

**Original article:**

**Common co-morbid conditions associated with type 2 diabetes mellitus**

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**Abstract:**

**Objective:** The aim of the present study was to find out the common co-morbid conditions associated with type 2 diabetes mellitus. **Methods:** A descriptive, cross sectional study was conducted from January 2016 to June 2016 among 300 patients attending at Medicine outpatient department of the Community Based Medical College Hospital and Endocrine outpatient department of the Mymensingh Medical College Hospital after obtaining requisite consent from the patients. Data were collected through the interviewing of the patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to know the common co-morbid conditions associated with type 2 diabetes mellitus. The study was approved by the institutional ethical committee. **Results:** In a pool of 300 type 2 diabetics, Most of the patients (57.3%) belonged to the middle age group 41-60 years. More than half of the respondents were female (n=223, 74.3%). Among 300 cases, 188 patients had shown association with different co-morbid conditions. Female patients (77%) suffered from more co-morbid conditions than male patients (23%). Hypertension was the most commonly associated disease (65.42%) with DM. **Conclusion:** Most of the diabetic patients have co-morbid conditions. Hypertension was the most commonly associated disease with DM.

**Keywords:** Co-morbid condition; Diabetes mellitus.

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**Introduction**

Co-morbidity means coexistence of two or more diseases, pathological conditions or clinical entities. According to the medical expenditure panel survey, most adults with diabetes have at least one co-morbid chronic disease and as many as 40% at least three. Up to 75% of adults with diabetes also have hypertension. Other common co-morbidities of diabetes are dyslipidemia, cardiovascular disease, kidney disease, non-alcoholic fatty liver disease and obesity<sup>1</sup>. Not surprisingly, clinicians and patients alike can be overwhelmed by the need to address co-morbid chronic conditions in addition to patient's diabetes-specific treatment goals. Diabetes mellitus

along with the co-morbidities has been reported as the fifth leading cause of death<sup>2</sup>. Co morbid illnesses can sap the financial resources of people with diabetes by increasing their out-of-pocket costs for medical care. Diabetic patients face higher out-of-pocket medication costs than people with almost any other chronic condition<sup>3</sup>.

**Materials & method**

A descriptive, cross sectional study was conducted from January 2016 to June 2016 among 300 patients attending at medicine outpatient department of the Community Based Medical College Hospital and Endocrine outpatient department of the Mymensingh

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Medical College Hospital after obtaining requisite consent from the patients. Departmental screening committee of Department of endocrinology, Mymensingh Medical college Hospital, Department of Medicine, Community Based Medical College hospital and Institutional. There are no violations of moral and ethical norms during preparing this research. Only type 2 diabetic outpatients were included in this study. Purposive sampling was adopted for collecting data. The interviews were held directly in the corridor just outside the Outpatient Department. The relevant information was entered into the predesigned proforma to know the common co-morbid conditions associated with type 2 diabetes mellitus. The collected data were entered into the computer and analyzed by using SPSS (version 20.1).

**Ethical clearance:** This study got ethical approval before conducting the study from Ethics Committee of Mymensingh Medical College, Mymensingh and Community Based Medical College Hospital.

**Result**

Most of the patients (57.3%) belonged to the middle age group 41-60 years. More than half of the respondents were female (n=223, 74.3%). (Table 1)

**Table 1: Demographic characteristics of the study population (n=300)**

Parameters	Number	Percentage
<b>Age of the patients</b>		
≤ 40 years	77	25.7
41-60 years	172	57.3
> 60 years	51	17.0
Total	300	100.0
<b>Sex</b>		
Male	77	25.7
Female	223	74.3
Total	300	100

Among 300 cases, 188 patients had shown association with different co-morbid conditions and 112 patients had not shown any association with those. (Figure 1)

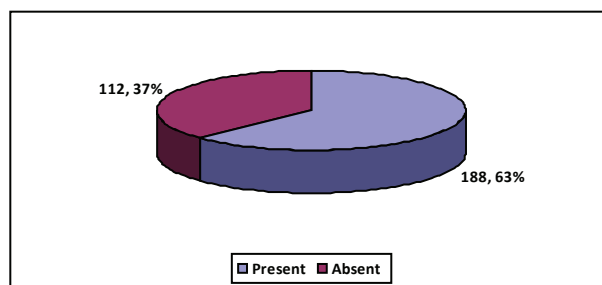


Figure 1: Pie chart showing co-morbidities of the study population

Female patients (77%) suffered from more co-morbid conditions than male patients (23%). (Figure 2)

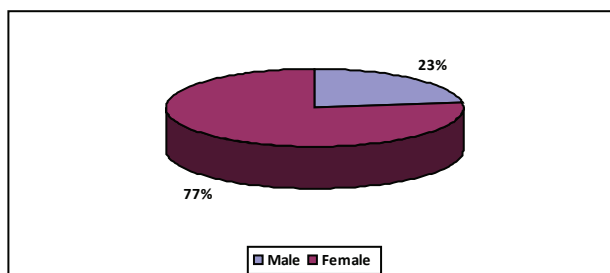


Figure 2: Pie chart showing presence of co morbidity among male and female (n=188).

Hypertension was the most commonly associated disease (65.42%) with DM followed by Ischaemic heart disease (18.61%). (Table 2)

**Table 2: Prevalence of Co-morbidities associated with DM (n=188)**

Co-morbidities	Number	Percentage
Hypertension	123	65.42
Dyslipidaemia	14	7.44
Ischaemic heart disease	35	18.61
Depression	12	6.38
Asthma	15	7.97
CKD or Renal failure	09	4.78
Liver disease	02	1.06
Diabetic Neuropathy	10	5.31
Diabetic foot	09	4.78
Gout	02	1.06
Chronic obstructive pulmonary disease	01	0.53

\*Patients may suffer from more than one co-morbid condition.

**Discussion**

All together a total of 300 patients were interviewed during the study period. This study showed that diabetes mellitus was more prevalent in female

patients than in male patients. Similar results were obtained in the study conducted by Abebaw et al. (2016), Alam et al. (2014) and Mann et al. (2009)<sup>4,5,6</sup>. This study revealed a higher prevalence of diabetes was among middle aged patients. A study done in India by Sajith et al. (2014) also found similar result<sup>7</sup>. In our study 188 (63%) patients suffered from different co-morbid conditions. Disimilar results were obtained in the study conducted by Struijs et al., (2006), where 44% patients of diabetes mellitus have co-morbid conditions<sup>8</sup>. Hypertension accounted for 65% of the total complications which are higher than the study reported in Thailand (hypertension accounted for 55.53% of the total complication). Our study findings are quite similar to the study conducted in India by Shamna and Marimuthu (2011) that hypertension is more common complication affecting 59% of people with diabetes. These findings are significantly alarming, as hypertension is a predictor of cardiovascular disease<sup>9-10</sup>. In our study female patients (77%) suffered from more co-morbid conditions than male patients. Struijs et al., (2006) in their study reported that Patients with diabetes without co morbidity were more likely to be male<sup>8</sup>.

### **Conclusion**

Most of the diabetic patients have co-morbid conditions. Hypertension was the most commonly associated disease with DM. Presence of co-

morbidity with diabetes pose significant health care burdens on both families and society. The result of the present study highlights the need for comprehensive management of diabetic patients including treatment of co-morbidity.

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### **Conflict of Interest**

Authors declare no conflict of Interest.

### **Authors Contributions:**

Data gathering and idea owner of this study: Kartick Chanda Shaha

Study design: Kartick Chanda Shaha, Md. Shamsur Rahman

Data gathering: Kartick Chanda Shaha, Md. Shamsur Rahman, Tasmin Shahnaz

Writing and submitting manuscript: Kartick Chanda Shaha, Tasmin Shahnaz

Editing and approval of final draft: Kartick Chanda Shaha, Habibunnahar

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