(RESEARCH ARTICLE)

A study on anti-diabetic prescription along with patients in Bangladeshi perspective

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Abstract

Diabetes is the main cause for inability and premature death in Bangladesh. As a part of treatment, Patients may have lifestyle changes, medications, surgery or other medical procedures. The aim of current research is to seek out therapy pattern for diabetes treatment in Bangladesh. A cross sectional study was performed in the government and private hospitals situated in Dhaka. 144 prescriptions of diabetic patients are collected from BIRDEM and BIHS Diabetic Center has 77 Male patient (53.47%) and female patient number 67 (46.53%). Most prescription drugs have captured Sitagliptin 34.02%, Linagliptin 20.83%, Metformin Hydrochloride 20.13%, Gliclazide 25%. Other results of this studies are described throughout the study and discussion. This research result focused on prescription pattern, lifestyle and awareness of patients. Those who are affected and plagued by the diabetes disease should be more responsive to this aspect, because little negligence is often the main reason for their life threat.

Keywords: Diabetes; Patients; Prescription; Lifestyle; Bangladesh; Hospital Patients

1. Introduction

Scientists and physicians have been documenting the condition now known as diabetes for thousands of years. From the origins of its discovery to the dramatic breakthroughs in its treatment, many brilliant minds have played a part in the fascinating history of diabetes. Diabetes mellitus (DM) is one of the commonest metabolic disorders encountered worldwide. It is characterized by hyperglycemia brought on by an imbalance in the metabolism of proteins, lipids, and carbs, which results in abnormalities in the secretion and/or action of insulin [1]. Currently used in the treatment of diabetes, a variety of types of anti-diabetic medications, including insulin and oral hypoglycemic agents (OHA), function through multiple pathways to reduce blood glucose levels and maintain optimal glycemic control. DM treatment is associated with numerous problems and comorbidities and must be taken continuously throughout life. Diabetes is commonly linked to obesity, lipid issues, hypertension, and polypharmacy. It also raises the risk of vascular disease. Several treatment guidelines, such as those from the Indian Council of Medical Research (ICMR) and the American Diabetic Association (ADA), are available to help doctors make appropriate management decisions [2]. Blood sugar, or glucose, tests are used to detect diabetes. Acute and chronic diabetic complications are the main problems. Hazardously high blood sugar levels and unusually low blood sugar brought on by diabetes medication are examples of acute complications. Chronic problems are associated with disorders of the blood vessels (both small and large), which can harm the kidneys, heart, eyes, nerves, and heart [3]. The kind and severity of diabetes determine how to treat it. Diabetes is classified into two types: type 1 (which is insulin-dependent) and type 2 (which is not insulin-dependent). Patients with type 1 diabetes are dependent on exogenous insulin; they cannot survive without it. When weight loss, a diabetic diet, and exercise are insufficient to control increased blood sugar levels, oral medicines are utilized as the first line of treatment for type 2 diabetes. Insulin medicines are taken into consideration if oral drugs are still insufficient [4]. Drug utilization studies are powerful exploratory tools to ascertain the role of drugs in society. These studies create a sound sociomedical and health economic basis for healthcare decision making [5]. WHO specifies drug use indicators [6] for adoption in drug utilization studies. Various guidelines are available that recommended for different classes of drugs to

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treat diabetes [7]. Modification of diet and eating balanced nutrition may help to manage diabetes [8]. An oral anti-diabetic drug within the Metformin Biguanide class. It's the primary line drug for treatment of type 2 diabetes, particularly, those with weight and obese people and normal kidney function. Pregnancy diabetes has been limited by security concerns. It's also employed in the treatment of polycystic ovary syndrome and is investigated for other diseases, where insulin will be a crucial think about prevention. Metformin works by suppressing the assembly of glucose by the liver [9]. Increases in the dosage of oral anti-diabetic medications in conjunction with insulin or other anti-diabetic medications should be carefully considered and restricted to individuals whose blood sugar levels are not under control [10].

2. Methods & study design

The present study was performed on a cross sectional observation which was attempted to seek out the frequently pharmaceuticals by the doctors in several diabetic patient. Study period was 3 months commencing from January 2021 to March 2021 to finish the study in time and it was conducted at Dhaka BIRDEM hospital, (Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders), Bangladesh. A piece schedule was prepared reckoning on different tasks of the study.

2.1. Sample size

In the present Study, Sample size consisted of 144 prescriptions and related patients, which were sampled by using purposive sampling technique.

2.2. Data collection

After explaining the aim of the study to the respondents and obtaining their verbal consent, the researcher interviewed all the respondents by asking questions in Bangla and photocopied their prescriptions consisting of list of diseases and medicines prescribed with their dosing schedule and length.

2.3. Data analysis

All the info were checked after collection. Then data were entered into computer and results were calculated with Microsoft® Excel 2016.

2.4. Sample prescription

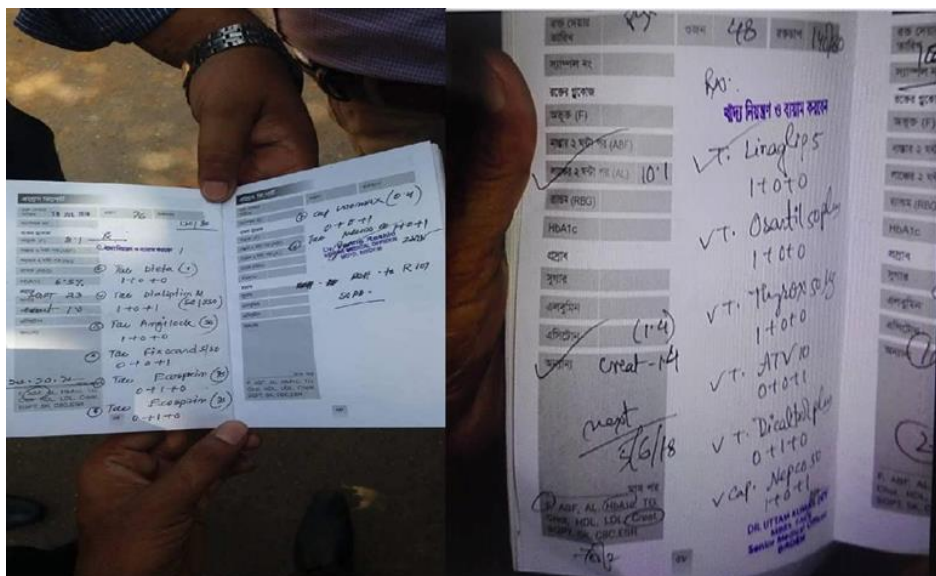Sample photographs of prescriptions are added below.

Figure 1 Sample prescriptions

3. Result

All findings are described through table and figures listed below.

Table 1 Age and gender distribution among respondents

Variable	Variable	Number	Percent
Age group (years)	0 - 19	3	2.08%
	20 - 39	7	4.86%
	40 - 50	65	45.13%
	51 - 65	69	47.91%
Gender	Male	77	53.47%
	Female	67	46.53%
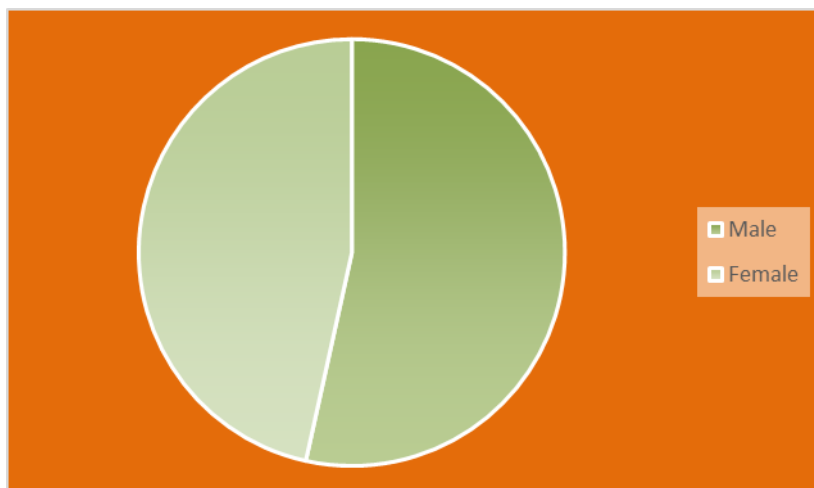
Figure 2 Gender distribution of respondents

Table 2 Diabetes distribution profile on gender

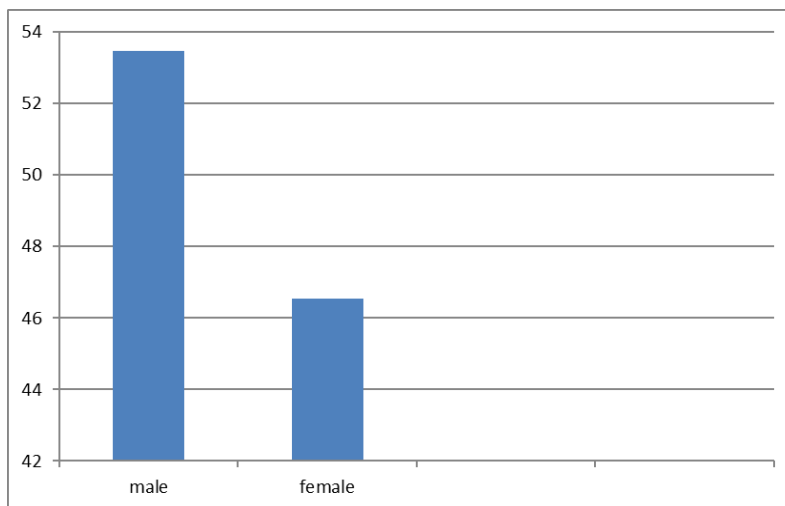| Gender	Patients	Percentage
Male	77	53.47%
Female	67	46.53%
Total	144	100%

Figure 3 Diabetes distribution profile on gender

Table 3 Distribution of the patients based on smoking habit

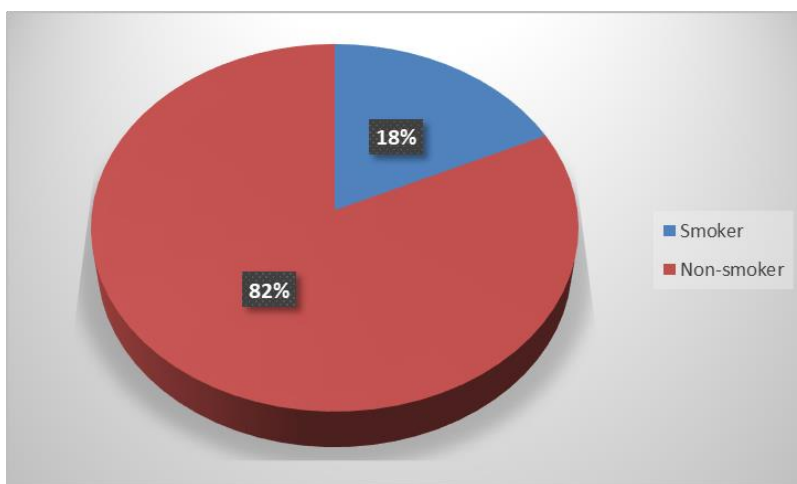| Types	Percentage
Smoker	18%
Non Smoker	82%

Figure 4 Distribution of the patients based on smoking habit

Table 4 Frequency distribution of body mass index(BMI)

Range of BMI (kg/m²)	Male	Female	Total	Percent
18	2	5	7	4.86%
19-24	9	8	17	11.80%
25-29	22	16	38	26.38%
30-35	28	31	59	40.97%
36-40	16	7	23	15.97%
total	77	67	144	100

Table 5 Distribution based on maintaining the food habit according to the prescription.

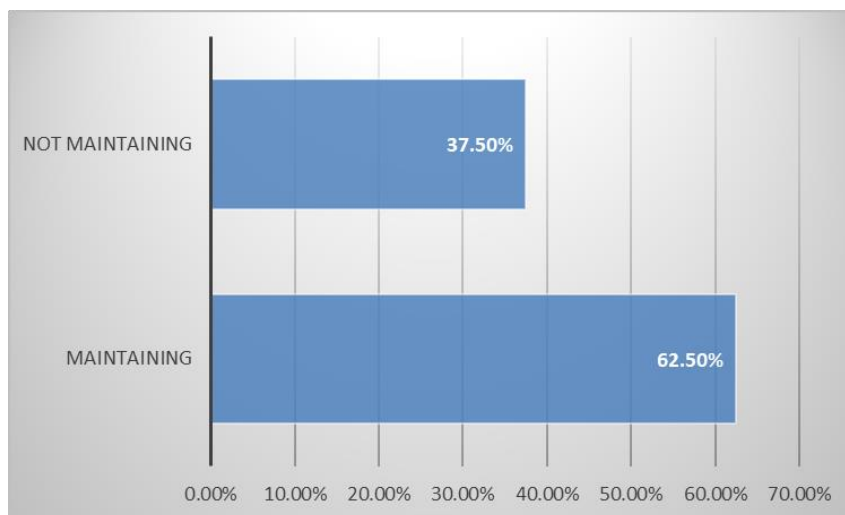| Types	Percentage
Maintaining	62.5%
Not maintaining	37.5%

Figure 5 Distribution based on maintaining the food habit according to the prescription

Table 6 Mostly prescribed drugs among diabetic patients

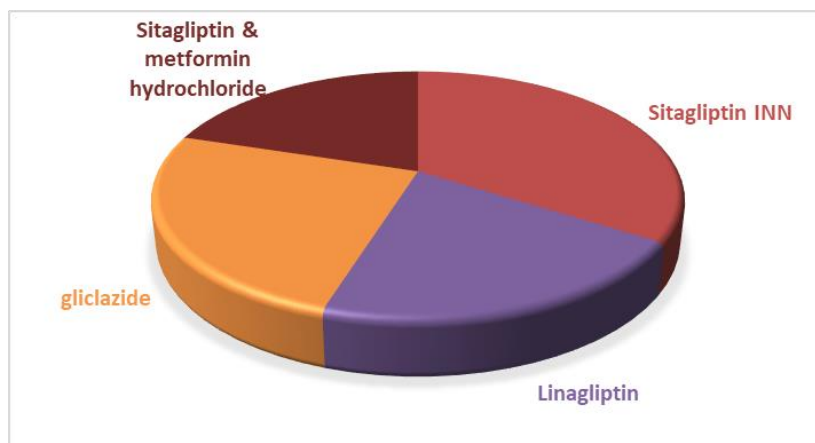| Drugs	No. of patients	Percentage
Sitagliptin INN	49	34.02%
Linagliptin	30	20.83%
gliclazide	36	25%
Sitagliptin & metformin Hydrochloride	29	20.13%

Figure 6 Mostly prescribed drugs among diabetic patients

Table 7 Use of drugs in diabetes patients suffering from cardiovascular disease

Drugs	No. of patients	Percentage %
Aspirin	65	45.13%
Glyceryl Trinitrate	11	7.63%
Ramipril	15	10.41%
Atorvastatin	39	27.08%
Other drugs	14	9.72%
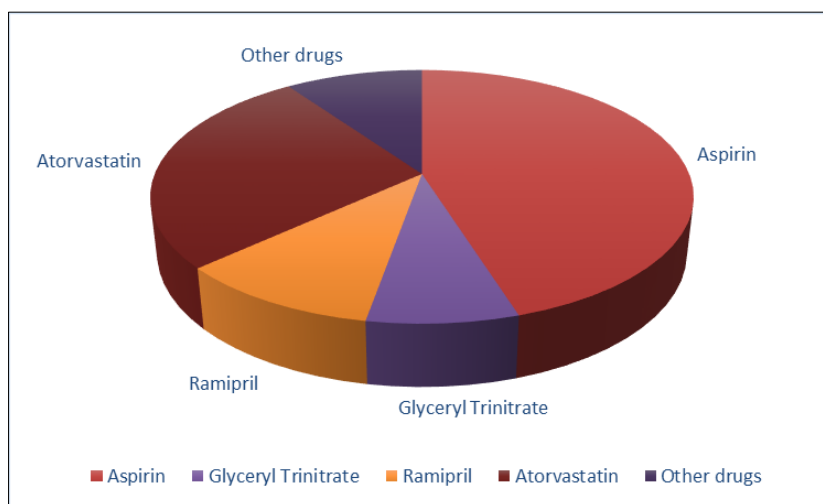
Figure 7 Use of drugs in diabetes suffering from cardiovascular disease

4. Discussion

Total number of patients were 144, among them number of male patients is 77(53.47%) and number of female patients is 67 (46.53%). In the present study 144 prescriptions related to diabetes patients were studied. They are distributed between age group, 0- 19 age group (2.08%), 20-39 age group (4.86%), 40-50 age group (45.13%), 51-65 age group (47.91%). Among all the patients 18% were smoker and 82% were non-smoker. About 62.5% patients are maintaining food habits according to their prescription and rest of the respondents do not follow rules appropriately. In 144 prescriptions, Doctors prescribed Sitagliptin 34.02%, Linagliptin 20.83%, Metformin Hydrochloride 20.13%, Gliclazide 25%. Use of drugs in diabetes patients suffering from cardiovascular disease were aspirin 45.13%, glyceryl trinitrate 7.63%, ramipril 10.41%, atorvastatin 27.08% and other drugs 9.72%. The recent significant changes in pharmacotherapy for diabetes mellitus are the cause of the shift in prescribing trends. Prescription trends are moving toward FDCs, which ease treatment regimen burden by delivering the same combination as fewer pills rather than as separate pills.

Diabetes mellitus (DM) is a long-term metabolic illness that frequently has several comorbidities. The most prevalent comorbidity in our study was hypertension, which was followed by dyslipidemia. Large artery stiffness is linked to hypertension and frequently occurs prior to macrovascular events. In 22.69%–49.18% of patients, hypertension was the most prevalent comorbidity, according to consistent findings from several research [11, 12]. Apart from anti-diabetic medicines, the most commonly prescribed medications in our study were atorvastatin, clopidogrel, aspirin, and ACEi/ARB. 28.9% of antihypertensive prescriptions were written, while a different study discovered a comparable prescription pattern for non-diabetic meds [13]. It is important to adhere to the treatment guidelines so that all patients can receive evidence-based management from the primary care physician. Therefore, it is advised that primary care doctors attend educational sessions to stay up to date on the most recent guidelines for the best management of patients with diabetes.

4.1. Limitations of study

Since this was a cross-sectional study, the only anti-diabetic medications prescribed at the time were those that were unable to control their diabetes with a prescription medication because there was no follow-up. This study was carried out in single care hospital with limited a number of patients. Further studies need to clarify such things and prescription style of antidiabetic drugs along with patients behavior and adherence to physician's roles.

5. Conclusion

Diabetes mellitus is a long-term condition with numerous complications and comorbidities. Although the majority of prescriptions are still for oral antidiabetic medications, there has been a shift in the management of type 2 diabetes toward the use of fixed-dose combinations (FDC). We can reduce the risk of diabetes and cardiovascular disease by avoiding of tobacco use, reducing of salt in the diet, doing regular physical exercise, avoiding harmful use of alcohol. We can also prevent heart disease & stroke through healthy diet, choosing a diet rich in fruits and vegetables, maintaining a healthy body weight, avoiding obesity and avoiding foods that are high in fat, sugar and salt. Preventing or treating hypertension and raised blood lipids are also helpful to reduce the diabetic risk. In coming days, pharmacogenomics capabilities will help to understand diseases in terms of specific genetic contributors.

Compliance with ethical standards

Disclosure of conflict of interest

There is no conflict of interest regarding this paper.

Author contribution

All author contributed significantly to design and development of this work.

Statement of informed consent

Participants actively participated, knowing that any personal information they contributed would be kept private and that the data they provided would be utilized responsibly.

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