

A Cross-Sectional Study Evaluating Pattern of Anti-Diabetic Drugs in Diabetic Patients

Insha E. Rab¹, Asha Kumari², Veena Kumari³

¹Senior Resident, Department of Pharmacology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India

²Associate Professor and HOD, Department of Pharmacology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India

³Associate Professor, Department of Pharmacology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India

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Corresponding Author: Dr. Veena Kumari

Conflict of interest: Nil

Abstract:

Aim: The aim of the present study was to investigate the prescribing pattern of anti-diabetic drugs in diabetic patients attending medicine OPD, Darbhanga Medical College, Laheriasarai

Methods: The present study was a retrospective study carried out in the Department of Pharmacology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India for one year. The sample size for this study was 100 patients in accordance with world health organization (WHO) manual to assess drug use in individual facilities.

Results: There were 55% male and 45% females. Out of total 100 prescribed anti-diabetic drug products, 52 (52%) were OHA and 48 (48%) were insulin. Thus, OHA's were the most common class of anti-diabetic drugs prescribed in this study. Biguanides were the most commonly prescribed class followed by fixed dose combination (FDC)-sulfonylureas biguanides among the different classes of OHA. Other classes of OHA prescribed were thiazolidinediones and dipeptidyl peptidase 4 inhibitors (DPP 4 inhibitors) and FDC- biguanides+DPP-4 inhibitors. Insulin preparations accounted for 48 of the total anti-diabetic drugs in which short acting insulin 20 followed by insulin mixture preparations 15, others are ultra short acting and intermediate insulin are 6 and 7 respectively.

Conclusion: Oral hypoglycemic agents still dominate the prescribing pattern, but there was a shifting trend toward the use of insulin preparations in the management of type 2 diabetes mellitus. In achieving optimal glycemic control, intensification of current drug treatment as well as planning multiple drug interventions with lifestyle modification is necessary to prevent diabetic complications.

Keywords: Anti-diabetic drugs, Glycemic control, Insulin, Oral hypoglycemic agents, Prescribing pattern.

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Introduction

Diabetes mellitus is a pandemic disease that has struck each and every corner of the world. According to the Indian Council of Medical Research-Indian Diabetes study (ICMR), a national diabetes study, India currently has 62.4 million people with diabetes. [1] This is set to increase to over 100 million by 2030. [2] The prevalence of diabetes among adults has reached approximately 20% in urban and approximately 10% in rural populations in India. [3] Various classes of anti-diabetic drugs including insulin and oral hypoglycemic agents (OHA) are currently used in the treatment of diabetes, which acts by different mechanisms to reduce the blood-glucose levels to maintain optimal glycemic control. [4,5] The United Kingdom Prospective Diabetes Study showed intensive blood-glucose control by

either sulfonylureas or insulin substantially decreased the risk of microvascular complications. [6,7]

In India, limited studies have focused on diabetes care and provide an insight into the current profile of patients and their management. More than 50% of people with diabetes have poor glycemic control, uncontrolled hypertension and dyslipidemia, and a large percentage have diabetic vascular complications. [8,9]

The American Diabetic Association and California Healthcare Foundation/American Geriatrics Society panel on improving care for elders with DM have recommended treatment goals for older patients. These goals are based on factors such as life expectancy, functional states, and comorbidities such as

hypertension and dyslipidemia. Because of comorbidities, geriatric patients are on polypharmacy, which leads to unintended therapeutic outcome. [10] Hence, frequent monitoring and special care are needed to avoid further complications in this age group. Drug utilization studies could provide feedback to prescribers and promote rational drug use.

The aim of the present study was to investigate the prescribing pattern of anti-diabetic drugs in diabetic patients attending Department of Pharmacology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India

Materials and Methods

The present study was a retrospective study carried out in Department of Pharmacology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India for one year. The sample size for this study

was 100 patients in accordance with world health organization (WHO) manual to assess drug use in individual facilities.

Inclusion Criteria: Inclusion criteria for current study were; all type 2 diabetes mellitus patients of both sexes irrespective of age and on treatment with oral hypoglycemic agents and insulin therapy.

Exclusion Criteria: Exclusion criteria for current study were; pregnant/lactating woman, patients of type 1 diabetes mellitus (DM), pediatric cases and patients with gestational diabetes.

Statistical Analysis: Data was entered using Microsoft excel quantitative variables as mean±SD. Prescribing drug products were expressed in percentages.

Results

Table 1: Gender and anti-diabetic drug distribution

Gender	N	%
Male	55	55
Female	45	45
Anti-diabetic drug		
OHA	52	52
Insulin	48	48

There were 55% male and 45% females. Out of total 100 prescribed anti-diabetic drug products, 52 (52%) were OHA and 48 (48%) were insulin.

Table 2: Prescribing frequency of different class of OHAs

OHA drugs	N
Biguanides	25
Sulfonylureas	10
FDC+sulfonylureas+biguanides	15
Thiazolidinediones	5
DPP 4 inhibitors	3
FDC+biguanides+DPP-4 inhibitors	2

Thus, OHA's were the most common class of anti-diabetic drugs prescribed in this study. Biguanides were the most commonly prescribed class followed by fixed dose combination (FDC)-sulfonylureas biguanides among the different classes of OHA. Other

classes of OHA prescribed were thiazolidinediones and dipeptidyl peptidase 4 inhibitors (DPP 4 inhibitors) and FDC- biguanides+DPP-4 inhibitors.

Table 4: Prescribing frequency of different insulin preparations

Insulin preparations	N
Ultra-short acting	6
Short acting	20
Intermediate	7
Mixtures	15

Insulin preparations accounted for 48 of the total anti-diabetic drugs in which short acting insulin 20 followed by insulin mixture preparations 15, others are ultra short acting and intermediate insulin are 6 and 7 respectively.

Discussion

Diabetes mellitus is a pandemic disease that has struck each and every corner of the world. India

currently has 62.4 million people with diabetes. This is set to increase to over 100 million by 2030. The prevalence of diabetes among adults has reached approximately 20% in urban and approximately 10% in rural populations in India. Various classes of anti-diabetic drugs including insulin and oral hypoglycemic agents (OHA) are currently used in the treatment of diabetes, which acts by different mechanisms to reduce the blood glucose levels to maintain

optimal glycemic control. [11,12] More than 50% of people with diabetes have poor glycemic control, uncontrolled hypertension and dyslipidemia, and a large percentage have diabetic vascular complications. [9,13]

There were 55% male and 45% females. Out of total 100 prescribed anti-diabetic drug products, 52 (52%) were OHA and 48 (48%) were insulin. Thus, OHA's were the most common class of anti-diabetic drugs prescribed in this study. Biguanides were the most commonly prescribed class followed by fixed dose combination (FDC)-sulfonylureas+biguanides among the different classes of OHA. Other classes of OHA prescribed were thiazolidinediones and dipeptidyl peptidase 4 inhibitors (DPP 4 inhibitors) and FDC- biguanides+DPP-4 inhibitors. Insulin preparations accounted for 48 of the total anti-diabetic drugs in which short acting insulin 20 followed by insulin mixture preparations 15, others are ultra short acting and intermediate insulin are 6 and 7 respectively. Insulin preparations can provide intensive, near physiologic delivery of insulin and can help patients achieve better glycemic control. [14] This reflects a change in prescribing trend and shift toward insulin-based therapy from the dominated class of OHA in type 2 diabetes treatment. Thus, lifestyle modification along with anti-diabetic drug treatment has the potential to improve glycemic control in patients with type 2 diabetes despite optimized anti-diabetic drug treatment. [6,7]

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Conclusion

Oral hypoglycemic agents still dominate the prescribing pattern, but there was a shifting trend toward the use of insulin preparations in the management of type 2 diabetes mellitus. In achieving optimal glycemic control, intensification of current drug treatment as well as planning multiple drug interventions with lifestyle modification is necessary to prevent diabetic complications.

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