



## BEHAVIOR CHARACTERISTICS OF PATIENTS WITH TYPE 2 DIABETIC MELLITUS ATTENDING IN A SELECTED TERTIARY CARE HOSPITAL IN DHAKA, BANGLADESH

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**Background:** Diabetes mellitus (DM) is a chronic metabolic disorder and important public health problem. DM is high in low and middle income countries including Bangladesh. In earlier studies in Bangladesh, the understanding on diet, drugs, discipline and knowledge of Type 2 DM is limited in this country.

**Aim:** The aim of the study was to assess demographic factors, dietary practices, drug intake, discipline and knowledge on Diabetes mellitus.

**Method:** It was a cross sectional study. 200 Type 2 Diabetic patients aged 25 years or above were included. Patients were recruited from outdoor patient department (OPD) of endocrinology of Dhaka National Medical Institute Hospital (DNMIH). Pre-tested semi-structured questionnaires were used for the study.

**Results:** Study enrolled 200 Type 2 DM patients. Among the cases 70% were female and 30% were male. Mean ( $\pm$ SD) age of study population was 53 ( $\pm$ 15) years and the median age (interquartile range) was 54 (40-65) years. Patients were almost equally distributed in each deciles aged  $\geq$  25 years. However, the highest proportion of T2DM (23%) was identified between 50-59 years of age. Illiterate rate was high 31%. About 42% had monthly household income of TK 10000 to TK 30000. 42% had family history of DM where 37% did not know

about the family history of DM. Among the respondents 37% suffered DM from 3 to 10 years. About 74% took anti diabetic drugs regularly where 77% had no idea about the side effects of drug, 60% knew that the cause is familial, 85% did not know the types and 64% had idea about the complications of DM. 75% had no exercise habit but the male patients with type 2 DM reported more exercise (46%) compare to female patients (19%) ( $p < 0.001$ ).

**Conclusion** Type 2 Diabetes Mellitus is a major public health problem. Here people are not concern about their health status and have lack of diabetic education. Increase education for women and creation of working facilities in Dhaka city could prevent the high prevalence of type 2 DM in women. Additionally, modify the lifestyle and raising awareness, taking healthy diet and timely drug intake could reduce the prevalence and improve management of type 2 DM.

**Key words:** Diabetes mellitus, public health, Type 2 Diabetes.

## **Introduction**

Diabetes mellitus (DM) is a serious global public health problem, an illness that kills silently. In 2013, it was reported that DM killed 4.6 million people (Aschner P et al.) Low and middle income countries face the greatest burden of DM (Islam et al. 2014a, b, c, 2015) . In 2011, the Diabetes Atlas of the International Diabetes Federation (IDF) estimated the global DM prevalence in the age group 20–79 years was at 8.3%, which translates into 366.2 million people suffering from DM in 2011. (Whiting et al. 2011). The number of people living with DM is projected to reach 551.9 million by 2030 (Whiting et al. 2011). By 2030 Bangladesh is likely to emerge as the 8th highest ranking country in terms of the number of people with DM (Whiting et al. 2011).

## **Method**

It was a cross sectional study. 200 Type 2 Diabetic patients aged 25 years or above were included. Patients were recruited from outdoor patient department (OPD) of endocrinology of Dhaka National Medical Institute Hospital (DNMIH). Pre-tested semi-structured questionnaires were used for the study.

## RESULTS

The Study had been conducted in Dhaka National Medical Institute Hospital which is located at the center of Old Dhaka City and respondents who participated in my study most of them belonged to middle class to below middle class family .A total sample size is 200 where different respondents were involved in different locations. A semi-structure questionnaire form was prepared and all answer were collected through interview.

**Table 1: Distribution of respondents by Socio-demographic characteristics**

<b>Socio-demographic characteristics</b>	<b>Percentages (%)</b>
<b>Age</b>	
25-29 years	7
30-39 years	17
40-49 years	16
50-59 years	23
60-69 years	19
Above 70 years	18
Mean age (sd) of male and female: (56.5±15.6 vs. 51.3±14.3, p=0.025)	
<b>Sex</b>	
Male	30
Female	70
<b>Marital Status</b>	
Unmarried	5
Widow	16
Married	79
<b>Educational status</b>	
Illiterate	31
Pre-primary	9
Primary	11
Secondary School Certificate (S.S.C)	19
H.S.C	5
Graduation	2

Masters	7
<b>Occupational status</b>	
Housewife	60
Businessmen	9
Service holders	8
Retired & unemployed	11
Others (rickshaw puller, maid servant, van driver, truck driver, grocer and farmer)	12
<b>Monthly income in taka</b>	
<10,000 Tk	4
10,000-30,000 Tk	50
31,000-50,000 Tk	42
>50,000 Tk	20
No Comments	1

**Table 1** shows, Distribution of respondents by Socio-demographic characteristics, Mean (sd) age of study population was 53 ( $\pm 15$ ) years and the median age (interquartile range) was 54 (40-65) years. The mean age (sd) of male was significantly higher compare to female participants ( $56.5 \pm 15.6$  vs.  $51.3 \pm 14.3$ ,  $p=0.025$ ). According to age distribution, the maximum respondents (23%) belong to 50-59 years of age. The next common is 19% in 60-69 years age group, 18% in  $\geq 70$  years, 17% in 30-39 years, 16% in 40-49 years and 7% in 25-29 years age group. Gender analysis among the respondents shows that 70% were female and 30% were male. According to the marital status of the subject shows that 79% were married, 10% were unmarried and 16% were widow. Regarding educational status 31% were illiterate; pre-primary 9%, primary 11%, Secondary School Certificate (S.S.C) completed 19%, H.S.C 5%, Graduation 2% and Masters 7%. Regarding occupational status Housewife was predominant 60%, businessmen 9%, service holders 8%, retired & unemployed 11% and others (rickshaw puller, maid servant, van driver, truck driver, grocer and farmer) 12%. Table also shows, almost 50% of the study participant had family income ranged 10,000-30,000 Tk per month. Family income ranged from 31,000-50,000 in 42% study participants, 20% had >50,000 Tk and 4% had family income <10,000 Tk per months and 1% respondent didn't say any comment on household income.

**Table 2: Dietary habits among study participants**

<b>Dietary habits</b>		<b>Percentages (%)</b>
Main menu of break fast	Ruti	83%
	Rice	14%
	Porota	2%
	Tea	1%
Take sweet item	Yes	7
	No	89
	Sometimes	4
Take mid morning snacks	Yes	49
	No	16
	Sometimes	35
Main menu of lunch	Rice	100
Main menu of dinner	Rice	63
	Ruti	37

Table 2 shows, among study participants, 83% took Ruti for their break-fast, 14% of them had Rice, 2% Porota and the remaining 1% drinks a cup of tea. Out of all the respondents, 89% of them don't take sweet item but 7% of them took sweet. The remaining 4% sometimes took sweet items. About half of participant 49% took mid morning snacks, 35% took sometimes and 16% did not take their snacks daily. 100% respondents took rice in lunch. Table shows that Rice and ruti were the main menu of dinner. Of the study participants, 63% took rice for dinner and the remaining 37% took only ruti.

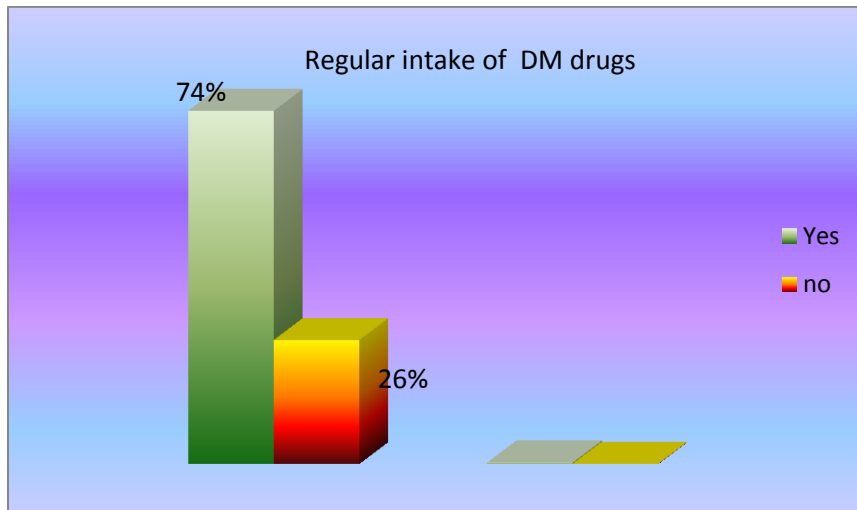
**Figure 1: Distribution of respondents according to regular intake of anti-diabetic drugs**

Figure 1 shows, 74% percent of the respondents took their DM drugs regularly but the remaining 26% percent did not take regularly.

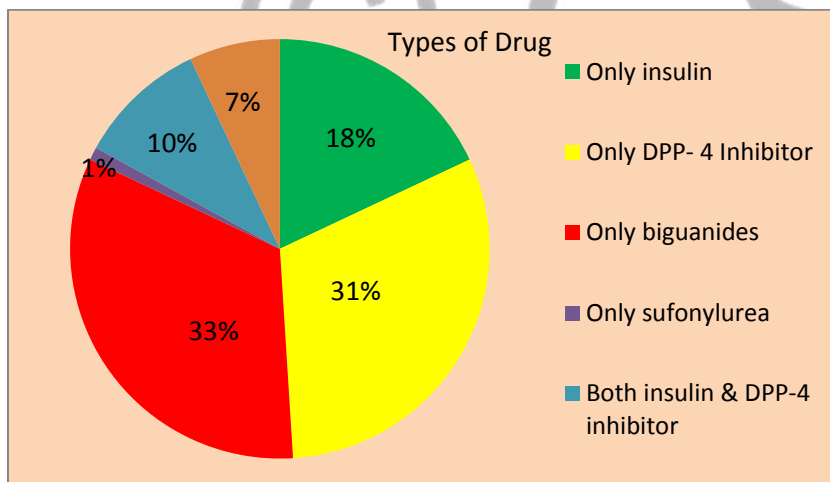
**Figure 2: Distribution of respondents according to the types of drugs they take**

Figure 2 shows, The respondents took various types of drugs. Of them, 18% only took insulin, 7% took both insulin and biguanides, 10% took both insulin & DPP-4 inhibitor, 33% took only biguanides 31% took only DPP- 4 Inhibitor and only 1% of them took sulfonylurea.

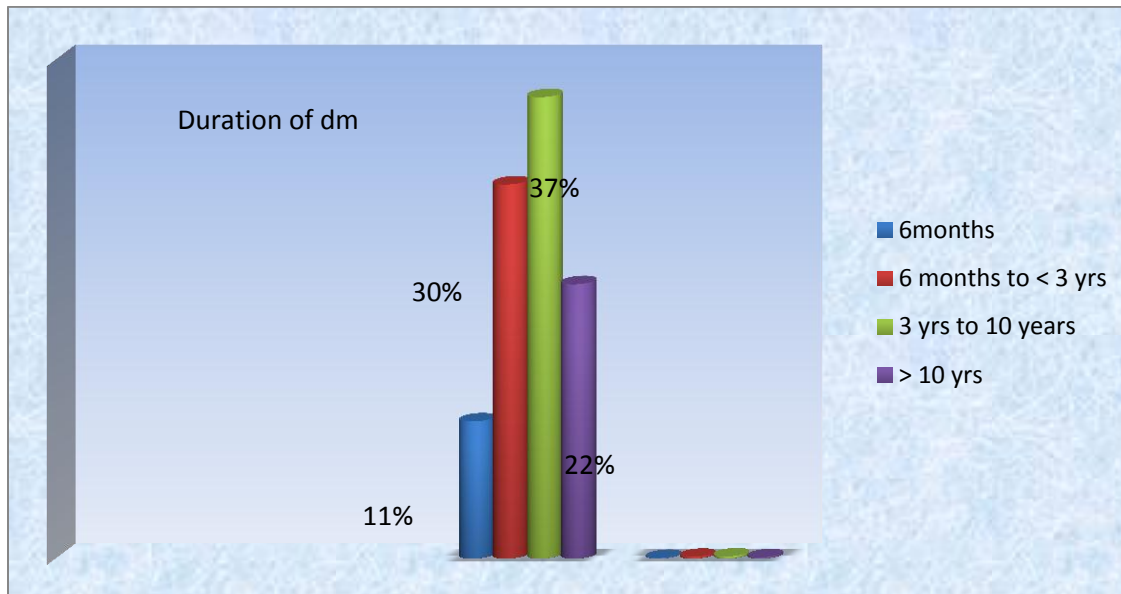
**Figure 3: Distribution of duration of Diabetes Mellitus (DM)**

Figure shows, among study participants, 37% suffered diabetes for 3-10 yrs, 30% for 6 months - < 3years, 22% for > 10 yrs and 11% suffered for <6 months.

**Table 3: Distribution of respondents according to knowledge Type 2 DM**

Having Knowledge on		Percentages (%)
Side effects of the drugs	Yes	23
	No	77
Cause of the DM	Yes	60
	No	40
Types of DM	Yes	15
	No	85
Family history of DM	Yes	42
	No	37
	didn't have any family history	21
Complication on DM	Yes	64
	No	34

Table shows that among these respondents, only 23% of them had knowledge about the side effects of the drugs and the remaining 77% did not have any knowledge. Table shows that among study participants, 60% of the respondents had knowledge and also knew the cause of the DM but the remaining 40% didn't have any knowledge and they didn't know the cause. Table shows that In response to knowledge on DM, 85% of the respondents didn't know the types of DM. The remaining 15% knew the types of DM. Out of 200 participants, 42% reported family history of DM and 37% did not know about family history of DM and 21% didn't have family history of DM. In response to complication on DM, 64% percent of the respondents had knowledge of complications but the remaining 36% didn't have any knowledge of complications.

**Figure 4: Distribution of respondents according to exercise habit**

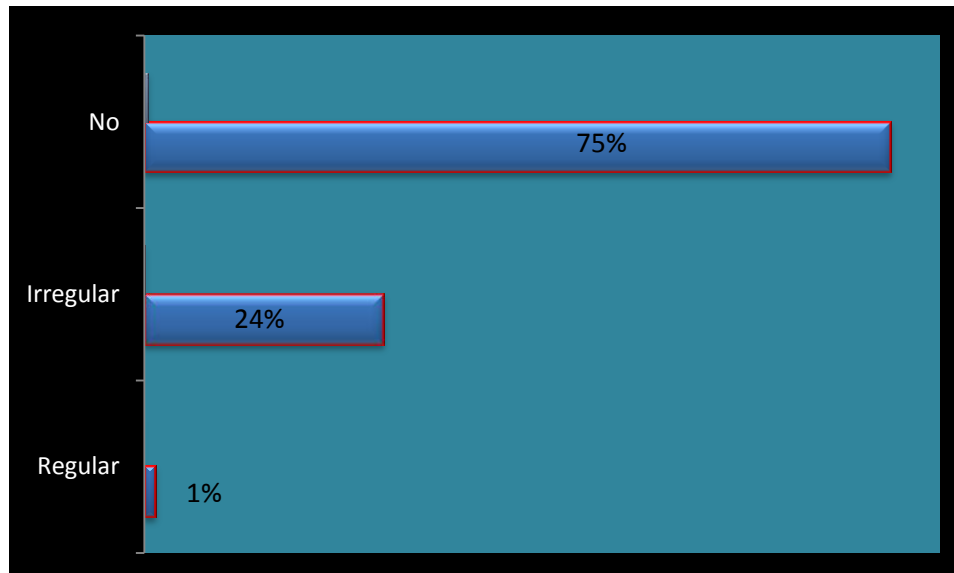


Figure shows, Among the respondents, 75% didn't have a habit of exercising. 24% of the respondents did some irregular exercise and only 1% reported red regular exercise. The male patients with type 2 DM reported more exercise (46%) compare to female patients (19%) ( $p < 0.001$ )



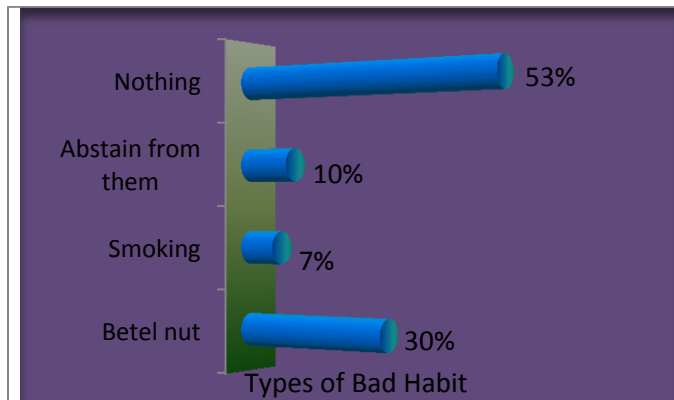
**Figure 5: Distribution of respondents according to types of addiction**

Figure shows, The respondents had many types of bad habit. Even though 53% of them did not have any, 30% of them took betel nut or leaf, 7% of them had exposure to smoking and the remaining 10% of them abstain from them. The betel nut or leaf was taken more commonly in female (37%) compare to 13% in male ( $p < 0.001$ ).

**Table 4: Distribution of respondents according to Time interval of medical check up:**

Time interval of medical check up	Percentages (%)
1 to 2 months interval	19
2 - 3 months interval	35
6 months interval	38
Once a Year	5
When needed	3
Total	46

Table shows that In response to Time interval of medical check up, 38% of the respondents went for medical check up 6 month interval. 35% did their check up 2 - 3 months interval, 19% of them 1 to 2 months interval 5% once a year and 3% did it when needed.

**Figure 5: Distribution of respondents according to time interval of blood glucose check up by Glucometer**

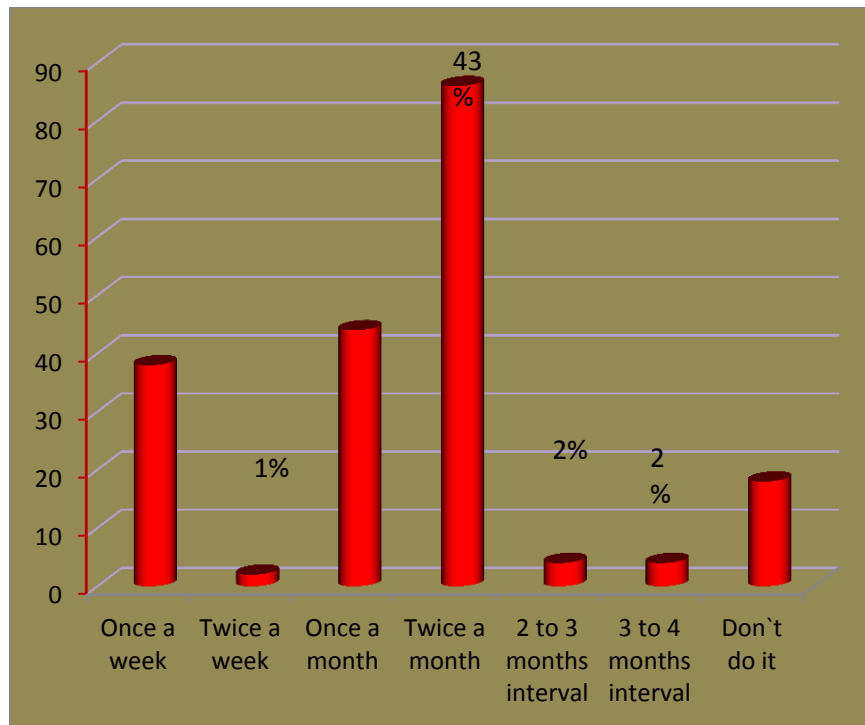


Figure shows, In response to blood glucose check up, 43% of the respondents checked blood glucose twice a month. 22% did their checkup once a month, 19% of them checked once a week, 2% did 2-3 months interval, 2% checked 3-4 months interval and 9% of them didn't check up blood glucose level.

### Discussion

In this cross sectional survey of type 2 DM at Dhaka National Medical Institute Hospital which is situated in South City Corporation of Dhaka City. Previously there was no survey conducted in this hospital regarding type 2 diabetic patients. In this study 70% of the participants were female. There is no identified relation of DM between male and female. However, I recruited all Type 2 DM cases attending in outpatient department of endocrinology. However, the residential buildings in this area are very unplanned and congested with limited or no access of day light. The roads are narrow and twisted and rarely have footpath. The roads and footpaths are blocked, and congested by vendors, rickshaw, pulling cart and engine vehicles. It is a challenge to walk through the roads and footpaths and it is more challenge for the women who are socially and culturally conservative. In Bangladesh, the women live in very disadvantageous situation. The female are culturally and religiously restricted to move outside home. The female spend most of

their time inside the house and do their household works. After marriage, the women are more engaged to take care of their children and household works. They have little opportunity to go outside home, walking outside home and to do hard physical works. Furthermore, the population in urban Dhaka have limited knowledge on physical exercise to maintain good health. Additionally, there are no or limited exercise facilities for urban population in Dhaka as well as more restricted to female population. The lack of physical activity is one of the contributing or aggravating factor for DM and it might contributes to increase diabetes patients in female population. So, I found higher number of female patients in our study.

In this study, the distribution of Type 2 DM cases is almost equal in 25-29, 30-39, 40-49, 50-59, 60-69 and  $\geq 70$  years. However, it was identified highest proportion of cases (23%) of cases in 50-59 years age. Age distribution of Type 2 DM is consistent with most of other studies (Perera et al.), (Sayka et al. JDMDC, 2015) found lower proportion of type 2 DM cases (8.2%) in  $>62$  years of age group compared to identification of 37% type 2 DM cases in similar age ( $\geq 60$  years) group in this study. Decrease glucose uptake by muscle and beta cell dysfunction occur in older age group in T2DM (Davidsons Principles and Practice of Medicine). My finding of age distribution co-relate with pathogenesis of T2DM.

In this survey, almost one third of our study population is illiterate. So, they are less likely to follow diabetic guideline and to maintain their blood level.

In this study, I found that 60% of the respondents do not know cause of DM. However, they know that DM was due to familial. They were not aware well about pathogenesis as many of them were illiterate and they could read about DM. Additionally, there was no good counseling system to inform adult and older population about DM. In this study respondents had also little knowledge about type of DM and 85% of the participants did not know the types of DM. The finding of poor knowledge of type of DM is similar to previous survey.(types of DM Davidsons Principles and Practice of Medicine) The poor knowledge of type DM is due to high illiteracy rate and lack of training. Majority of the respondents (81%) in this survey did not recommend 6 times meal per day which is important to maintain blood glucose level.

This study was a cross sectional and I was not able to indentify the risk factors for Type 2 DM. Furthermore, this study was done in OPD. So, I might miss to pick up severe complicated cases of Type 2 DM. Additionally, the study was conducted only between September to December and

will not represent throughout the year. DM is a chronic disease. So, unlikely it will affect the seasonal bias of recruitment.

**Conclusion:**

Type 2 DM represents a major public health problem in Dhaka city. Type 2 DM is more common in female population of Dhaka. The age distribution of Type 2 DM is almost equal in middle age and older age group. More studies are needed to identify risk factors of Type 2 DM for female in Dhaka city. Increase education for women and creation of working facilities in Dhaka city could prevent the high prevalence of type 2 DM . Additionally, modify the lifestyle and raising awareness about daily walking habit as well as exercise, maintaining time schedule for diet, taking healthy diet with adequate amount and timely drug intake could reduce the prevalence and improve management of type 2 DM.

**Recommendation:**

- ❖ Diabetes knowledge among the patients specially in female should be expanded.
- ❖ More illustrative interventional study should be carried out.
- ❖ Campaign for awareness and life style modification for health to be arranged.

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