

## Knowledge of Complications of Diabetes Mellitus Among Citizens of Urban Community in Dhaka

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**Abstract:** *Diabetes mellitus is one of the major health problems around the world. A cross-sectional type of study was conducted in urban community in Dhaka city with the aim to assess the level of knowledge about different types of complications and knowledge about control and prevention on complications of diabetes mellitus. Data were collected from 214 male and female senior citizens by face to face formal interview using a pre-tested semi-structured questionnaire. In this study the mean age of the respondents was 62.8±3.1 years and majority of the respondents (85.0%) were married with the mean family monthly income was 27,457.0±13927.6 taka. About 56.5% of the respondents were male and 22.4% of the respondents had SSC level of education, followed by 20.1% who had bachelor degree. About 28.0% of the respondents mentioned chest pain and heart attack as the complications of diabetes on heart. More than half (55.6%) of the respondents don't know about kidney problems and 22.0% of the respondents stated that back pain and kidney failure are the complication of diabetes on kidney. The majority (60.3%) of the respondents don't know about problem of brain due to diabetes and more than six-tenths (65.4%) of them knows about complications of diabetic foot. About 35.0% of the respondents mentioned treatment, diet control and regular exercise/walk as the control method for diabetes. The findings reveal that only little above three-tenths of the respondents had good level of knowledge regarding the complication of diabetes mellitus. Health education programme and behavioral change interventional program could play role to improve knowledge of risk population guide them to modify their life style to prevent and control diabetes.*

**Keywords:** *Diabetes Mellitus, Respondents, Health, Complications, Knowledge*

### Introduction

Diabetes mellitus is one of the major health problems around the world. World Health Organization (WHO) estimates that more than 346 million people worldwide have DM. This number is likely to more than double by 2030 without any intervention. Almost 80.0% of diabetes induced mortality occurs in low and middle-income countries<sup>1</sup>. The incidence of this disease has shown a sharp increase in the South-East Asia Region, diminishing the myth that it is largely a problem of developed countries. Diabetes from the Region constituted 20.0% of the world's 135 million diabetes population in 1995, and this proportion is expected to increase to 27.0% by 2025<sup>2</sup>. In urban population, more than two-fold increases in diabetes mellitus have been reported. On a global scale, female diabetics outnumber their male counterparts although in South-East Asia Region, the ratio is reversed. The prevalence and the mortality and morbidity data grossly underestimate the real magnitude of the problem. Because 'once a diabetic, always a diabetics' – he or she has to control the disease for the rest of his or her life<sup>2</sup>. According to a WHO report, India heads the world with over 32 million diabetic patients and this number is projected to increase to 79.4 million by the year 2030<sup>3</sup>.

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Recent surveys indicate that diabetes now affects a staggering 10-16% of urban population and 5-8% of rural population in India and Sri Lanka<sup>4</sup>. According to a study in Bangladesh the prevalence rate of diabetes mellitus (DM) was 5.63%<sup>5</sup>. The prevalence rate of diabetes in male and female were 5.41% and 5.96% respectively.

Diabetes mellitus (DM) is a chronic progressive metabolic disorder characterized by hyperglycemia mainly due to absolute (Type 1 DM) or relative (Type 2 DM) deficiency of insulin hormone<sup>6</sup>. Diabetes mellitus, with its two main types, Type 1 diabetes (T1D) and Type 2 diabetes (T2D) represents a global health problem due to increasing prevalence and associated risk of devastating complications such as gangrene, blindness, kidney failure as well as premature morbidity and mortality due to heart and vascular diseases<sup>7</sup>. Furthermore, lifestyle-induced health problems combined with ageing of populations in the developed world and improved general living standards and survival in the developing world are producing more if not less people with diabetes.

DM virtually affects every system of the body mainly due to metabolic disturbances caused by hyperglycemia, especially if diabetes control over a period of time remains suboptimal<sup>6</sup>. Until recently it was believed to be a disease occurring mainly in developed countries, but recent findings reveal a rise in number of new cases of type 2 DM with an earlier onset and associated complications in developing countries. Diabetes is associated with complications such as cardiovascular diseases, nephropathy, retinopathy and neuropathy, which can lead to chronic morbidities and mortality<sup>8</sup>.

Diabetes mellitus type 1 (also known as type 1 diabetes, or T1DM; formerly insulin dependent diabetes or juvenile diabetes) is a form of diabetes mellitus that results from autoimmune destruction of insulin-producing beta cells of the pancreas. The subsequent lack of insulin leads to increased blood and urine glucose. The classical symptoms are polyuria, polydipsia, polyphagia, and weight loss<sup>9</sup>. Type 1 diabetes can be distinguished from type 2 by autoantibody testing - glutamic acid decarboxylase autoantibodies (GADA), islet cell autoantibodies (ICA), insulinoma-associated (IA-2) autoantibodies, and zinc transporter autoantibodies (ZnT8) are present in individuals with type 1 diabetes, but not type 2. The C-peptide assay, which measures endogenous insulin production, can also be used. Incidence varies from 8 to 17 per 100,000 in Northern Europe and the U.S. with a high of about 35 per 100,000 in Scandinavia to a low of 1 per 100,000 in Japan and China<sup>10</sup>. This study aimed to assess the level of knowledge about different types of complications and knowledge about control and prevention on complications of diabetes mellitus.

### **Material and Methods**

The study follows a cross-sectional study design encompassing a descriptive style with aim to assess the level of knowledge about different types of complications, control measures and preventions of diabetes mellitus. The research participants were the residents of urban community in Dhaka city of Bangladesh. The sample size of the study composed of 214 respondents, who were available during the period of this study. The study was carried out within the Dhaka metropolitan and a convenience sampling technique was used to select the participants.

Data was collected by face to face interview using pre-tested semi-structured questionnaire and the target population for the study composed of senior citizens of urban community. The participants who were not willing to participate were excluded. The selected participants were explained in details the nature of the study and informed consent was obtained. All the collected data were coded numerically and analyzed using SPSS 20 version. A descriptive statistic was carried out and the results were presented in the form of tables and figures.

### **Ethical consideration**

Prior to the data collection, the interviewer briefly described the participants about the objectives of the study to make them mentally ready for participation. The informed consent was taken from the respondents before interview ensuring strict confidentiality of personal information. The study was ethically approved by the Ethics Review Committee of Faculty of Allied Health Sciences (ERC-FAHS), Daffodil International University, Bangladesh.

### **Results**

#### **Distribution of the Respondents by Socio-demographic Characteristics**

A total of 214 respondents were recruited in this study. Table 1 shows that the mean age of the respondents was  $62.8 \pm 3.1$  years and majority (69.6%) of the respondents were  $\leq 63$  years. About 19.2% of the respondents were in the age group 64-67 years and 9.8% of the respondents were in the age group 68-71 years and the rest (1.4%) were 72 years and above.

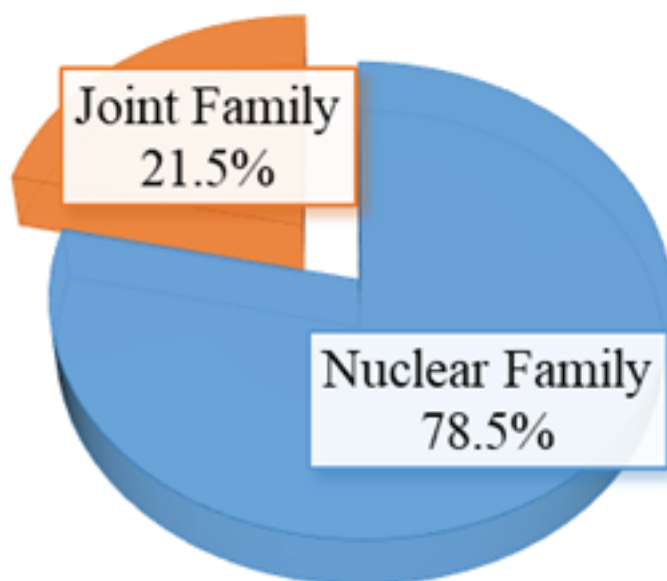
It was observed that majority of the respondents (85.0%) were married, 13.1% were widowed and the remaining 1.9% were divorced. About 39.7% of the respondents had a monthly income of 21,000-31,000 BDT, followed by 27.1% who had 31,000 BDT & above with the mean family monthly income being  $27,457.0 \pm 13,927.6$  BDT. About 56.5% of the respondents were male and 75.2% of them were Muslims. Approximately 22.4% of the respondents had SSC level of education, followed by 20.1% who had bachelor degree, 15.5% had HSC, 15.4% had diploma/vocational education, 11.7% had primary level of education, 11.2% had master level of education and 3.7% had no formal education.

**Table 1: Distribution of the respondents by Socio-demographic Characteristics (n=214)**

| <b>Socio-demographic Characteristics</b> | <b>Frequency</b> | <b>Percent</b> |
|------------------------------------------|------------------|----------------|
| <b>Age (years)</b>                       |                  |                |
| ≤63                                      | 149              | 69.6           |
| 64-67                                    | 41               | 19.2           |
| 68-71                                    | 21               | 9.8            |
| ≥72                                      | 3                | 1.4            |
| <i>X</i> ±SD                             | 62.78±3.075      |                |
| <b>Marital Status</b>                    |                  |                |
| Married                                  | 182              | 85.0           |
| Widowed                                  | 28               | 13.1           |
| Divorced                                 | 4                | 1.9            |
| <b>Monthly Family Income (Taka)</b>      |                  |                |
| ≤10000                                   | 22               | 10.3           |
| 11000-20000                              | 49               | 22.9           |
| 21000-30000                              | 85               | 39.7           |
| ≥31000                                   | 58               | 27.1           |
| <i>X</i> ±SD                             | 27,457.0±13927.6 |                |
| <b>Gender</b>                            |                  |                |
| Male                                     | 121              | 56.5           |
| Female                                   | 93               | 43.5           |
| <b>Religion</b>                          |                  |                |
| Muslim                                   | 161              | 75.2           |
| Non-Muslim                               | 53               | 24.8           |
| <b>Educational level</b>                 |                  |                |
| No formal education                      | 8                | 3.7            |
| Primary                                  | 25               | 11.7           |
| SSC                                      | 48               | 22.4           |
| HSC                                      | 33               | 15.5           |
| Diploma/Vocational education             | 33               | 15.4           |
| Bachelor degree                          | 43               | 20.1           |
| Masters                                  | 24               | 11.2           |
| <b>Occupation</b>                        |                  |                |
| Housewives                               | 46               | 21.5           |
| Retired                                  | 60               | 28.0           |
| Businessman                              | 57               | 26.6           |
| NGOs                                     | 41               | 19.2           |
| Daily laborers                           | 9                | 4.2            |
| Others                                   | 1                | 0.5            |

**Distribution of the Respondents by Types of Family**

Figure 1 shows the distribution of the respondents by their family type. It was observed that among the total respondents, the majority (78.5%) were from nuclear family and rests (21.5%) were from joint family.



**Figure 1: Distribution of the respondents by types of family (n=214)**

#### **Distribution of the Respondents by Knowledge about Complications of Diabetes Mellitus**

Table 2 shows that the majority (29.9%) of the respondents didn't know about complications of diabetes on heart. However, 17.8% of the respondents mentioned the chest pain, 24.3%-heart attack and 28.0% of them mentioned both chest pain and heart attack as the complications of diabetes on heart. It was found that more than half (55.6%) of the respondents didn't know about kidney problems and the rest (44.4%) of the respondents knew about kidney problems as a complication of diabetes. About 55.6% of the respondents cannot mention any name of kidney problem, 22.0% of the respondents stated that back pain and kidney failure are the complication of diabetes on kidney, 12.1% mentioned only back pain, and 10.3% mentioned kidney failure as the complication of diabetes. Three-fifths (60.3%) of the respondents didn't know about brain complications due to diabetes, 19.6% mentioned brain stroke, 14.5% mentioned headache and brain stroke and 5.6% of them mentioned headache only. It was found that more than six-tenths (65.4%) of the respondents knew about complication of diabetes on foot while the rest of them did not know (34.6%). Regarding the knowledge on diabetes control, about 35.0% of the respondents mentioned treatment, diet control and regular exercise/walk as the control method for diabetes, 21.5% mentioned regular walk/exercises and treatment, 16.8% mentioned diet control, 12.6% don't know, 7.0% mentioned treatment only, 5.6% mentioned treatment and diet control and 1.4% mentioned regular walk/exercise.

**Table 2: Distribution of the Respondents by Knowledge about Complications of Diabetes Mellitus (n=214)**

| Knowledge variables                  | Frequency | Percent |
|--------------------------------------|-----------|---------|
| <b>Heart problem</b>                 |           |         |
| Chest pain                           | 38        | 17.8    |
| Heart attack                         | 52        | 24.3    |
| Both                                 | 60        | 28.0    |
| Don't know                           | 64        | 29.9    |
| <b>Knows the problem of kidney</b>   |           |         |
| Yes                                  | 95        | 44.4    |
| No                                   | 119       | 55.6    |
| <b>Name of kidney problem</b>        |           |         |
| Back pain                            | 26        | 12.1    |
| Kidney failure                       | 22        | 10.3    |
| All                                  | 47        | 22.0    |
| Don't know                           | 119       | 55.6    |
| <b>Name of brain problem</b>         |           |         |
| Headache                             | 12        | 5.6     |
| Brain stroke                         | 42        | 19.6    |
| Headache and brain stroke            | 31        | 14.5    |
| Don't know                           | 129       | 60.3    |
| <b>Foot problem</b>                  |           |         |
| Yes                                  | 140       | 65.4    |
| No                                   | 74        | 34.6    |
| <b>Knowledge on diabetes control</b> |           |         |
| Treatment                            | 15        | 7.0     |
| Control diet                         | 36        | 16.8    |
| Regular Walk/exercise                | 3         | 1.4     |
| All                                  | 75        | 35.0    |
| Treatment & diet                     | 12        | 5.6     |
| Regular Walk/exercise, treatment     | 46        | 21.5    |
| Don't know                           | 27        | 12.6    |

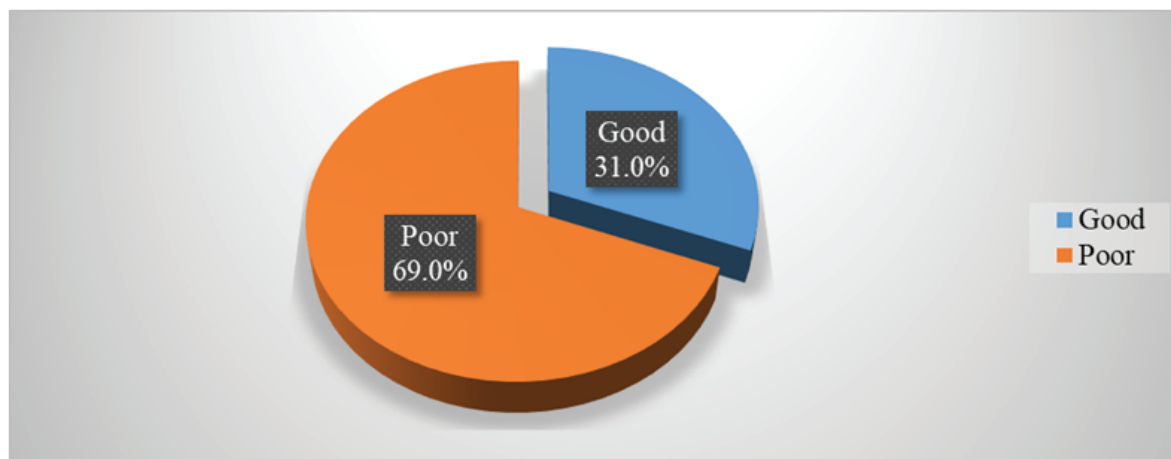


Figure 2: Distribution of the Respondents by Level of Knowledge about Complications of Diabetes Mellitus (n=214)

Figure 2 shows that little above three-tenths (31.0%) of the respondents had good level of knowledge regarding the complication of diabetes mellitus and the remaining respondents (69.0%) had poor level of knowledge regarding the complications.

### Discussion

A total number of 214 respondents were interviewed with the help of questionnaires. Collected data were analysed using SPSS software according to the objectives of the study. In this study the mean age of the respondents was  $62.8 \pm 3.1$  years and majority (69.6%) of the respondents were  $\leq 63$  years. It was observed that majority of the respondents (85.0%) were married and the mean family monthly income was  $27,457.0 \pm 13927.6$  taka. About 56.5% of the respondents were male and 75.2% of them were Muslims. About 22.4% of the respondents had SSC level of education, followed by 20.1% who had bachelor degree. The socioeconomic characteristics of this study was inconsistent with a previous study conducted in Sri Lanka<sup>11</sup>, in Fortaleza, CE, Brazil<sup>12</sup> because this study was addressing in the specific population and different setting contrast to other study. This finding indicates that large proportions of the respondents were educated, reasonable income and belongs to nuclear family. This might be due to fact that this study was conducted only in government staff quarters colony, where most of the people were engaged in job.

The majority of the respondents didn't know about complications of diabetes on heart. However, 17.8% of the respondents mentioned the chest pain, 24.3% of the respondents mentioned heart attack and 28.0% of them mentioned both chest pain and heart attack as the complications of diabetes on heart. Our finding is inconsistent with that of similar study conducted in Bangladesh which reported the heart disease (48.9%) as the most common complication which was known by the respondents<sup>13</sup>. We found that more than six-tenths of the respondents knew about complication of diabetes on foot and 34.6% of the respondents don't know about complication of diabetes on foot. This was again in stark contrast to another study which stated that only one-tenths (10.0%) of the respondents knew diabetic foot as a complication of diabetes<sup>14</sup>. Little above three-tenths (31.0%) of the respondents had good level of knowledge regarding the complication of diabetes mellitus and the remaining of the respondents (69.0%) had poor level of knowledge regarding the complication of diabetes mellitus. Our finding is inconsistent with that of another study conducted among diabetic mellitus patients in India which reported that only 3.0% of the respondents had adequate knowledge on acute complication of diabetic mellitus<sup>14</sup>.

### Conclusion & Recommendations

Diabetes is still a serious disease even in countries where treatment is easily accessible. It has been found that little above three-tenths of the respondents had good level of knowledge regarding the complication of diabetes mellitus. In particular, knowledge about diabetes control, management and complications was insufficient. From the above facts, appropriate health education programme and behavioral change interventional program could play a role to improve knowledge and help them to modify their life style which would in turn help their diabetes self-management skill. Since this study was conducted at a single community health care centre the results do not reflect the knowledge of the general population and further studies are required particularly in different settings to identify patient educational needs and methods to improve self management of diabetes.

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