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Original Research Article

Prescribing pattern of antidiabetic drugs in tertiary care hospital

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ABSTRACT

Background: The aim of the current study was to investigate the prescribing pattern of anti-diabetic drugs in diabetic patients attending tertiary care teaching hospital in Kurnool.

Methods: A prospective, cross-sectional, observational survey was carried out in 100 patients of diabetes mellitus attending diabetes outpatient/medicine outpatient departments, to assess their prescribing pattern of anti-diabetic drugs.

Results: Average number of anti-diabetic drugs per prescription was 1.4. Metformin (biguanide) was the commonest prescribed individual drug among oral hypoglycemic agents. Fixed dose combination of biguanide and sulfonylurea was prescribed commonly. Monotherapy dominated over polytherapy and there was a higher percentage of use of insulin in type 2 diabetics.

Conclusions: OHAs 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. Intensification of current drug treatment as well as planning multiple drug interventions with lifestyle modification is necessary.

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

INTRODUCTION

Diabetes mellitus is a heterogeneous group of diseases characterized by chronic elevation of glucose in the blood. It arises because the body is unable to produce enough insulin for its own needs, either because of impaired insulin secretion, impaired insulin action, or both. Diabetes affects kidneys and cause renal failure, visual loss and a range of other types of tissue damage. Diabetes also predisposes to arterial disease, not least because it is often accompanied by hypertension, lipid disorders and obesity. Many cases of diabetes and almost all of its unwanted long-term consequences are potentially avoidable, but this will require intervention at a societal as well as at a medical level.

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.^{1,2}

More than 50% of people with diabetes have poor glycemic control, uncontrolled hypertension and dyslipidemia, and a large percentage have diabetic

vascular complications.^{3,4} Therefore, current study was carried out to find the current prescribing pattern of anti-diabetic drugs and efficacy of these drugs in maintaining adequate glycemic control in diabetic patients attending a tertiary care teaching hospital in Kurnool.

METHODS

Current study was a cross-sectional, prospective, observational study carried out in diabetology and medicine department of a tertiary care hospital in Kurnool. The sample size for this study was 100 patients (95% confidence interval, ±10%) in accordance with world health organization (WHO) manual to assess drug use in individual facilities.⁵ It was a pilot study with duration of 2 months (10 August 2019 to 10 October, 2019) in which 100 patients of diabetes who are receiving anti-diabetic therapy for more than one year was randomly selected.

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

One hundred (n=100) patients of type 2 diabetes were analyzed and 50 anti-diabetic drug products were prescribed. Male were 52% (N=52), female were 48% (N=48) (Figure 1).

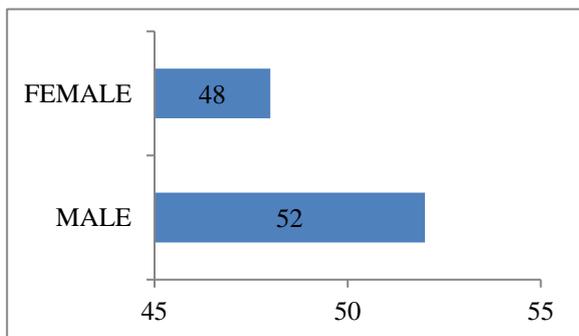


Figure 1: Number of males and females.

Prescribing pattern

During the study, the number of anti-diabetic drug products per prescription varied from one to four and the average number of anti-diabetic drugs per prescription was 1.4. Out of total 140 prescribed anti-diabetic drug products, 74 (52.86%) were OHA and 66 (47.14%) were insulin (Figure 2).

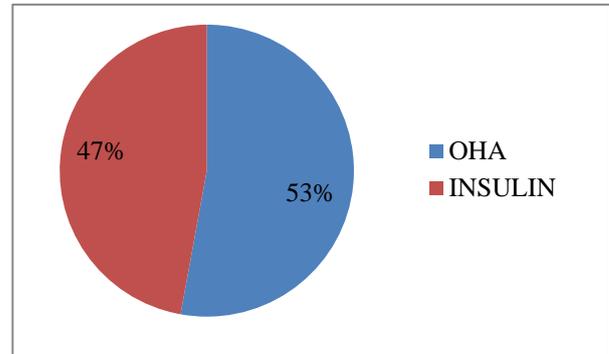


Figure 2: Percentage of OHA and insulin prescribed.

Thus OHA's were the most common class of anti-diabetic drugs prescribed in this study. Biguanides (35%) were the most commonly prescribed class followed by fixed dose combination (FDC)-sulfonylureas+biguanides (29%) among the different classes of OHA (Figure 3). Metformin (biguanide) was the most common individual OHA to be prescribed followed by FDC of glicemipride plus metformin 29%. Other classes of OHA prescribed were thiazolidinediones 9.5% and dipeptidyl peptidase 4 inhibitors (DPP 4 inhibitors) 4.8% and FDC-biguanides+DPP-4 inhibitors are 2.4%.

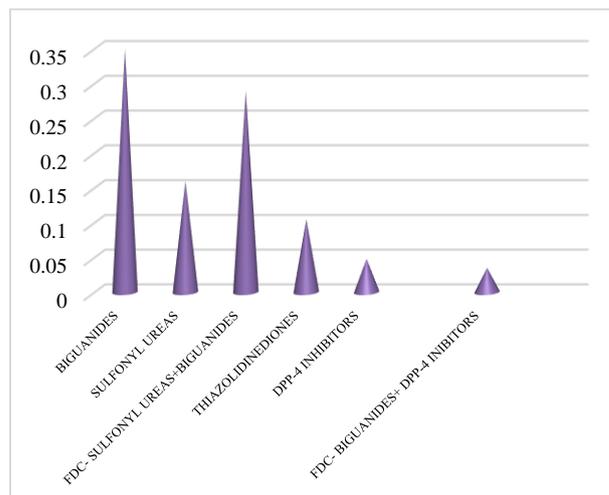


Figure 3: Prescribing frequency of different class of OHAs.

Insulin preparations accounted for 47 % of the total anti-diabetic drugs in which short acting insulin 47% followed by insulin mixture preparations 33%, others are ultra short acting and intermediate insulin are 10% each.

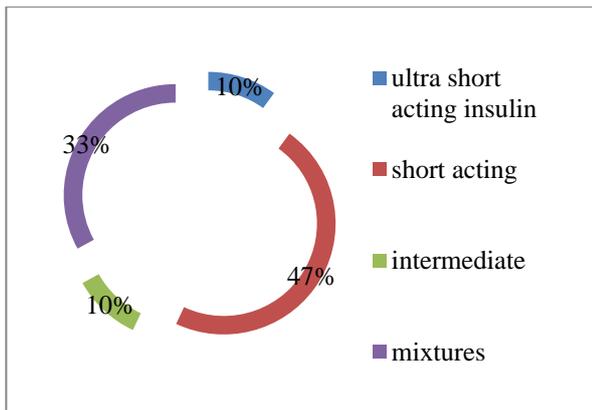


Figure 4: Prescribing frequency of different insulin preparations.

DISCUSSION

In this study, an attempt has been made to describe the current prescribing pattern and trend of anti-diabetic drug therapy in diabetic patients in a tertiary care hospital in Kurnool.

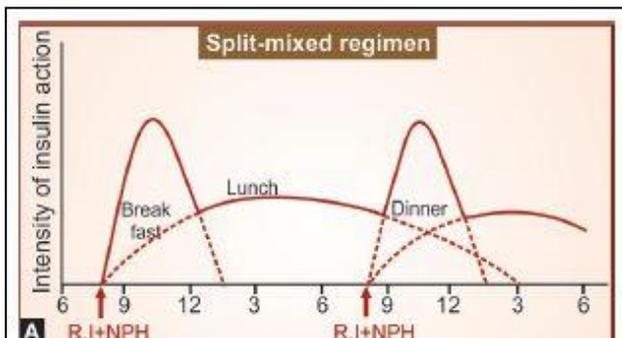


Figure 5: Insulin action obtained with regular insulin and NPH.

In current study, out of 100 patients who were treated with anti-diabetic drugs all of them were type 2 diabetic patients (noninsulin dependent diabetes mellitus) that reflect the increasing prevalence of type 2 diabetes mellitus in our region. The average number of anti-diabetic drugs per prescription in this study was 1.4. Our study showed restraint on polypharmacy. In current study, male preponderance is seen compare to females similar to a finding in a study done by Mahamood et al.⁶ OHAs were commonly prescribed drugs accounting for 53% of the total prescribed anti-diabetic products. Biguanides (35%) were the most commonly prescribed class followed by FDC-sulfonylureas+biguanides (29%), similar to finding of et al. Biguanides are used in combination with other OHAs in order to achieve better glycemic control.⁸

Insulin preparations accounted for 47% of the total anti-diabetic drugs and the most common preparation was short acting insulin preparation followed by mixtures (split-mixed regimen), the total daily dose of a 30:70 or

50:50 mixture of regular and NPH (neutral protamine hagedorn/isophane) insulin is usually split into two (split-mixed regimen) and injected subcutaneously before breakfast and before dinner (Figure 5). Insulin preparations can provide intensive, near physiologic delivery of insulin and can help patients achieve better glycemic control.⁹ 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.^{10,11} In this study, all drugs were prescribed by brand name suggesting popularity of the brands among the physician and influence of pharmaceutical companies on the physician. It is advisable to prescribe by generic name for cost effective utilization.

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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Conflict of interest: None declared

Ethical approval: Not required

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