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ORIGINAL ARTICLE

Prescribing pattern of antidiabetic drugs in type II diabetes mellitus in tertiary care hospital

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ABSTRACT:

Aim: To assess prescribing pattern of antidiabetic drugs in type II diabetes mellitus in tertiary care hospital. **Methodology:** One hundred forty type II diabetes mellitus patients of both genders were enrolled for the study. Medical history, diabetes duration, family history, prescribed antidiabetic drugs, coexisting diseases, and concomitant medications were gathered. **Results:** Out of 140 patients, males were 80 (57.1%) and females were 60 (42.9%). Common drugs prescribed were metformin (31%), glimepiride (29%), pioglitazone (8%), miglitol (10%), pioglitazone+ metformin (3%), glimepiride+ metformin (15%) and pioglitazone+ glimepiride (4%). The difference was significant (P< 0.05). 1 drug was prescribed in 78% of prescriptions consisting of oral antidiabetic drugs only, 2 drugs were prescribed in 16% of prescriptions with 15% containing oral antidiabetic drugs and 1% containing insulin, 3 drugs were prescribed in 4% of prescriptions with 3% containing oral antidiabetic drugs and 1% containing insulin, 4 drugs were prescribed in 2% of prescriptions with all containing oral antidiabetic drugs only. **Conclusion:** Mostcommon antidiabetic drugs prescribed were metformin, glimepiride, pioglitazone, miglitol, pioglitazone+ metformin, glimepiride+ metformin and pioglitazone+ glimepiride.

Key words: Diabetes, metformin, glimepiride, pioglitazone

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INTRODUCTION

Diabetes is a chronic disease characterised by unusually high blood sugar (glucose) levels. The pancreas produces insulin, which decreases blood sugar. Diabetes is brought on by a lack of insulin or its inadequate production.[1] Diabetes symptoms include increased urination, thirst, appetite, and weariness. Testing for blood sugar (glucose) can identify diabetes. Both acute and chronic diabetes problems are the main ones.[2] Chronic problems are linked to illnesses of the blood vessels (both small and large), which can harm the eye, kidneys, nerves, and heart. Acute complications include dangerously raised blood sugar and unusually low blood sugar as a result of diabetic treatments.[3]

Type 2 diabetes develops when the body becomes resistant to the effects of insulin or doesn't produce enough insulin to maintain normal blood sugar levels. It is often associated with lifestyle factors such as obesity, physical inactivity, and poor diet. Type 2 diabetes can be managed through lifestyle modifications, such as a healthy diet, regular exercise, weight management, and, in some cases, medication or insulin therapy.[4]

There are several classes of anti-diabetic drugs used to manage diabetes, and the choice of medication depends on the type of diabetes, individual health factors, and other considerations. A clinician's prescription represents the prescriber's perspective on the disease and the drug's role in treatment.[5] Additionally, it sheds light on the makeup of the healthcare delivery system. Drug utilisation studies' (DUS) main goal is to encourage the population's responsible drug use. Drug therapy must be optimised with the use of drug utilisation studies.[6] We performed this study to assess prescribing pattern of antidiabetic drugs in type II diabetes mellitus in tertiary care hospital.

METHODOLOGY

After considering the utility of the study and obtaining approval from ethical review committee, we selected one hundred forty type II diabetes mellitus patients of both genders. Patients' consent was obtained before starting the study. Ethical approval for the study was also obtained from institutional review committee.

Data such as name, age, gender etc. was recorded. Demographic information, medical history, diabetes duration, family history, prescribed antidiabetic drugs, coexisting diseases, and concomitant medications were gathered. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

RESULTS

Table I Patients distribution

Total- 140		
Gender	**Males**	**Females**
Number (%)	80 (57.1%)	60 (42.9%)

Table I shows that out of 140 patients, males were 80 (57.1%) and females were 60 (42.9%) (Table I).

Table II Percentage of drugs prescribed

Drugs	Percentage	P value
Metformin	31%	0.05
Glimepiride	29%	
Pioglitazone	8%	
Miglitol	10%	
Pioglitazone+ Metformin	3%	
Glimepiride+ Metformin	15%	
Pioglitazone+ Glimepiride	4%	

Table II, graph I shows that common drugs prescribed were metformin (31%), glimepiride (29%), pioglitazone (8%), miglitol (10%), pioglitazone+ metformin (3%), glimepiride+ metformin (15%) and pioglitazone+ glimepiride (4%). The difference was significant (P< 0.05) (Table II, graph I).

Graph I Percentage of drugs prescribed

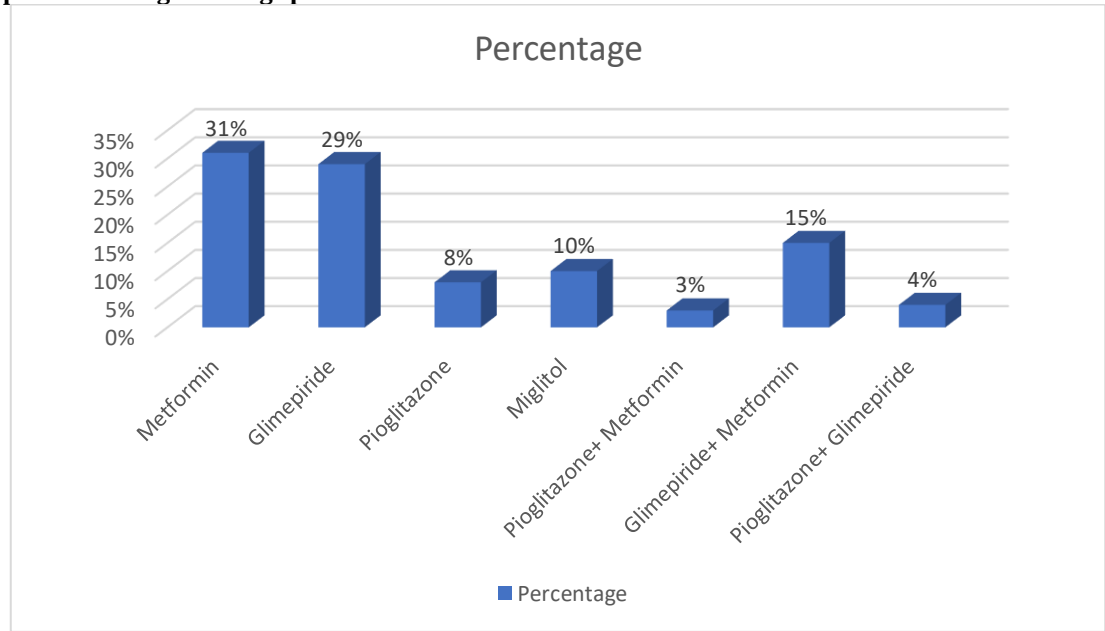

Table III Description of drugs present in each prescription

No. of drugs per prescription	No of prescriptions (%)	No of prescriptions containing oral antidiabetic drugs (%)	No of prescription containing insulin (%)
1	78	78	0
2	16	15	1
3	4	3	1
4	2	2	0

1 drug was prescribed in 78% of prescriptions consisting of oral antidiabetic drugs only, 2 drugs were prescribed in 16% of prescriptions with 15% containing oral antidiabetic drugs and 1% containing insulin, 3 drugs were prescribedin 4% of prescriptions with3% containing oral antidiabetic drugs and 1% containing insulin, 4 drugs were prescribed in 2% of prescriptions with all containing oral antidiabetic drugs only (Table III).

DISCUSSION

When weight loss, a diabetic diet, and exercise fail to manage the increased blood sugar levels, oral medicines are used to treat type 2diabetes. Insulin medicines are taken into consideration if oral treatments are still insufficient.[7] One of the main causes of kidney failure is diabetes, however the prevalence of the condition varies between populations and is also correlated with the severity and prognosis of the illness. According to estimates,

135 million individuals had diabetes worldwide in 1995, and by 2025, at least 30 million more people are anticipated to have the disease.[8,9] Studies on drug use are effective exploratory methods for determining the place of drugs in society. These studies provide a solid sociomedical and health economic foundation for making decisions about healthcare.[10,11] We performed this study to assess prescribing pattern of antidiabetic drugs in type II diabetes mellitus in tertiary care hospital.

Metformin is a drug that is frequently recommended for type 2 diabetes. It functions by lowering liver glucose synthesis, raising insulin sensitivity, and enhancing muscle glucose absorption. Typically taken orally, metformin can also be used with other medications.[12] A hormone called insulin aids in controlling blood sugar levels. Insulin is usually necessary for those with type 1 diabetes, and it may also be administered for some people with type 2 diabetes when other drugs are insufficient. Typically, a syringe, insulin pen, or insulin pump are used to inject insulin under the skin.[13]

We found that out of 140 patients, males were 80 (57.1%) and females were 60 (42.9%). Alex et al[14]analysed the anti-diabetic drug use patterns in diabetic outpatients and kept track of any adverse drug reactions (ADRs) brought on by anti-diabetic therapy. Of the 197 diabetic patients, 99 (50.3%) were men. Most patients (36.5%) had a history of diabetes for less than five years, and the majority of patients (39.6%) fell into the 51–60 age range. Metformin was the medication that was most frequently administered (68%), and then the sulfonylurea class of medications (49.7%). Patient usage of insulin preparations was almost 42%, with 30.4% of patients using biphasic isophane human insulin. The majority of the patients (58.4%) were receiving multidrug therapy, and approximately 40% were receiving two medication regimens. The most frequently prescribed single medication was metformin (18.8%), and the most frequently prescribed dual medication (13.2%) was glimepiride plus metformin.

In our study common drugs prescribed were metformin (31%), glimepiride (29%), pioglitazone (8%), miglitol (10%), pioglitazone+ metformin (3%), glimepiride+ metformin (15%) and pioglitazone+ glimepiride (4%). Agarwal et al[15] found that an average of 1.4 anti-diabetic medications were prescribed each prescription. The most frequently given class of oral hypoglycemic agents (OHA) was sulfonylureas, whereas the most frequently prescribed individual medicine was metformin (biguanide). It was customary to give a fixed-dose combination of biguanide and sulfonylurea. Monotherapy outperformed polytherapy, and Type 2 diabetes used insulin at a higher rate. Among patients on anti-diabetic medication, only 41% had ideal glycemic control. A statistically significant relationship existed between anti-diabetic medication and lifestyle changes for glycemic management.

It was found in our study that 1 drug was prescribed in 78% of prescriptions consisting of oral antidiabetic drugs only, 2 drugs were prescribed in 16% of prescriptions with 15% containing oral antidiabetic drugs and 1% containing insulin, 3 drugs were prescribed in 4% of prescriptions with 3% containing oral antidiabetic drugs and 1% containing insulin, 4 drugs were prescribed in 2% of prescriptions with all containing oral antidiabetic drugs only. Vengurlekar et al[16] found that the highest prescription rates for the various available anti-diabetic medications were found to be for metformin (27%) and glimepiride (22.60%). Glimepride (22.60%, sulfonylurea category), metformin (27%, biguanide category), and pioglitazones (13.90%, glitazone category) are the most commonly prescribed medications in terms of category. Prescriptions for insulin were found to be extremely low (4.5%). The most frequent prescription (20.86%) was for a metformin and glimepiride combination. Hypertension was shown to be the condition most frequently linked to diabetes mellitus (35%). The age range of 51 to 60 was shown to have the highest prevalence of disease, followed by the age group of 41 to 50. It was discovered that male patients (66.36%) outnumbered female patients (33.64%).

CONCLUSION

Mostcommon antidiabetic drugs prescribed were metformin, glimepiride, pioglitazone, miglitol, pioglitazone+ metformin, glimepiride+ metformin and pioglitazone+ glimepiride.

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