International Journal of Medical Research Professionals
P-ISSN: 2454-6356; E-ISSN: 2454-6364
DOI: 10.21276/ijmrp

Original Research Article.

The Management of Diabetes in Diabetic Patients Attending at NHNs in Dhaka City

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ABSTRACT

Objective: In this study our main goal is to evaluate the management of diabetes in diabetic patients attending at NHNs in Dhaka city.

Method: This retrospective Cohort study was conducted among 430 Diabetic population of adult age group (≥18 years) of all socioeconomic strata attending at different NHNs in Dhaka city from August 2015 to October 2016.

Results: During the study, Most of the respondents 345 (80.23%) had FPG record at their initial visit. 208 (48.37%) had HbA1C, 257 (59.76) had OGTT and 169 (39.30%) had PG-2hABF. Most of the patients 178 (41.4%) are treated with combined oral drugs at their initial visit and 117 (27%) were on insulin. Only 24 (5.6%) patients advised for lifestyle modification. Approximately 40% patients presented with complications related to diabetes mellitus at initial visit.

Conclusion: From our study we can conclude that, use of HbA1c for initiation of management and follow the glycemic control was poor. Short term and long-term glycemic control are poor in all modalities of treatment. Non-adherence of Diabetes Self-management and poor selection of treatment regimen both were responsible for poor glycemic control. Further study is needed for better outcome.

Keywords: Diabetes, Glycemic Control, HbA1c.

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Article History:

Received: 30-11-2019, **Revised:** 26-12-2019, **Accepted:** 23-01-2020

Access this article online	
Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2020.6.1.046	

INTRODUCTION

Diabetes mellitus poses a major global health threat especially in the developed and developing countries. The increasing trend of type 2 diabetes is more common in the developing nations and most common in Southeast Asian countries.[1] Recent epidemiologic study have shown an increased prevalence of diabetes in India (11.6%), Pakistan (11.1%), Hawaii (20.4%), and Turkey (7.2%).[2,3] It has been suggested that the increase in prevalence of diabetes among Asian is due to ageing of the population, urbanization and increasing prevalence of obesity and physical inactivity.[4] Some population-based studies conducted in Bangladesh at different times have revealed an increasing trend of diabetes prevalence ranging from 1.0 to 3.8% in rural population and 1.5 to 8.0% in urban population.[5] Bangladeshis are more at risk to develop diabetes, hyperinsulinemia and coronary heart disease compared with other South Asian migrants settled in the UK.[6]In this study our main goal is to evaluate the management of diabetes in diabetic patients attending at NHNs in Dhaka city.

OBJECTIVE

General Objective

- To assess the management of diabetes in diabetic patients attending at NHNs in Dhaka city.

Specific Objective

- To detect pattern of complications among the patients.

- To identify drugs chosen at initial visit on the basis of the HbA1C level.

METHODOLOGY

Type of Study: Retrospective Cohort study

Place of Study: National Healthcare Networks (NHNs) in Dhaka city. Six NHNs are selected by lottery and data is collected from the patients attending in those NHNs.

Study Period: August 2015 to October 2016.

Study Population: 430 Diabetic population of adult age group (≥18 years) of all socioeconomic strata attending at different NHNs in Dhaka city.

Sampling Technique: Purposive

Inclusion Criteria

- Patients attending at different NHNs in Dhaka city and those suffering from diabetes mellitus after being confirmed by registered physician.
- Patients willing to participate in this study.
- Patients who was registered in NHNs from first visit and came in subsequent follow up in that NHNs.
- Age ≥ 18 years.

Study Procedure: Current study involved collection of both primary and secondary data. Primary data was collected by face to face interview of the patients by the researcher at health facility during the period of NHNs visits upon their consent and convenient. Socioeconomic and personal information was recorded from patient through interview, with a semi structured pre-tested questionnaire and their guidebook (provided from NHNs) record. Secondary data about the treatment (at initial and follow-up visit), present state and diagnosis was collected from the diabetic guide book

Data Analysis: Data were entered in the template of Statistical program, SPSS-15 after necessary editing and coding. Descriptive statistics were generated for socio-demographic variables and were presented with relative frequency.

Table 1: Age distribution of the patients

Variable	Distribution	Frequency (n)	%
Age (Years)	< 30	22	5.1
	30-40	132	30.6
	40-50	136	31.8
	50-60	80	18.6
	60-70	44	10.2
	>70	16	3.7
Mean(±SD)	45.91 ± 13.02 years		

Table-2: Glycemic parameters done by the study subjects at initial visit.

Glycemic Parameters	Frequency (n)	%
HbA1C	208	48.37
OGTT	257	59.76
FPG	345	80.23
PG-2hABF	169	39.30

Table 3: Pattern of complications among the patients at first visit

Complication	Percent
Neuropathy	11.94
Nephropathy	21.42
Retinopathy	16.66
IHD	21.42
PVD	4.76
Stroke	2.38
More than one	21.42
Total	100.00

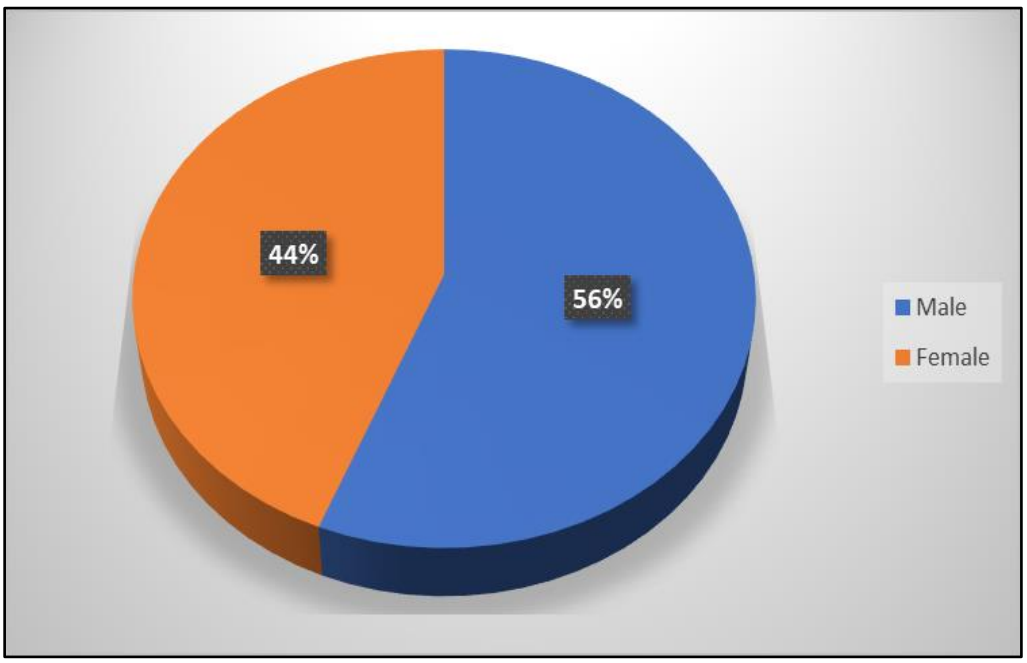

Figure 1: Gender distribution of the patients.

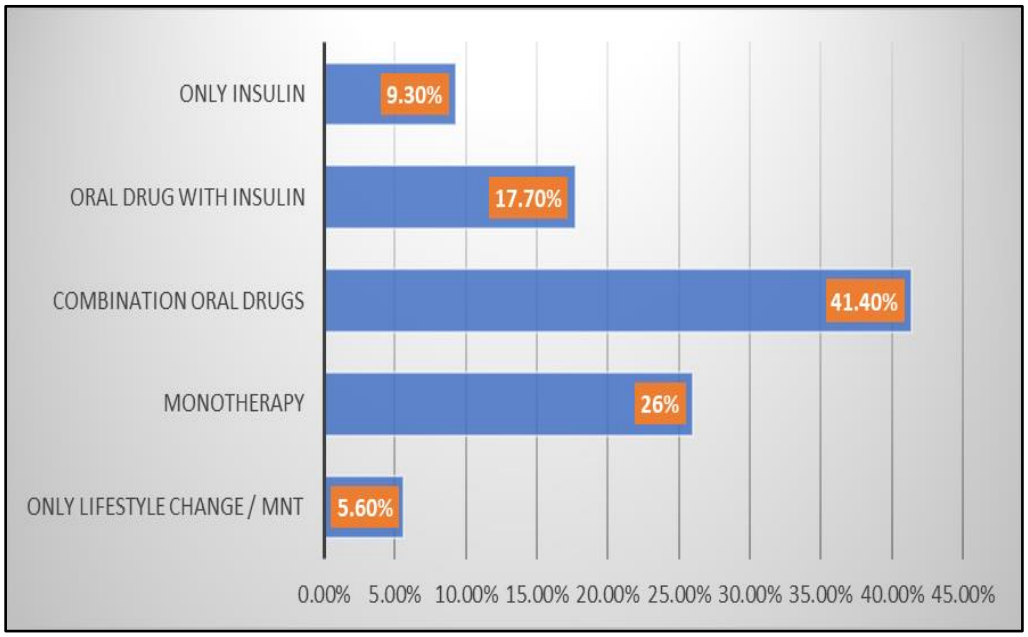

Figure 2: Treatment modalities started at initial visit (N=430).

RESULTS

In table-1 shows age distribution of the patients where most of the patients (31.8%) belong to age group 40-50 years.

In figure-1 shows gender distribution of the patients where most of the patients were male, 56%.

In table-2 shows glycemic parameters done by the study subjects at initial visit. Most of the respondents 345 (80.23%) had FPG record at their initial visit. 208 (48.37%) had HbA1C, 257 (59.76) had OGTT and 169 (39.30%) had PG-2hABF record.

In figure-2 shows treatment modalities started at initial visit (N=430). Most of the patients 178 (41.4%) are treated with combined oral drugs at their initial visit and 117 (27%) were on insulin. Only 24 (5.6%) patients advised for lifestyle modification.

In table-3 shows pattern of complications among the patients at first visit (n=168). Approximately 40% patients presented with complications related to diabetes mellitus at initial visit. Among micro vascular complications, nephropathy 36(21.42%) was the most common. Ischemic heart disease (IHD) 36(21.42%) was the commonest among macro vascular complications. 4(2.38%) patients presented with stroke, 20(11.94%) with neuropathy and 36(21.42%) with more than one complication.

In table-4 shows treatment modalities chosen at first visit on the basis of HbA1c level (n=208). Among 208 patients who had HbA1c level at first visit, the most frequent (116) were 8-10%. With this HbA1C level, 64 patients were getting combined oral drugs and 36 patients on insulin. 48 patients with HbA1C level > 10% were getting insulin.

In table 5 shows treatment modalities chosen at first visit on the basis of glycemic status. At first visit the patients who were on lifestyle modification mean FPG (8.93 ± 1.36) and HbA1C (8.10 ±1.00). Patients who were on insulin mean FPG > (11.60 ± 3.15) and HbA1C > (10.01 ±1.96).

Table 4: Treatment modalities chosen at first visit on the basis of HbA1c level (n=208).

HbA1c at first visit	Treatment modalities at first visit					Total
	Only lifestyle change	Monotherapy	Combination oral drugs	Oral drug + insulin	Only insulin	
<8%	4	16	12	12	0	44
8-10%	0	16	64	24	12	116
>10%	0	0	0	20	28	48
Total	**4**	**32**	**76**	**56**	**40**	**208**

Table 5: Treatment modalities chosen at first visit on the basis of glycemic status.

Treatment modality started	FPG (n=345)	PG-2HAOG (n=257)	HbA1C (n=208)
	Mean ± SD	Mean ± SD	Mean ± SD
Only lifestyle change	8.93 ± 1.36	13.61 ±1.57	8.10 ±1.00
Monotherapy	9.16 ±1.83	13.70 ±1.45	8.70 ±1.25
Combination oral drugs	11.01 ±1.45	15.52 ±1.00	9.07 ± 1.76
Oral drug + insulin	11.60 ± 3.15	15.31 ±2.98	10.01 ±1.96
Only insulin	14.78 ± 3.50	20.10 ±1.43	11.51±1.87

Table 6: Treatment modalities chosen at first visit on the basis of their complications (n=168).

Complication	Treatment modality started					Total
	Life style change	Monotherapy	Combination oral drug	Insulin + oral drug	Insulin	
Neuropathy	4	4	12	0	0	20
Nephropathy	4	12	8	8	4	36
Retinopathy	0	4	20	4	0	28
IHD	0	12	20	0	4	36
PVD	0	0	0	0	8	8
Stroke	0	0	0	4	0	4
More than one	0	0	24	8	4	36
Total	8	32	84	24	20	168

Table 7: Drugs chosen at initial visit on the basis of the HbA1C level (n=208).

	Drugs used	<8%	8-10%	>10%	Total
Monotherapy	Metformin	4	12	0	16
	Secretogogue	20	24	0	44
	DPP-4 inhibitors	0	4	0	4
Combined oral drug	Metformin + Secretogogue	16	34	0	50
	Metformin+DPP-4 inhibitors	0	12	0	12
	Metformin+Secretogogue+DPP-4 inhibitors	0	10	6	16
Insulin +	Metformin	0	4	8	12
	Metformin+DPP-4 inhibitors	0	8	0	8
	OHA + Metformin	0	4	8	12
	Only insulin	0	8	26	34

In table-6 shows treatment modalities chosen at first visit on the basis of their complications (n=168).Among the 168 patients with complications, 8 patients (4 neuropathy and 4 nephropathy) were on only lifestyle modification, 44 patients on insulin and 84 patients on combined oral drugs.

In table 7 shows drugs chosen at initial visit on the basis of the HbA1C level (n=208). Among the respondents mostly secretogogue (44) and metformin with secretogogue (50) were chosen with HBA1C level <10% at initial visit. Insulin were chosen in patients (24) with HbA1C level 8.-10% and (42) patients with HbA1C >10%.

DISCUSSION

Most common complication was diabetic nephropathy 21.42% and Ischemic Heart Disease 21.42%. Fundoscopy at first visit was done in 80% patients, out of them 16.66% had retinopathy. One study found diabetic retinopathy in 36.2% of diabetic patients in BIRDEM.[6] Retinopathy was the most common micro-vascular complication followed by nephropathy. Macro-vascular complication was much less common than micro-vascular complication. In this study macro-vascular complications especially IHD was equally common as nephropathy but other macro-vascular complications were less common. In UKPDS retinopathy at the time of diagnosis found in 25% cases, which is similar to our result.[7] Neuropathy based on the symptom/sign or drug used for symptoms of neuropathy was found in 11.94% patient where in UKPDS neuropathy at first diagnosis was found in 9% of the patients which is similar to our study. In UKPDS nephropathy was found in 8% of the patients which is lower than our finding. This is probably due to sensitive test like ACR not done in screening in our study people. In this study 4.76% patients presented with peripheral vascular disease and 2.38% patients presented with stroke.

Among study subjects' pattern of treatment modalities started at first visit were only lifestyle change in 5.6%, monotherapy with single oral anti-diabetic drug in 26.0%, combination of oral anti-diabetic drug in 41.4%, insulin with oral anti-diabetic drug in 17.7% and only insulin in 9.3% cases. In this study, insulin started in 27.0% of the patients and oral anti-diabetic drug in 67% and with life style modification in 5.6% of the patients. One report found 39% with insulin, 57% with oral anti-diabetic drug and 4% with lifestyle change only which is similar to our study. Agarwal et al (2014) found 43.6% with insulin and 56.4% with oral anti-diabetic drug.[8] Another report found 11.3% with insulin and 88.7% with oral medication.[9] Both results of these studies are different from our study. Other article reported that 25.3% with insulin which is consistent with this study.[10] So, picture is different in different study may be due to difference in population and presentation.

Most common reason behind the selection of treatment regimen were glycemic status in the term of HbA1c or OGTT in 362 patients. In 40 case complications were the influencing factor, infection in 12 and surgery in 16 cases. HbA1c was done in 48.4% patients but HbA1c in the most significant parameter used for choosing the treatment modalities and to see the glycemic improvement all guidelines. Treatment modalities were not selected as per guidelines. All patients with HbA1c more than 10%

managed with insulin alone or with oral drugs which is similar to guideline.[11] Most common single drug used was secretogogue 33.5% this finding is similar to one study., (40.45%), second most common was metformin 16.7%.[12] Most common combination oral drug was Metformin and secretogogue combination 30% which is also similar to one report.[12] Metformin alone predominated in 41% prescriptions followed by the combination of Metformin and Sitagliptin 31.4%. This result was not consistent with this study.[13]

CONCLUSION

From our study we can conclude that, use of HbA1c for initiation of management and follow the glycemic control was poor. Short term and long-term glycemic control are poor in all modalities of treatment. Non-adherence of Diabetes Self-management and poor selection of treatment regimen both were responsible for poor glycemic control. Further study is needed for better outcome.

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Source of Support: Nil.

Conflict of Interest: None Declared.

Cite this article as: Lutful Kabir, Faruque Pathan, Abu Hena Md. Shohel Rana, Dahlia Sultana, Mahmudul Kabir, Afjal Hossain, Mostarial Jannat, Mostafa Kabir Ahmed, Shafiqus Saleheen. The Management of Diabetes in Diabetic Patients Attending at NHNs in Dhaka City. Int J Med Res Prof. 2020 Jan; 6(1):192-96.
DOI:10.21276/ijmrp.2020.6.1.046