Study on Socio-Demographic and Anthropometric Profile among Newly Detected Diabetic Patients Attending in a Tertiary Care Teaching Hospital, Dhaka, Bangladesh

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ABSTRACT

Background: Diabetes Mellitus (DM) has become a modern epidemic as a non-communicable disease showing rising trend all over the world. In Bangladesh a large number of diabetic patients encounter every day to the various diabetic clinics for treatment purpose.

Objective: This study aims to observe the socio-demographic and anthropometric profile among newly detected diabetic patients attending to our tertiary care teaching hospital.

Methods: This is a hospital-record based cross sectional descriptive study executed in a tertiary care teaching hospital, Dhanmondi, Dhaka. The study group comprises 165 newly detected diabetic patients enrolled in our Bangladesh Medical College Hospital from July 2019 to June 2020. Analysis of data was done by using SPSS 15 software. Prevalence of newly detected diabetes among study population was calculated by using percentage and the strength of association between socio demographic and anthropometric factors were evaluated in our study.

Results: Among the 165 study participants, we found that 62 were males and 103 were females. Newly detected DM was more common among 36-50 years of age group followed by 51-65 years. Majority of the participants belonged to urban areas (53.94%) and were graduates (38.18%). Positive family history of DM was found among 93 patients. Nearly 55.76% diabetic patients were overweight followed by 23.63% were obese with moderate to low levels of physical activities were observed mostly.

Conclusion: In Bangladesh DM has been emerging as one of the biggest health problems with majority of the patients were unaware about its consequences and morbidity. We need to observe the socio-demographic and anthropometric factors to create the awareness among diabetic patients and prevent its fatal complications.

Keywords: Anthropometric profile, Diabetes Mellitus, Socio-demographic profile.

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I. INTRODUCTION

DM is the most prevailing metabolic condition which has become a major health and socioeconomic issue worldwide [1]. Globally at an alarming rate the expansion of DM is increasing. In the year 2000 around 150-170 million people were found to be suffering from DM and its related complications. WHO has reported the double prevalence of DM worldwide by the year 2025 [2]. In Bangladesh around 8% (12.88 millions) of total population was affected by DM whether as diabetes related death occurred 3% according to WHO report in the year 2016 [3]. Over time an increasing prevalence of diabetes among Bangladeshi people has been observed [4]. Regarding evaluation of morbidity and mortality of non-communicable diseases (NCD) Diabetes, Cancers, Cardiovascular disease and Chronic Respiratory disease are the four main ruling conditions.

In the pathophysiology of diabetes Obesity has become a vital part of metabolic syndrome. To measure adiposity Body mass index (BMI) has gained more favorable and accurate points. In many large epidemiological studies BMI has chosen as an important tool for body fat measurements [5], [6].

For better management and to adopt early prevention strategies, study of socio-demographic profiles among patients attending tertiary care hospitals are very essential. It will not only decrease the morbidity and mortality related to diabetes but also create a great financial impact to the individual as well as to the society. In our study we want to observe the prevalence of newly detected DM with their socio-demographic and anthropometric profiles.

II. MATERIALS AND METHODS

A. Study Design & Area

This a population based cross sectional observational study carried out in both indoor and outdoor Medicine department of Bangladesh Medical College Hospital (BMCH) located at Dhanmondi in Bangladesh.

B. Study Period

This study was carried out from July 2019 – June 2020.

C. Study Population

All newly detected diabetic patients attending indoor and outdoor of Medicine department of BMCH fulfilling the inclusion and exclusion criteria in the study period were enrolled as the study sample.

D. Inclusion Criteria

Newly detected DM on the basis of ADA criteria.
Age more than 20 years.
Informed written consent.

E. Exclusion Criteria

Previously diagnosed as DM.
Pregnant women.
Patients with co-existing Liver disease, Nephrotic syndrome, Alcoholism, Infections, Cerebrovascular accident, Hypothyroidism.
A critically ill patient with altered higher psychic function.
Patients on oral corticosteroids.
Patients not willing to participate in the study.

F. Sampling Technique:

Consecutive convenient (purposive) sampling.

G. Data Collection

All the subjects underwent medical history assessment, general clinical examination, before enrollment. Patients gave informed consent before they participated in the study. Once informed consent was obtained, all participants were asked to complete a questionnaire to collect basic demographic information such as age, gender, place of living, marital status, economic condition, educational qualifications, family history of DM and level of physical activity.

By using laboratory kits (enzymatic methods) and spectrophotometry technique Fasting blood glucose was measured in the morning after having an overnight fasting for 8 hours on a pre-fixed date. In the interview schedule the blood glucose level was recorded.

By using adult weighing scale and stadiometer weight and height were measured respectively.

H. Operational Definition

According to American Diabetes Association (ADA) criteria DM is diagnosed at fasting blood glucose of greater than or equal to 126 mg/dl.

BMI was calculated by dividing weight (kg) to height (m²).

< 18.5 (kg/m²): Under weight.
18.6-22.9 (kg/m²): Normal.
23-24.9 (kg/m²): Overweight.
>25 (kg/m²): Obese.

as per new guidelines of obesity among Asians [7].

5 categories were designed for physical activities on the basis of daily work:

- No physical activities (without moving from one place to another place).
- Low activity (physical activity involving the extension of muscular-skeletal and moving from one place to another place).
- Moderate activity (physical activity sometimes involving an increase in respiratory rate like cleanliness, gardening, building painter).
- High activity (physical activity involving a highly increased reparatory rate such as manual labor, building labor, porter).
- All of the above activities during the day.

I. Data Analysis

Data was recorded into semi-structured pre-tested pro forma. It was entered into Microsoft Excel and analyzed using SPSS v 16.0. Summarization of data was done according to data types and appropriate statistical tests were done. The various modes of clinical presentation were expressed as the total number of patients presenting with a particular presenting feature and then calculated as a percentage of the total number of patients. Statistical analysis was done by using appropriate statistical tool like 'chi-square' test, student 't' test, where applicable. A P-value of <0.05 was considered to be statistically significant and a P value of >0.05 (p>0.05) was taken as not significant. Informed consent was taken in all the cases and the records were kept confidentially.

J. Ethical Clearance and Informed Consent

The study was carried out after obtaining approval from the Institutional Ethical Committee. The participants were briefed about the purpose of the study and informed consent was obtained prior to the data collection.

III. RESULTS

A. Gender and Age Wise Distribution of Study Population

Out of 165 newly detected diabetic patients' majority 103 were female patients and 62 were males (Fig. 1). Maximum number of patients (40.61%) were in between the age group 36-50 years (Table 1).

Fig. 1. Gender distribution among study population.

TABLE 1: AGE WISE DISTRIBUTION OF STUDY POPULATION

Age	Male	Percentage (%)	Female	Percentage (%)	Total (%)
20-35	6	3.63	8	4.85	14 (8.48)
36-50	24	14.55	43	26.06	67 (40.61)
51-65	17	10.30	34	20.61	51 (30.91)
>65	15	9.09	18	10.91	33 (20)
	n = 62		n = 103		165 (100%)

B. Educational Status Among Study Group

The educational status showed that majority of the study participants were either graduates (38.18%) or educated up to primary level (34.55%) or (Table 2).

TABLE 2: EDUCATIONAL STATUS AMONG STUDY GROUP

Educational Status	No. of Patients (n = 165)	Total Percentage (%)	P value
Illiterate	13	7.88	0.056
Up to 10 th Standard	57	34.55	
Graduate	63	38.18	
Post graduate	32	19.39	

C. Distribution of Residence Area

Most of our newly detected diabetic patients belonged from urban areas (89 patients) in comparison to the rural areas (76 patients) (Fig. 2).

Fig. 2. Area wise distribution of study population.

D. Marital Status of Study Group

In our study 64.85% diabetic patients were found married which was not proven statistically significant here ($p < 0.665$) (Table 3).

TABLE 3: MARITAL STATUS OF STUDY GROUP

Marital Status	No. of Patients	Total Percentage (%)	P-value
Married	107	64.85	<0.665
Unmarried	58	35.15	

E. Family History of DM

Here we found around 56.36% patients had positive family history of DM among their first degree relatives but it has not proven statistically significant in our study ($p > 0.62$) (Fig. 3).

Fig. 3. Family History of DM among Study Group.

F. Economic Status of Study Group

From economic point of view majority of patients in this study belonged to middle or lower socioeconomic group (Table 4).

TABLE 4: ECONOMIC STATUS OF STUDY GROUP

Economic Status	No. of Patients	Total Percentage (%)	P-value
Lower income group	45	27.27	<0.665
Middle income group	67	40.61	
Higher income group	53	32.12	

G. BMI Among Diabetic Patients (n=165)

As per BMI classification only 12.73% had normal BMI, whereas as high as 55.76% were overweight, 7.89% were in underweight category and 23.64% were on obese category.

Fig. 4. BMI Status of Study Group.

H. Level of Physical Activity of Study Group

Moderate to low physical activity was found three times higher than high physical activity in our study group (Table 5) with statistical significance ($p < 0.05$).

TABLE 5: LEVEL OF PHYSICAL ACTIVITY AMONG STUDY GROUP

Levels of Physical Activity	No. of Patients (n=165)	Total Percentage (%)	p-value
Low	57	34.55	0.038
Moderate	63	38.18	
High	19	11.52	
Whole	26	15.76	

IV. DISCUSSION

This study was conducted in a private medical college hospital which explains the socio demographic profiles of the participants. Majority of the diabetic patients were from middle socioeconomic background. It probably breaks the stigma that the DM is no more confined to the higher socio economic group.

Here we found, majority of our diabetic patients were in the age group of 36-50 years. A study conducted in a private hospital of Ahmedabad has mentioned only one fourth of their study population from the geriatric group (defined as >55 years in their study) [8]. The differences may be due to lack of awareness of DM among younger population as well as proper screening.

Regarding gender distribution our study showed 62% were newly detected female diabetic patients in contrast to one study where they had similar percentage (62%) for their male diabetic patients [8]. This reveals a fascinating observation on the basis of which need to be evaluated. Majority of our patients were either graduates or educated up to primary level which had similarities with one study where they had maximum graduate participants and merely 1% illiterate patients [8].

During consideration of nutritional status majority of our patients were found overweight followed by obese category. This study has identified higher BMI as an association with newly detected DM and the role of BMI has been previously described [9]. It is well documented that higher fat levels prevent proper functioning of insulin and also down regulate its receptors that produce insulin resistance that ultimately result into DM [10]. A study conducted in Madhya-Pradesh mentioned that 22% of their study population were overweight whereas 55% were obese [11]. We found similarities on increased BMI among female diabetic patients with another study done by Shekar MA et al among south Indian diabetic group [12].

In our study overweight and obese diabetic females had moderate to low levels of physical activities probably due to lack of awareness regarding health status.

Like other studies no positive correlation were found between economic status of the study group [13]. Meanwhile, low accessibility to health care facilities were found among lower economic group in one study [14].

V. CONCLUSION

The socio-demographic and anthropometric profile of the newly detected diabetic patients attending to our tertiary care teaching hospital reveal that majority are overweight females residing in urban areas with middle economic background and have moderate to low levels of physical activity. All these information points towards creating awareness among this vulnerable group of population for preventing DM and its related complications.

VI. LIMITATIONS

As the current study has done in a tertiary care teaching hospital in the urban area, hence the results may not be the complete reflection of the diabetic patients residing in the

whole community. More studies need to be contemplated to come to a complete conclusion for this. Moreover, only selected variables of interest have taken here for observation.

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