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Original Article

Prescribing patterns of anti-diabetic drugs among type 2 diabetic patients at a private Medical College Hospital in Mymensingh

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Abstract:

Background: The right choice of anti-diabetic drugs among type 2 diabetic patients carries a vital role.

Objective: The aim of the present study was to evaluate the prescribing patterns of anti-diabetic drugs among type 2 diabetic patients at tertiary level teaching hospital in Mymensingh.

Methods: A descriptive, cross sectional study was conducted from July 2015 to June 2016 among patients attending at Medicine Outpatient Department of the Community Based Medical College Hospital. Data were collected through the reviewing of the prescriptions and interviewing of the patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to know the prescribing patterns of anti-diabetic drugs among type 2 diabetic patients. The study was approved by the institutional ethical committee.

Results: In a pool of 150 type 2 diabetics, more than half were female (n=100, 67%). Higher proportion (54.7%) of diabetes was among middle aged patients (41-60 years). A total of 558 drugs were prescribed during the study period. Less than half (45.9%) of the total prescribed drugs were to the anti-diabetic groups. Sulfonylureas were the most commonly prescribed class (64.7%) followed by Biguanides (45.3%). Half of the patients (50.7%) were prescribed with two anti-diabetic drugs. Average number of drugs per prescription was 3.72. None of the drugs was prescribed by generic name. Drugs prescribed from an essential drug list (EDL) were 51.9%.

Conclusion: Prescribing pattern need to be improved in accordance with World Health Organization (WHO) core prescribing indicator. This study will help the clinician to take appropriate measure for the improvement of prescribing patterns and use of essential drugs to the patients to prevent prescribing errors and thus promote rational use of drugs.

Keywords: Anti-diabetic drugs, prescribing patterns, essential drug.

Introduction

Diabetes mellitus is the chronic disorder emerging as a major world health problem which increases the rate of morbidity and mortality. The prevalence of diabetes mellitus is growing rapidly worldwide and is reaching at epidemic proportions.[1] It is estimated that there are currently 422 million people with diabetes worldwide and in Bangladesh it is estimated about 8.4 million. The higher prevalence was found in urban areas predominantly among women. Urbanization and urban migration have been established as a risk factor for an increased occurrence of diabetes. The trend has been authenticated by the World Health Organization (WHO).[2] Type 2 diabetes characterized by high level of blood glucose due to the impaired action of insulin and insufficient insulin production by pancreas.[3] The diagnosis is based on the World Health Organization (WHO) national diabetic group criteria of 2006, which is for a single raised blood glucose reading with symptoms or raised values on two occasions. Medications for diabetes mellitus need to be taken for the entire life and factors like efficacy, side effects, drug interactions and cost of therapy need to be taken into consideration.[4] Since 1995, a dozen orally administered medications or combination of medications for the management of type 2 diabetes mellitus have been approved by Food and Drug Administration (FDA). Prescription of such drugs varies from physician to physician depending upon the glycemic status and complications due to diabetes.[3] However, to, date, there is no reliable evidence on the

prescription pattern of anti-diabetic dugs of type 2 diabetes mellitus in Mymensingh. The aim of this study was to evaluate the prescribing patterns of anti-diabetic drugs among type 2 diabetic patients at tertiary level teaching hospitals in Mymensingh. This study undoubtedly will benefits the physicians for successful management of diabetes mellitus in the future.

Materials & method

A descriptive, cross sectional study was conducted from July 2015 to June 2016 among 150 patients attending at medicine outpatient department of the Community Based Medical College Hospital after obtaining requisite consent from the patients. Purposive sampling was adopted for collecting data. The study was approved by the institutional ethical committee. The interviews were held directly in the corridor just outside the Medicine Outpatient Department. Prescription slips were taken from the patients after taking the written consent and the relevant information was entered into the predesigned proforma to know the prescribing patterns of anti-diabetic drugs among type 2 diabetic patients. All filled questionnaires on the pattern of using anti-diabetic drugs were entered into the computer for analysis using SPSS version 20.1. Only descriptive statistics were computed.

Results

More than half of the respondents (54.7%) were in the middle age group (41-60 years).

(Table -1)

Table-1 Age distribution of the study population (n=150)

Age group (years)	Frequency (%)
30- 40	36 (24.0)
41-60	82 (54.7)
> 60	32 (21.3)
Total	**150 (100.0)**

About two-thirds (67%) of the respondents were female. (Figure-1)

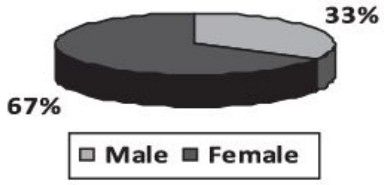

Figure-1 Pie chart showing sex distribution of the study population

Totally 558 drugs were prescribed during the study period. 45.9% of the drugs belong to the anti-diabetic groups, while 54.1% belong to other groups such as anti-microbial, anti-hypertensive, vitamin etc. (Figure 2)

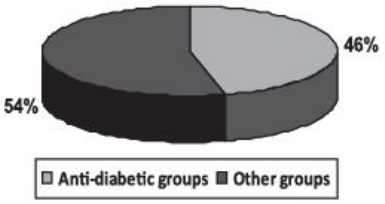

Figure-2: Pie chart showing percentage of anti-diabetic groups and other groups

Half of the respondents (50.7%) were being prescribed with two anti-diabetic drugs. Near to it 40% were being prescribed with single anti-diabetic drug. Average number of anti-diabetic drugs per prescription was 1.7. (Table-2)

Table-2: Distribution of anti-diabetic drugs per prescription (n=150)

Number of anti-diabetic drug	Frequency (%)
1	60 (40)
2	76 (50.7)
3	12 (8)
4	2 (1.3)
Total	**150 (100.0)**
Average number of anti-diabetic drugs per prescription	Mean = 1.7

About two-thirds (64.7%) of the respondents were treated with Sulfonylureas, Biguanides was used in 45.3%, Incretin mimetics was used in 21.3% and insulin preparation was used in 32.7 %.

(Table-3)

Table-3: Prescribing frequency of different classes of anti diabetic Agents (n=150)

Class of anti-diabetic drug	Frequency (%)
Sulfonylureas	97 (64.7)
Biguanides (Metformin)	68 (45.3)
Incretin Mimetics	32 (21.3)
Meglitinide (Repaglinide)	02 (1.3)
Alpha Glucosidase inhibitor (Miglitol)	01 (0.7)
Insulin preparation	49 (32.7)

*Patients received more than one drug category in each prescription such as insulin preparation with metformin.

No drugs were prescribed by generic name and more than half (52%) of the drugs were prescribed from essential drug list (EDL). (Table-4)

Table-4: Prescribing pattern of drugs among type 2 diabetic patients according to WHO prescribing indicator (n=150)

Prescribing indicator	Drugs Total	Average	Percentage	Standard derived according to WHO
Average number of drugs per prescription	558	3.72		1.6-1.8
Percentage of drug prescribed by generic name	0		0	100%
Percentage of drugs prescribed from EDL	290		51.97%	100%

Discussion

This study showed that diabetes mellitus was more prevalent in female patients than in male patients. Similar results were obtained in the study conducted by Abebaw et al. (2016), Alam et al. (2014) and Mann et al. (2009).[5,6,7] This study revealed a higher prevalence of diabetes was among middle aged patients. A study done in India by sajith et al. (2014) also found similar result.[1] A total of 558 drugs were prescribed during the study period. The current study found that less than half (45.9%) of the drugs belonged to anti-diabetic groups. Though Dutta et al. (2014) found that more than half of the drugs (53.6%) belonged to the anti-diabetic groups in India.[8] In this study average number of drugs per prescription was 3.72 due to presence of co-morbid conditions. Similar picture depicted in India where average number of drugs was 4 per prescription. Ramchandran, Rohith and Isabella (2015) reported that more than one quarter (25.4%) of drugs prescribed by generic name.[9] None of the drugs were prescribed in generic name in this study. In this study the percentage of drugs prescribed from EDL (WHO) was 51.97 % which was high as compared to the study conducted by Raj, Kamlesh, and Hl (27.41%).[10] The average number of anti-diabetic drug per prescription in this study was 1.7. Similar results were obtained in the study conducted by Agarwal et al. (2014)[11] where average number of anti-diabetic drugs per prescription was 1.4. In this study majority (50.7%) of the patients were prescribed with two anti-diabetic drugs. This result is consistent with the result of Haile et al. (2015) study[12] where they observed that majority (50.8%) of the patients were prescribed with two anti-diabetic drugs. Sulfonylureas were the most commonly prescribed class (64.7%) followed by Biguanides (45.3%). This reflects that Sulfonylureas and Biguanides are still the choice of most physicians in the treatment of type 2 diabetes. This present study consistent with the study of agarwal, Jadhav and Deshmukh (2014).[11] That study showed that Sulfonylureas (34.14%) were the most common prescribed class followed by Biguanides (31.65%).

Conclusion

Type 2 diabetes mellitus being a chronic disorder requires multiple therapeutic approaches. Sulfonylureas and Biguanides are still the choice of most physicians in the treatment of type 2 diabetes. Majority of the patients were prescribed with two anti-diabetic drugs. Prescribing pattern need to be improved in accordance with WHO core prescribing indicator. Implementation of WHO core prescribing indicators by the prescribers would help to reduce the cost and prevent potentially dangerous drug-drug interaction.

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