Status of Glycaemic Control in Patients Attending Endocrine OPD in a Tertiary Care Hospital in Bangladesh

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Abstract
Strict glycaemic control early in the treatment process has been shown to reduce the occurrence of micro- and macro- vascular complications of diabetes in the long-term. Thus, treatment guidelines advise early intensification of treatment to achieve glycaemic control goals. However, evidence in Bangladesh suggests that, despite guideline recommendations, glycaemic control among patients with T2DM remains challenging. The objective of this study was to determinants of glycaemic control among individuals with type 2 diabetes mellitus patients in Bangladesh. A cross-sectional study was conducted during March to September 2017 at Endocrinology OPD in Lab Aid Specialized Hospital, Dhaka, Bangladesh. A total number of 213 patients with type 2 diabetes mellitus patients were enrolled. Information was gathered from patients by means of eye to eye meet, and their clinical records were explored. Numerous calculated relapse examinations were performed. Among the patients, 46.48% were male. Mean age was 49.20and standard deviation (±13.04). Mean of HbA1c was 8.71% and standard deviation was (±3.97). Low training level, rustic living arrangement, undesirable dietary patterns, insulin use rate follow up registration related with insufficient and exceptionally poor controls. Being female and smokeless tobacco buyer gave off an impression of being related with deficient control anyway psychological debilitation was related with poor control as it were. Commonness of insufficient glycaemic level was exceptionally high in Bangladesh. Having comprehended relatable way of life change variables, socioeconomics and co-morbidities among individuals with type 2 diabetes, human services suppliers related to patients should cooperate to address the glycaemic control.
Keywords: *Glycaemic control, Endocrine OPD, Co-morbidities.*

Introduction

Diabetes has been identified as one of the most common disease suffered by the vast majority of Bangladesh. It was evaluated that, in the year 2017, in excess of 425 million individuals universally were experiencing diabetes, and still

increasing day by day in low-and center salary nations, where about 80% of complete diabetes passing on the planet occurs[1]. In Bangladesh, the diabetes was detected in 9.7% of the total populace in 2011[2], and the quantity is anticipated to be 13.7 million by 2045[1].

The most significant part of the ideal administration of patients experiencing diabetes is counteraction of the harmful impacts of hyperglycemia. Glycaemic control is hence considered as the fundamental remedial objective for counteraction of these serious results. Results from numerous observational investigations and randomized controlled clinical trials[3-6] have found that exacting control of glycaemic levels assists with forestalling confusions, particularly of the microvascular type[1].Therefore, the overall aim of the present study is to status of glycaemic control in patients attending endocrine OPD in a tertiary care hospital in Bangladesh, especially among patients with T2DM.

Materials & Methods
Study Type
This was a cross-sectional observational study.
All outpatient subjects, who were older than 18years, diagnosed with T2DM and scheduled for a routine office visit during the time period between March to September 2017, were eligible to participate.

Data Collection
The primary data was collected from the patients who showed symptoms of diabetes were already diagnosed with diabetes. Additional data were also collected during follow up consultations, if patients visited more than once at OPD during the study period. A questionnaire survey was conducted in order to glean some of the additional information from the samples.The patients were given consent from to maintain the ethical validation of this study.

Operational definition
The patient's latest readings (within the previous three months) of glycaemic status were categorized as follows: good glycaemic control = HbA1c < 7%[7-8]; 18.50–24.99 = normal; >25.00 = overweight or obese[9]. The cut-off point for WHR was defined as a ratio of >0.90 for men and >0.80 for women.[10]

Analysis Method
Expressive measurements were accounted for utilizing mean with standard deviation (SD) for numerical information and relative frequencies (rates) for unmitigated information. To test the relationship between hazard factors and levels of glycaemic control, ANOVA, chi-square tests, and straightforward calculated relapse investigation were utilized for a univariate examination.

Results
Out of 213 patients, 99 (46.48%) were male and female 114 (53.52%). The mean (±SD) age was 49.20 (±13.04) years and the mean (±SD) duration of participants' diabetes conditions was 97.28 (±7.2) months. The mean (±SD) BMI was 25.7 (±4.9) kg/m² and the mean (±SD) HbA1c was 8.71% (±2.2%). Only 18.8% of participants were classified as having good control, 19.78% had fair control, 62% had poor glycaemic control, and 54.7% had very poor control. Table 1 shows demographic and lifestyle characteristics for various glycaemic levels. The prevalence of poor control was higher among females (p = 0.003), participants with a lower level of education (p = 0.001), those living in rural areas (p < 0.001), and housewives (p = 0.011). Further, the prevalence of poor glycaemic control was higher among smokeless tobacco consumers (p = 0.008) and unhealthy diners (p = 0.008).

Table 1: Background information of the patients

Characteristics		Frequency	Percentage
Religion	Islam	180	84.51
	Hinduism	32	15.02
	Christianity	1	0.47
	Buddhis	0	0.00
	Base	**213**	**100.00**
Marital status	Married	203	95.31
	Unmarried	10	4.69
	Base	**213**	**100.00**
Education	Illiterate	7	3.29
	Primary	22	10.33
	SSC	48	22.54
	HSC	26	12.21
	Graduate	83	38.97
	Others	27	12.68
	Base	**213**	**100.00**

Demographic characteristics and lifestyle by glycaemic control

Gender of the patients
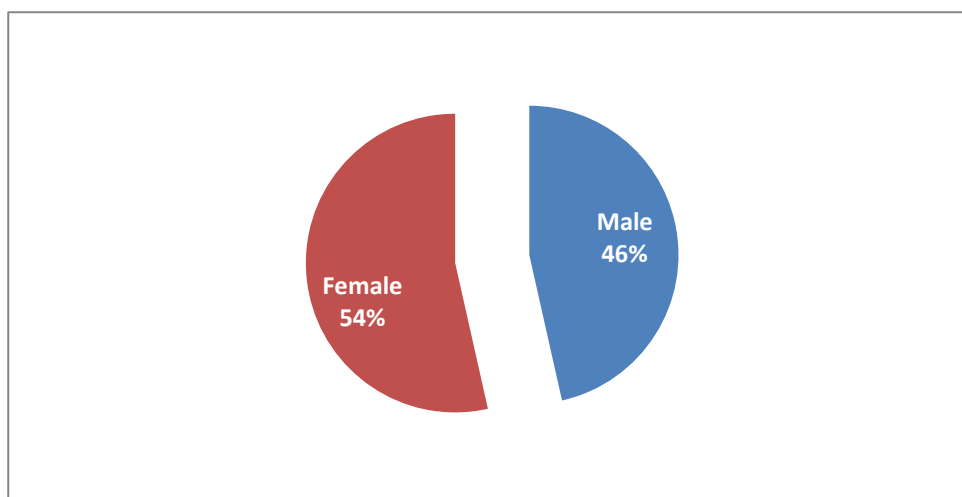
Figure 1: Gender of the patients
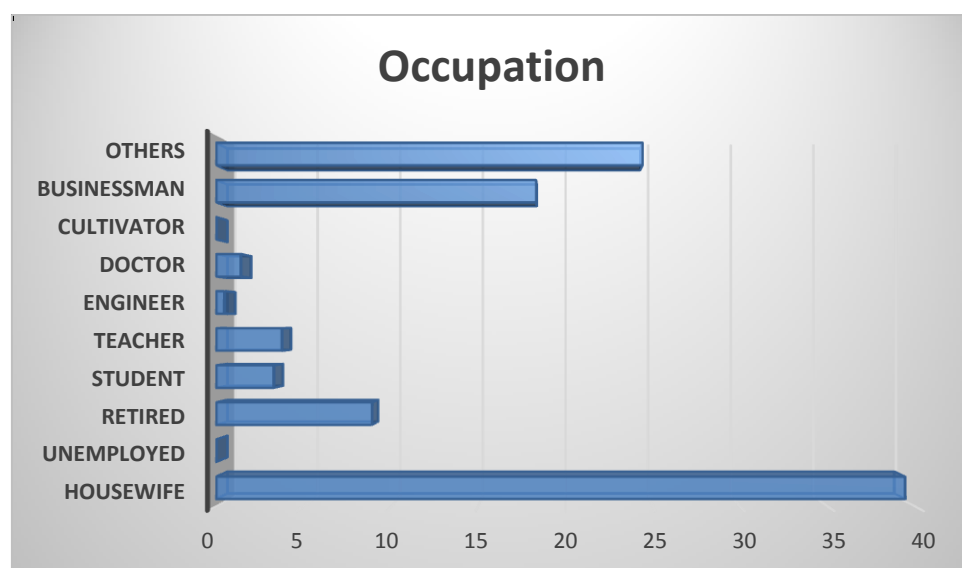
Figure: 2 Occupation of Patients

The clinical conditions and their characteristics of the 213 samples by glycaemic control are described in Table 2, Table 3, and Table 4.

Table 2 Clinical characteristics by glycaemic control

On anti-hypertensive medication	Yes	117	54.93
	No	86	40.38
	Base	**203**	**95.31**
Recode of how patients check their blood glucose at Home or Office	Glucometer	163	82.32
	Hospital Lab	35	17.68
	Base	**198**	**100.00**
Known Diabetes complications	Retinopathy	10	20.00
	Nephropathy	13	26.00
	Neuropathy	22	44.00
	CAD	9	18.00
	CVA	3	6.00
	PVD	4	8.00
	ED(Male)	11	22.00
	Base	**50**	**100.00**
From where they took consultation for diabetes	Private chamber	172	83.90
	OPD of hospital	5	2.44
	Mixed	28	13.66
	Base	**205**	**100.00**

Table 3 Adjusted association (odds ratio (OR)) between risk factors and inadequate (HbA1c $\geq$ 7%) glycaemic control by duration of diabetes

	Diabetes duration ≤5 years			Diabetes duration >5 years		
Variables	OR	95% CI	p-value	OR	95% CI	p-value
Age (ref: ≤40 years)						
41-60 years						
>60 years						
Gender (ref: male)						
Female				2.6	1.4-4.2	0.001
Location (ref: urban)						
Rural	2.5	1.2-4.4	0.002	2.6	1.5-4.7	0.001
Smokeless tobacco (ref: never)						
Ever consumer	2.8	1.4-6.2	0.007			
Eating habit (ref: Healthy)						
Unhealthy	3.1	1.3-6.8	0.007	1.9	1.2-3.3	0.24
Modality of treatment (ref: without insulin)						
Insulin	3.7	2.1-7.1	<0.001	4.1	2.6-6.5	<0.001
Follow up check-up frequency (ref: ≤3 months)						
Every six months						
Annually	2.7	1.2-5.6	0.015	2.1	1.0-4.3	0.042
CAD (ref: no)						
Yes	3.8	1.5-10.3	0.005	1.9	1.1-3.2	0.022

Discussion

Glycaemic control is the foundation of overseeing T2DM and is basic for the anticipation of long haul diabetes inconveniences. When all is said in done, being female, a low degree of training, rustic living arrangement, smokeless tobacco utilization, unfortunate dietary patterns, insulin use, history of CAD, and psychological weakness

were related with deficient glycaemic levels in the Bangladeshi T2DM populace.

The prevalence of inadequate glycaemic control found among people with T2DM is consistent with previous studies conducted in Bangladesh by Selim *et al.*[8] and Latif *et al.*[11]. The proportion of people with inadequate glycaemic control is higher among females who have had the condition for a longer duration (>5 years), which is also similar to the findings of the previous studies.[12,13] The study showed that, adjusted association (odds ratio (OR)) between risk factors with inadequate glycaemic control (HbA1c ≥7%),the sub-group (duration of T2DM: ≤5 years, shorter and >5 years, longer) analysis results for inadequate and very poor glycaemic controls are presented in Tables 3. Table 3 shows that most of the variables in the multiple logistic model appeared as common risk factors between the two groups. However, smokeless tobacco consumption (OR: 2.8, 95% CI: 1.4–6.2) presented a risk only in the shorter duration group and female participants (OR: 2.5; 95% CI: 1.5–4.1) were at higher risk in the longer duration group only. Tobacco for the most part raises glucose levels, and the unfavorable impacts of smokeless tobacco on wellbeing are apparent from past investigations[14].

The majority of the current study's participants responded that they had received dietary advice from health professionals; however, they also stated that they were unable to maintain the advice. This may be due to a lack of understanding or low affordability of healthy foods. Also, we found that solitary 37.6% of our members utilized self-checking blood glucose gadgets; this demonstrates an absence of appropriate observing, implying that patients are probably going to battle with dealing with their insulin. The study explored all conceivable modifiable and non-modifiable components influencing glycaemic control, which adds solidarity to the discoveries. The enrollment of members and the data assortment strategies guaranteed information quality. In any case, this examination has the impediment of being cross-sectional in configuration, implying that a worldly connection among circumstances and logical results can't be set up.

Conclusion

In conclusion, the extent of individuals with uncontrolled glycaemic levels is significantly high in Bangladesh, which may add to an expanding pervasiveness of inconveniences and in this manner may represent an additional weight on social insurance costs. This examination has distinguished various modifiable indicators of deficient glycaemic control: in particular, various arrangements of hazard factors were recognized for members who had been T2DM patients for various lengths. The investigation's discoveries underscore the significance of being agreeable with follow-up registration, and of way of life adjustments, including good dieting and evading smokeless tobacco utilization. A far reaching information on modifiable and non-modifiable hazard elements will assist wellbeing with caring suppliers to individualize the decision of glycaemic objectives in reference to term, with the point of improving consideration and results for patients with T2DM.

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