

# Major depressive disorder and generalized anxiety disorder among the patients with diabetes mellitus

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## Summary

Diabetes mellitus (DM) is a chronic condition which is associated with long term damage, dysfunction and failure of various organs. Many psychiatric disorders associated with DM have been also reported and among them major depressive disorder (MDD) and generalized anxiety disorder (GAD) are more common. The objective of the study was to find out the proportion of MDD and GAD among the patients with DM. This was a cross sectional study conducted in North Bengal Medical College hospital, Sirajgang, Bangladesh during the period from 1<sup>st</sup> January 2016 to 30<sup>th</sup> June 2016. For this purpose, 80 diabetic patients satisfying inclusion and exclusion criteria were selected from primarily selected sample done by convenient sampling technique. Data were collected by face to face interview using semi-structured questionnaire. MDD and GAD were confirmed by Diagnostic and Statistical Manual for Mental Disorders, 5th edition (DSM-5) among the respondents who were found screened positive by General Health Questionnaire-12 (GHQ-12). The results showed that maximum respondents 29 (36.2%) were in the age group between 40-49 years with male predominance (57%). Among the respondents 52 (65%) were married, 48 (60%) came from a lower class family and 46 (57.5%) were rural resident. General Health Questionnaire-12 (GHQ-12) was positive in 35 (43.7%) of respondents. Among them 18 (22.5%) were suffering from MDD and 11 (13.7%) were suffering from GAD. It was shown that both MDD and GAD were higher among female patients. So physicians should pay attention to rule out psychiatric disorders in patients with DM.

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## Introduction

Diabetes mellitus is a chronic disorder characterized by impaired metabolism of glucose and other energy-yielding fuels as well as by the late development of vascular and neurological complication.<sup>1</sup> DM may present with characteristic or classical symptoms such as polydipsia, polyuria, polyphagia, loss of weight, fatigue, blurring of vision etc. Diabetic subjects are at an increased risk of atherosclerotic changes affecting the vessels leading to cardiovascular, cerebrovascular and peripheral vascular diseases. Several pathogenetic processes are involved in the development of diabetes. The autoimmune destruction of the beta cells of the islets of Langerhans of the pancreas results in insulin deficiency. DM is a major global public health problem which is increasing dramatically in developing countries.<sup>2</sup> The prevalence of DM worldwide is estimated to be around 200 million people, more than 5% of the adult population globally.<sup>3</sup> Several factors contribute in type 2 DM pathogenesis, including environmental

and lifestyle factors.<sup>4,5</sup> In modern life suffering from diabetes mellitus has become an integral part for many. Not only the genetic inheritance but also the environmental factors and lifestyle we lead in this era also can cause diabetes in people. Among the many additional complications which coincide with DM, depression, anxiety, tension and stress are most commonly under-detected.<sup>6</sup> This is that a growing body of literature has reported that patients with diabetes are almost twice as suffer from anxiety and depression as the general population.<sup>7,8</sup>

To our knowledge, insufficient studies had conducted regarding psychiatric morbidities among diabetic patients in our country and no study had conducted in North zone of Bangladesh. So the objective of the study was to evaluate the proportion of MDD and GAD among the patients suffering from Diabetes mellitus as well as to identify the socio-demographic characteristics of patients in this area. This study will give baseline information about psychiatric co-morbidity among the diabetic patients.

## Materials and methods

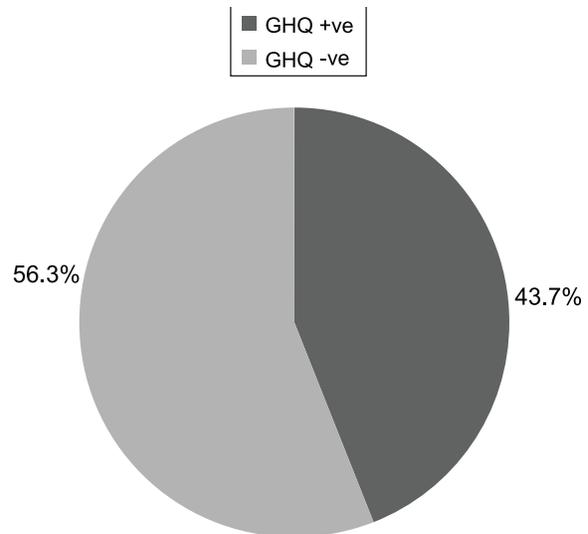
This was a cross sectional study carried out in the Department of Psychiatry in collaboration with the inpatient and outpatient departments of Medicine, North Bengal Medical College Hospital (NBMCH), Sirajgang, Bangladesh during the period from 1<sup>st</sup> January 2016 to 30<sup>th</sup> June 2016. The patients who have reported history of DM for at least 6 months irrespective of taking oral hypoglycemic agents and or insulin were included in the study. The diagnosis of DM was done by the patient's physician. Those having other chronic illness were excluded from the study. In this way a total number of 80 patients aged 18 years or above irrespective of sex were selected as a study population by convenient sampling technique. A structured questionnaire was prepared to determine socio-demographic characteristics such as age, sex, marital status, socio economic status, social background etc. At first all 80 patients were screened by General Health Questionnaire-12 (GHQ-12).<sup>9</sup> Those who scored 15 or more out of 36 were further evaluated by DSM-5 criteria for diagnosis of MDD and GAD.<sup>10</sup> The interviews were held in a peaceful and non-threatening environment. After collecting data, editing was done manually. Ethical issues were maintained properly throughout the study. An informed written consent was taken from each and every patient by using consent form. The research was conducted in full accord with ethical principle.

## Results

In this study, maximum 29 (36.2%) of the respondents were found in the age group between 40-49 years with male predominance (57%). Most of the respondents were married 52 (65%), 48 (60%) respondents came from a lower class family and 46 (57.5%) respondents were rural resident (Table 1). The GHQ-12 was positive in 35 (43.7%) of the respondents (Figure 1).

**Table 1: Distribution of respondents according to socio demographic characteristics (n=80)**

Socio demographic Characters	Frequency	%
<b>Age groups (in years)</b>		
20-29	9	11.3
30-39	20	25.0
40-49	29	36.2
50 and above	22	27.5
<b>Sex</b>		
Male	46	57.0
Female	34	43.0
<b>Marital status</b>		
Married <sup>1</sup>	52	65.0
Unmarried	28	35.0
<b>Socioeconomic status<sup>1</sup></b>		
Middle Class	32	40.0
Lower Class	48	60.0
<b>Social background</b>		
Urban	34	42.5
Rural	46	57.5



**Figure 1: Distribution of respondents by GHQ-12 (n=80)**

Among the GHQ-12 positive respondents, co morbid MDD were found in 18 (22.5%) and GAD were found in 11 (13.7%) of the respondents (Table 2).

**Table 2: Distribution of GHQ-12 positive respondents by MDD and GAD (n=35)**

Co morbid psychiatric disorder	Frequency	%
Major Depressive Disorder (MDD)	18	22.5
Generalized Anxiety Disorder (GAD)	11	13.7
Not present	6	7.5
Total	35	43.7

It was found that the highest numbers of MDD were present among the age group between 40-49 years and the highest numbers of GAD were present between 20-29 age groups (Table 3). It was shown that both MDD and GAD were higher among female patients than male. Out of total 18 MDD cases, male were 8 and female respondents were 10 whereas among total 11 GAD cases male were 5 and female were 6 (Table 4).

**Table 3: MDD and GAD of respondents according to age distribution (n=80)**

Age group (in years)	Total (%)	MDD Frequency (%)	GAD Frequency (%)
20-29	9 (11.3%)	2 (2.5%)	4 (5.0%)
30-39	20 (25.0%)	4 (5.0%)	2 (2.5%)
40-49	29 (36.2%)	7 (8.7%)	2 (2.5%)
50 and above	22 (27.5%)	5 (6.3%)	3 (3.7%)
Total	80 (100%)	18(22.5%)	11(13.7%)

**Table 4: MDD and GAD of respondents according to age distribution sex distribution (n=80)**

Sex	Total (%)	MDD Frequency (%)	GAD Frequency (%)
Female	46 (57.0%)	10 (12.5%)	6 (7.4%)
Male	34 (43.0%)	8 (10.0%)	5 (6.3%)
Total	80 (100%)	18(22.5%)	11(13.7%)

### Discussion

A growing number of studies in the international literatures support the findings that DM patients have an increased psychiatric morbidity.<sup>7</sup> DM can have a major impact on one's quality of life. Overall quality of life is an all-inclusive concept incorporating all the facts that impact upon an individual life. The concept can be divided into several components including psychological, social and physical domains. In this study the screening of psychiatric morbidity among DM patients were done by GHQ-12. GHQ-12 screenings were positive in 35 (43.7%) respondents among diabetic patients. In our study, total numbers of MDD were 18 (22.5%) and GAD were 11 (13.7%). This result was similar with a study of Iraq.<sup>11</sup> Another European study indicated the variable prevalence of depression in between 8.5% and 27 % in diabetic patients.<sup>12</sup> Diabetic patients with MDD were mostly in middle age group between 40-49 years whereas GAD were maximum in young adult group between 20-29 years in our study. In community study, psychiatric morbidity had their peak occurrence between 25-44 years old in diabetic patients.<sup>13</sup> It was found that anxiety was closely related to depression in diabetic and one study showed that prevalence of anxiety and depression were common in diabetic patients.<sup>14</sup> In our study, MDD was more in comparing that of GAD in diabetic patients. Regarding the marital status, majority patients with DM were married 52 (65%) and unmarried respondents were 28 (35%). These findings were consistent with another study.<sup>15</sup> In our study, most of the patients were in middle aged group and in our country majority middle aged person become married. So the percentages of married were more than that of unmarried person in the present study. In the study, both MDD and GAD were higher in female than that of male. This findings were similar with others studies who reported depression to be significantly higher in diabetic women than in diabetic men.<sup>16,17</sup> A cross sectional study in Nigeria reported a male to female ratio of 1:3.<sup>18</sup> It also concurred with another study that reported depression to be significantly higher in diabetic women (28%) than in diabetic men (18%).<sup>7</sup> These findings were similar to the general trend of gender distribution in the general population.<sup>17,19,20</sup> This could be attributable to gender-specific issues like pregnancy, menstrual cycle changes, postpartum and additional stresses such as responsibilities at work and at

home, single parenthood, caring for children and aging parents which could all lead to depression.<sup>21,22</sup>

### Conclusion

Despite a number of limitations such as purposefully selected institution, relatively small sample size, this study had provided baseline information on the proportion of MDD and GAD among the patients with DM. A high proportion of MDD and GAD were found in patients with DM. As diabetes appears to increase the risk of developing psychiatric disorders, it is necessary for the physicians to pay attention for co morbid MDD and GAD during treating of diabetic patients.

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