Diabetes is a chronic disease caused by inherited or acquired deficiency in production of insulin by the pancreas or in its effects. The prevalence of diabetes is rising all over the world due to population growth, aging, urbanisation and an increase of obesity and physical inactivity. The worldwide prevalence of diabetes is 4% (1995) which will be 5.4% (2025). The National Urban Survey conducted across the metropolitan cities of India reported 12.4 per cent Bangalore (South India) <sup>[2]</sup>

The chronicity of the disease often leads to frustration and related distress. Healthcare professionals and researchers have identified many relevant factors that cause diabetes distress. Diabetes-related emotional distress ranges from limited psychological problems to

constant diabetes-related self-care behaviors such as regular blood sugar control, medications administration, insulin injection, and adherence to treatment regime. Many studies have revealed that distress can significantly affect diabetic patients' health outcomes, especially their self-management. Findings of a qualitative study revealed that three subjects are closely related to diabetes distress including: 1) behavior pressure, 2) emotional pressure and 3) fear of diabetes complications [3].

**2. Material and methods**

The research design adopted for present study was a cross sectional survey method. Ethical clearance was obtained from the ethical research committee. Permission was obtained from the concerned authority of the diabetic clinic, Bangalore. The present study was conducted in diabetic clinic. The sample size consists of thirty patients selected through a convenient sampling technique. Structured interview was used to collect the socio demographic data and disease specific data. Self-report was used to collect data on diabetes distress and self-efficacy. The tool for data collection were Socio-demographic Performa, Diabetes Distress Screening Scale-17 and Diabetes Self-efficacy Scale. Descriptive statistics was used to describe the characteristics of subject. Mean and standard deviation to describe self-efficacy and also distress perceived by patients with type2 diabetes mellitus. Pearson's correlation coefficient was used to correlate mean diabetes distress scores with self-efficacy. Chi square was used to associate mean diabetes distress scores and self-efficacy with selected socio-personal variables.

**3. Findings**

**3.1 Socio-demographic variables**

According to age in years, all the subjects were within the age of 24-78 with mean 60.43 and SD of 11.41 years. Of the sample, 9(30.0%) of them were male patients and the rest of

21(70.0%) of them were female patients. According to religion, 22(73.3%) were Hindus, 5(16.7%) were Christians, 3(10.0%) were Muslims and none of them was belonged to other religion. Regarding religion of patients with hypertension, 33(55.0%) were Hindus, 16(26.7%) were Muslims and 11(18.3%) were Christians. According to type of family, 21(70.0%) were from nuclear family and the rest of 9(30.0%) them were from joint family. Regarding their education, none was professional of honours, 6(20.0%) of them were graduates or post graduates, 3(10.0%) of them were intermediate or post high school diploma, 6(20.0%) of them had high school education, 2(6.7%) of them had middle school certificate, 6(20.0%) of them had primary school certificate and the rest of 7(23.3%) were illiterates. According to occupation, 1(3.3%) was professional, 4(13.3%) were semi-professional, 6(20.0%) were found to be as clerical or shop owner or farmer, 1(3.3%) was a skilled worker, 1(3.3%) was semi-skilled worker, 2(6.7%) were unskilled workers and the rest of 15(50.0%) were unemployed. Regarding the family income per month, 6(20.0%)of them from the family with income of ≥32050/Rs, half the sample 15((50.0%) of them from the family income of 16020-32049 Rs, 7(23.3%) of them from the family with the income of 12020-16019 Rs, 1(3.3%) of them from the family with income of 8010-12019 Rs, 1(3.3%) of them from the family with the income of 4810-8009 Rs and none of them was found to be with the family income below8009 Rs.

**3.2 Morbidity variables**

Majority of the subjects were on oral anti diabetes (43.3%) as for type of treatment they are taking. Majority of the subjects had no diabetic complication (33.35%).Majority of the subjects had cardiovascular disease as comorbidities. Majority of the subjects had family history of diabetes (76.7%).

**Table 1:** Frequency distribution of patients with type 2 diabetes mellitus according to the level of perceived diabetes distress N =30

| Sl. No | Level of distress         | Patients with type 2 diabetes |            |
|--------|---------------------------|-------------------------------|------------|
|        |                           | Frequency                     | Percentage |
| 1      | Mild distress (<50%)      | 30                            | 100        |
| 2      | Moderate distress (50-5%) | 0                             | 0          |
| 3      | Severe distress (>75%)    | 0                             | 0          |
|        | Total                     | 30                            | 100        |

The above table shows that all the patients with type2 diabetes mellitus were having mild level of perceived

diabetes distress and none of them was found to be with moderate or severe distress.

**Table 2:** Frequency distribution of patients with type 2 diabetes mellitus according to level of self-efficacy. N =30

| Sl. No | Level of self-efficacy          | Patients with type 2 diabetes |            |
|--------|---------------------------------|-------------------------------|------------|
|        |                                 | Frequency                     | Percentage |
| 1      | Poor self-efficacy (<50%)       | 0                             | 0          |
| 2      | Moderate self-efficacy (50-75%) | 29                            | 96.7       |
| 3      | Adequate self-efficacy (>75%)   | 1                             | 3.3        |
| 4      | Over all                        | 30                            | 100        |

The above table shows that a majority 29(96.7%) had moderate self-efficacy, 1(3.3%) had adequate self-efficacy and none of them had poor self-efficacy.

**Table 3:** Range, mean, standard deviation and mean percentage of distress and self-efficacy among patients with type 2 diabetes mellitus. N=30

| Sl. No | Variable                    | Max Score | Range | Mean  | SD   | Mean % |
|--------|-----------------------------|-----------|-------|-------|------|--------|
|        | Perceived diabetes distress | 102       | 17-30 | 20.90 | 2.75 | 20.5   |
|        | Self-efficacy               | 80        | 40-62 | 50.53 | 5.30 | 62.8   |

The above table shows that the perceived diabetes distress of patients with type 2 diabetes mellitus was ranging within 17-30 with mean 20.90 and SD of 2.75. The mean percentage was 20.5%. The self-efficacy of patients with

type 2 diabetes mellitus was ranging within 40-62 with mean 50.53 and SD of 5.30. The mean score percentage was 62.8%.The table shows evidence that those with moderate self-efficacy had less perceived diabetes distress.

**Table 4:** Correlation between perceived diabetes distress and self-efficacy of patients with type2 diabetes mellitus. N=30

| Parameter                   |                     | Perceived Diabetes Distress | Self-efficacy |
|-----------------------------|---------------------|-----------------------------|---------------|
| Perceived Diabetes Distress | Pearson Correlation | 1                           | -.063NS       |
|                             | Sig. (2-tailed)     |                             | .744          |
| Self-efficacy               | Pearson Correlation | -.063NS                     | 1             |
|                             | Sig. (2-tailed)     | .744                        |               |

The above table shows that there is a negative correlation between the perceived diabetes distress and self-efficacy ( $r=-0.063$ ) but not significant ( $p>0.05$ ).

Increase in self-efficacy has an impact on decreasing perceived diabetes distress among the patients with type 2 diabetes mellitus.

**Table 5:** Association between perceived distress of patients with type2 diabetes mellitus with their selected socio demographic variables. N=30

| Sl. No                       | Demographic variables        | Sample=30 |      | Distress |      |         |      | Chi Square value | p-Value  |
|------------------------------|------------------------------|-----------|------|----------|------|---------|------|------------------|----------|
|                              |                              |           |      | ≤Median  |      | >Median |      |                  |          |
|                              |                              | F         | %    | F        | %    | F       | %    |                  |          |
| <b>Age in years</b>          |                              |           |      |          |      |         |      |                  |          |
| 1.                           | ≤60 years                    | 15        | 50.0 | 9        | 56.2 | 6       | 42.9 | 0.536, df=1, NS  | $p>0.05$ |
|                              | >60 years                    | 15        | 50.0 | 7        | 43.8 | 8       | 57.1 |                  |          |
| <b>Gender</b>                |                              |           |      |          |      |         |      |                  |          |
| 2                            | Male                         | 9         | 30.0 | 6        | 37.5 | 3       | 21.4 | 0.918, df=1, NS  | $p>0.05$ |
|                              | Female                       | 21        | 70.0 | 10       | 62.5 | 11      | 78.6 |                  |          |
| <b>Religion</b>              |                              |           |      |          |      |         |      |                  |          |
| 3.                           | Hindu                        | 22        | 73.3 | 9        | 56.2 | 13      | 92.9 | 6.418, df=2, S   | $p<0.05$ |
|                              | Christian                    | 5         | 16.7 | 4        | 25.0 | 1       | 7.1  |                  |          |
|                              | Muslim                       | 3         | 10.0 | 3        | 18.8 | 0       | 0    |                  |          |
|                              | Others                       | 0         | 0    | 0        | 0    | 0       | 0    |                  |          |
| <b>Marital Status</b>        |                              |           |      |          |      |         |      |                  |          |
| 4.                           | Married                      | 27        | 90.0 | 14       | 87.5 | 13      | 92.9 | 0.233, df=1, NS  | $p>0.05$ |
|                              | Unmarried                    | 0         | 0    | 0        | 0    | 0       | 0    |                  |          |
|                              | Unmarried                    | 3         | 10.0 | 2        | 12.5 | 1       | 7.1  |                  |          |
| <b>Type of family</b>        |                              |           |      |          |      |         |      |                  |          |
| 5.                           | Nuclear family               | 21        | 70.0 | 11       | 68.8 | 10      | 71.4 | 0.025, df=1, NS  | $p>0.05$ |
|                              | Joint family                 | 9         | 30.0 | 5        | 31.2 | 4       | 28.6 |                  |          |
| <b>Education</b>             |                              |           |      |          |      |         |      |                  |          |
| 6.                           | Profession/ Honors           | 0         | 0    | 0        | 0    | 0       | 0    | 5.702, df=5, NS  | $p>0.05$ |
|                              | Graduate/Post graduate       | 6         | 20.0 | 3        | 18.8 | 3       | 21.4 |                  |          |
|                              | Intermediate                 | 3         | 10.0 | 3        | 18.8 | 0       | 0    |                  |          |
|                              | Highschool certificate       | 6         | 20.0 | 3        | 18.8 | 3       | 21.4 |                  |          |
|                              | Middle school certificate    | 2         | 6.7  | 0        | 0    | 2       | 14.3 |                  |          |
|                              | Primary school certificate   | 6         | 20.0 | 4        | 25.0 | 2       | 14.3 |                  |          |
| <b>Occupation</b>            |                              |           |      |          |      |         |      |                  |          |
| 7.                           | Profession                   | 1         | 3.3  | 1        | 6.2  | 0       | 0    | 3.616, df=6, NS  | $p>0.05$ |
|                              | Semi profession              | 4         | 13.3 | 2        | 12.5 | 2       | 14.3 |                  |          |
|                              | Clerical, shop owner, Farmer | 6         | 20.0 | 4        | 25.0 | 2       | 14.3 |                  |          |
|                              | Skilled worker               | 1         | 3.3  | 0        | 0    | 1       | 7.1  |                  |          |
|                              | Semi-skilled worker          | 1         | 3.3  | 1        | 6.2  | 0       | 0    |                  |          |
|                              | Unskilled worker             | 2         | 6.7  | 1        | 6.2  | 1       | 7.1  |                  |          |
|                              | Unemployed                   | 15        | 50.0 | 7        | 43.8 | 8       | 57.1 |                  |          |
| <b>Monthly family income</b> |                              |           |      |          |      |         |      |                  |          |
| 8                            | ≥32050                       | 6         | 20.0 | 3        | 18.8 | 3       | 21.4 | 10.88, df=4, S   | $p<0.05$ |
|                              | 16020-32049                  | 15        | 50.0 | 12       | 75.0 | 3       | 21.4 |                  |          |
|                              | 12020-16019                  | 7         | 23.3 | 1        | 6.2  | 6       | 42.9 |                  |          |
|                              | 8010-12019                   | 1         | 3.3  | 0        | 0    | 1       | 7.1  |                  |          |
|                              | 4810-8009                    | 1         | 3.3  | 0        | 0    | 1       | 7.1  |                  |          |
|                              | 1601-4809                    | 0         | 0    | 0        | 0    | 0       | 0    |                  |          |

**Note:** S-significant ( $p<0.05$ ), NS-Not significant ( $p>0.05$ ).

The above table shows that out of the demographic variables accounted, perceived distress was significantly associated with religion (Chi-square value =6.418, df=2) and monthly income of the family (Chi-square value=10.88, df=4). The

perceived distress was not significantly associated with age, gender, marital status, education and occupation of patients with type2 diabetes mellitus.

**Table 6:** Association between self-efficacy of patients with type2 diabetes mellitus with their selected socio demographic variables. N=30

| Sl. No                       | Demographic variables                    | Sample=30 |      | Self-efficacy |      |         |      | Chi Square value | p-Value |
|------------------------------|--|-----------|------|---------------|------|---------|------|------------------|---------|
|                              |  |           |      | ≤Median       |      | >Median |      |                  |         |
|                              |  | F         | %    | F             | %    | F       | %    |                  |         |
| <b>Age in years</b>          |  |           |      |               |      |         |      |                  |         |
| 1.                           | ≤60 years                                | 15        | 50.0 | 7             | 43.8 | 8       | 57.1 | 0.536, df=1, NS  | p>0.05  |
|                              | >60 years                                | 15        | 50.0 | 9             | 56.2 | 6       | 42.9 |                  |         |
| <b>Gender</b>                |  |           |      |               |      |         |      |                  |         |
| 2.                           | Male                                     | 9         | 30.0 | 2             | 12.5 | 7       | 50.0 | 5.00 df=1, S     | p<0.05  |
|                              | Female                                   | 21        | 70.0 | 14            | 87.5 | 7       | 50.0 |                  |         |
| <b>Religion</b>              |  |           |      |               |      |         |      |                  |         |
| 3.                           | Hindu                                    | 22        | 73.3 | 12            | 75.0 | 10      | 71.4 | 0.584, df=2, NS  | p>0.05  |
|                              | Christian                                | 5         | 16.7 | 2             | 12.5 | 3       | 21.4 |                  |         |
|                              | Muslim                                   | 3         | 10.0 | 2             | 12.5 | 1       | 7.1  |                  |         |
|                              | Others                                   | 0         | 0    | 0             | 0    | 0       | 0    |                  |         |
| <b>Marital Status</b>        |  |           |      |               |      |         |      |                  |         |
| 4.                           | Married                                  | 27        | 90.0 | 13            | 81.2 | 14      | 100  | 2.917, df=1, NS  | p>0.05  |
|                              | Unmarried                                | 3         | 10.0 | 3             | 18.8 | 0       | 0    |                  |         |
| <b>Type of family</b>        |  |           |      |               |      |         |      |                  |         |
| 5.                           | Nuclear family                           | 21        | 70.0 | 12            | 75.0 | 9       | 64.3 | 0.400, df=1, NS  | p>0.05  |
|                              | Joint family                             | 9         | 30.0 | 4             | 25.0 | 5       | 35.7 |                  |         |
| <b>Education</b>             |  |           |      |               |      |         |      |                  |         |
| 6.                           | Profession or Honors                     | 0         | 0    | 0             | 0    | 0       | 0    | 11.211, df=5, S  | p<0.05  |
|                              | Graduate or Post graduate                | 6         | 20.0 | 2             | 12.5 | 4       | 28.6 |                  |         |
|                              | Intermediate or Post high school diploma | 3         | 10.0 | 1             | 6.2  | 2       | 14.3 |                  |         |
|                              | High school certificate                  | 6         | 20.0 | 2             | 12.5 | 4       | 28.6 |                  |         |
|                              | Middle school certificate                | 2         | 6.7  | 0             | 0    | 2       | 14.3 |                  |         |
|                              | Primary school certificate               | 6         | 20.0 | 5             | 31.2 | 1       | 7.1  |                  |         |
|                              | Illiterate                               | 7         | 23.3 | 6             | 37.5 | 1       | 7.1  |                  |         |
| <b>Occupation</b>            |  |           |      |               |      |         |      |                  |         |
| 7.                           | Profession                               | 1         | 3.3  | 0             | 0    | 1       | 7.1  | 7.165, df=6, NS  | p>0.05  |
|                              | Semi profession                          | 4         | 13.3 | 1             | 6.2  | 3       | 21.4 |                  |         |
|                              | Clerical, shop owner, Farmer             | 6         | 20.0 | 4             | 25.0 | 2       | 14.3 |                  |         |
|                              | Skilled worker                           | 1         | 3.3  | 0             | 0    | 1       | 7.1  |                  |         |
|                              | Semi-skilled worker                      | 1         | 3.3  | 0             | 0    | 1       | 7.1  |                  |         |
|                              | Unskilled worker                         | 2         | 6.7  | 2             | 12.5 | 0       | 0    |                  |         |
| Unemployed                   | 15                                       | 50.0      | 9    | 56.2          | 6    | 42.9    |      |                  |         |
| <b>Monthly family income</b> |  |           |      |               |      |         |      |                  |         |
| 8.                           | ≥32050                                   | 6         | 20.0 | 3             | 18.8 | 3       | 21.4 | 2.85, df=4, NS   | p>0.05  |
|                              | 16020-32049                              | 15        | 50.0 | 8             | 50.0 | 7       | 50.0 |                  |         |
|                              | 12020-16019                              | 7         | 23.3 | 3             | 18.8 | 4       | 28.6 |                  |         |
|                              | 8010-12019                               | 1         | 3.3  | 1             | 6.2  | 0       | 0    |                  |         |
|                              | 4810-8009                                | 1         | 3.3  | 1             | 6.2  | 0       | 0    |                  |         |
|                              | 1601-4809                                | 0         | 0    | 0             | 0    | 0       | 0    |                  |         |
| ≤1600                        | 0  | 0         | 0    | 0             | 0    | 0       |      |                  |         |

**Note:** S-significant ( $p<0.05$ ), NS-Not significant ( $p>0.05$ )

The above table shows that out of the demographic variables accounted, self-efficacy was significantly associated with gender (Chi-square value =5.00, df=1) and education (Chi-square value=11.211, df=5). Self- efficacy was not significantly associated with age, religion, marital status, occupation and monthly income of the family of patients with type2 diabetes mellitus.

#### 4. Discussion

The finding shows that majority of the patients with type2 diabetes mellitus were having mild level of perceived distress and none of them were found to be with moderate or severe distress. Supporting studies could not be found. This finding was contraindicated by a study conducted in Community Medical group and Diabetes Education Centre, California which showed high distress among patient with type2 diabetes mellitus due to increase in negative life events, poor diet and low exercise<sup>4</sup>.

In this study majority of the patients with type 2 diabetes mellitus had moderate self-efficacy (96.7%) and (3.3%) had adequate self-efficacy and none of them had poor self-efficacy. This was supported by a study conducted in the outpatient diabetic clinic, Kerala, which showed that majority of subjects had average self-efficacy among patients with type2 diabetes mellitus.<sup>5</sup>

Present study shows that there is negative correlation between the diabetes perceived distress and self-efficacy which means as self-efficacy increases, diabetes distress decreases. This is supported by the study conducted in US which showed that patients with high self-efficacy leads to low diabetic distress due to increase in confidence of performing day to day tasks such as diet, adequate activities, adherence to medication and by coping with negative social response. Therefore, high self-efficacy is helpful in reduction of diabetes perceived distress<sup>6</sup>.

The study shows that diabetes distress was significantly associated with religion and monthly income of the family

and not associated with age. This finding is supported by the study conducted in Nigeria which showed that diabetes distress is associated with religion<sup>7</sup>.

The current study findings are contradictory to the findings of a study conducted in Isfahan-Iran which showed that diabetes distress had significant association with age<sup>8</sup>. This difference could be due to the difference in the socio-demographic features in different geographic areas.

The current study shows that self-efficacy was significantly associated with gender and education and not significantly associated with age, religion, marital status, occupation and monthly income of the family of patients with type2 diabetes mellitus. This finding is supported by the study conducted in Los Angeles County Hospital, California which showed that males have increase in self-efficacy without increase in knowledge and females have increase in knowledge with little increase in self-efficacy<sup>9</sup>.

## 5. Conclusion

Study findings proved that patients with type2 diabetes mellitus experiences distress associated with disease which also affects their self-efficacy. This in turn impairs the achievement of glycemic control.

## 6. Acknowledgement

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## 7. Conflict-of-Interest

Authors declare that they have no conflict of interests.

## 8. Source of support

The study was self-funded.

## 9. Ethical clearance

Ethical clearance was obtained from institution review board. Confidentiality of subjects was ensured.

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