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## A Drug Prescribing Pattern Study in Diabetes Mellitus: An Outpatient Study

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### ABSTRACT:

Diabetes mellitus is a broadly prevalent endocrine system disorder with a major health issue in current scientific time. An observational prospective study to assess the drug prescribing pattern conducted at outpatient's setting of Amit hospital, valsad. With prior permission of organization of hospital and informed consent form from patients were received. 85 patients were assessed for the study in which 95.29% patients are of type II. Majority of patients belongs to >60 years of age with 28% people are having Diabetes mellitus since more than 5 years. 41.17% patients have family history of diabetes mellitus. As majority of patients type II patients so Metformin is most commonly prescribed drug in combinations with other hypoglycemic agents like commonly prescribed drugs 47.05% of two drug combination in which Metformin+ Glimipride with 61.17% on top while 17.64% for Metformin & insulin. 28.23% are prescribed with three drug combinations. From the study Biguanides, Sulfonylurea, Insulin and Thiazolidinedione are most commonly prescribed drug. Combination drug is unavoidable in diabetes but proper combination selection according to clinical judgment will be beneficial and reduce drug related problems. The outcome results of prescribing drug on patients can be enhanced by the service of pharmacist through education and awareness. This kind of support from the medical professionals to the pharmacist may help in enhancing healthcare development and defining prescribing pattern.

**KEYWORDS:** Diabetes mellitus, endocrine disorder, Metformin, Glimipride, Pioglitazone, prescribing pattern.

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### INTRODUCTION:

As we know that prescription is a written order which mention drugs and other instructions given to pharmacist to dispense drugs to patients for proper treatment of disease.<sup>1</sup> The assessment of drug utilization is important for clinical, educational and economic reasons.<sup>2</sup> It is necessary to define the prescribing pattern and to target the irrational prescribing habits for sending a remedial message.<sup>3</sup> Worldwide, more than half of all medicines are prescribed, dispensed, or sold improperly, and 50% of patients fail to take them correctly. About one third of the world's population lacks access to essential medicines.

Diabetes mellitus is a chronic metabolic disorder which requires treatment for life time. The prevalence of diabetes is 2.8% in 2000 and will be around 4.4% in 2030. Number of person that will be affected with diabetes is projected to be 376 million in 2030.<sup>4</sup> There is thickening of the capillary basement membrane throughout the body mainly due to hyperglycemia. Decrease level of insulin or insulin resistance causes initial symptoms which are polyuria, polydipsia and polyphagia, weight loss if remain untreated or undiagnosed for longer period of time the complications like retinopathy, nephropathy, neuropathy and cardiomyopathy can be occur in patients of diabetes mellitus. There are generally two main types of this endocrine disorder in

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which type –I is known as insulin dependent which usually occurs in young age characterized by the ketoacidosis and coma because insulin prevent ketone body formation and eventually increases the concentration of potassium. The other type is type-II insulin independent which is usually associated with obesity in majority of cases. There are other various forms of diabetes mellitus like gestational diabetes.<sup>5</sup>

Management of Diabetes totally depends on the type and severity of the diabetes mellitus. Type –I diabetes management is as name indicate totally depend on exogenous insulin source as patients cannot live without it. While on the other side Type II diabetes is first approached with non pharmacological management options like weight reduction, a diet healthy in nature, and exercise. In cases when non pharmacological approach is not effective in controlling blood sugar medications like oral medications known as oral hypoglycemic agents are used but in certain cases when these oral medications are still not sufficient to manage condition than, in that cases insulin is also considered. The complication of diabetes can be prevented if the glycemic control in diabetes patients maintained properly.<sup>6</sup>

As we know that lots of efforts to control hyperglycemia condition and its associated symptoms are important, but the major challenges in optimally managing the patient with diabetes mellitus are targeted at reducing or preventing complications which can impact on the quality of life, and improving life expectancy and eventually on quality of life. Various Research & drug development efforts in the field of this endocrinal lifelong disorder over the past several decades have provided valuable information that applies directly to improving outcomes in patients with diabetes mellitus and have extended the therapeutic approach. Additionally, interventions in an attempt to prevent disease in high-risk populations have been also reported in case of type 1or juvenile type and type 2 or maturity onset diabetes mellitus. It is never been enough to give patients with diabetes mellitus a brief instructions with a few pamphlets and expect them to manage their disease adequately. Because thinking that diabetes education is limited to one or two encounters are always unwise efforts; because as we know that education is a lifetime implement. Flourishing treatment of diabetes mellitus involves first important aspect is to bring changes in regular lifestyle for the diabetes patient which can only be possible by focusing on medical nutritional therapy, physical activity like exercise to improve the sensitivity of insulin, and self-monitoring of blood glucose and possibly of urine for ketone bodies and adhering to prescribed medications regularly. The patient of diabetes must be involved in the decision-making process and must learn at least basic about the endocrine

disease and its associated complications. Importance should be given to the evidence which indicates that complications can be prevented or minimized with glycemic control and management of risk factors for cardiac disease. However recognition of the need for proper patient education to empower them into self-care has generated good amount of awareness in terms of diabetes education.<sup>7</sup>

#### METHODOLOGY:

Spreading awareness and education to the patients and healthcare professionals about the disease and drug prescribing pattern in patients of diabetes with immense support from the AMIT hospital and with the guidance from Dr. Sandeep Desai a study questionnaire was prepared and the participants consented about the study and received their fully filled 85 form at the end. The percentage analysis method is used to estimate the drug prescribing pattern in diabetes mellitus.

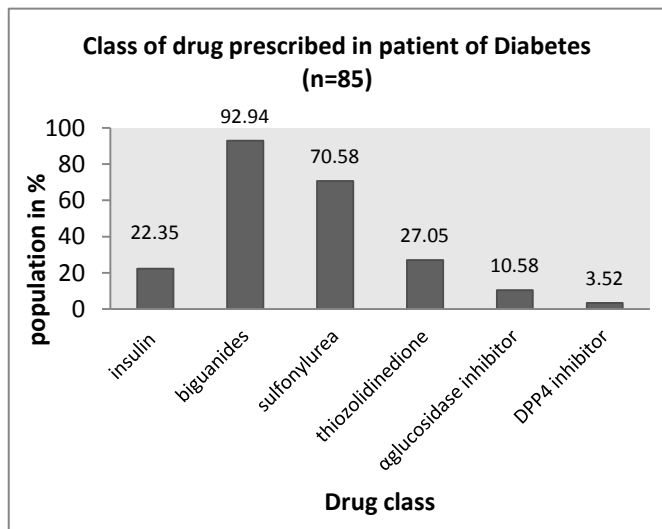
#### RESULT:

85 patients were assessed for the study in which 95.29% patients are of type II. Majority of patients are belongs to >60 years of age with 28% people are having diabetes mellitus since more than 5 years. 41.17% patients have family history of diabetes mellitus.

**Table 1:** Demographic information about the participants involve in the study.

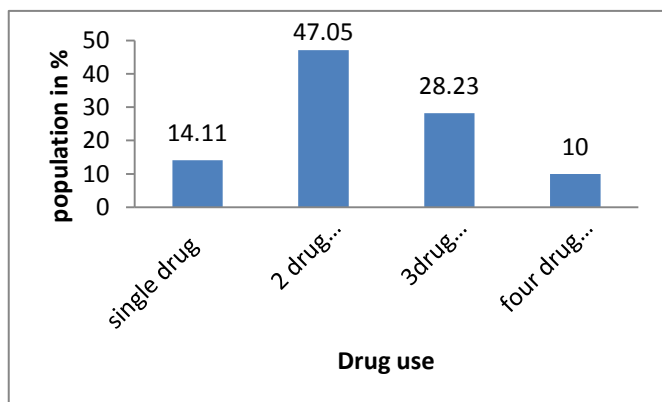
Participants	Result in %
>60 years	44.70
50-60 years	20.00
40-50 years	23.52
30-40 years	8.23
Suffering from disease since > 10 years	27.05
Suffering from disease since > 5 years	28.35
Suffering from disease since > 2 years	20.00
Suffering from disease since > 1 year	25.88
Other habit like alcohol	8.35
Other habit like smoking	2.35

From the study and analysis of prescription it was observed that various classes of anti diabetic agent like Biguanides class with 92.94% are most prescribed class and followed by sulfonylurea with 70.58%, Thiazolidinedione with 27.05, insulin 22.35%,  $\alpha$ -glycosidase inhibitor 10.58% and DPP4 inhibitors are 3.52% and almost all traditional and newer class agents are covered under the prescribing pattern. The following graph represents the result of percentage wise drug use in patients of diabetes mellitus.



**Figure 1:** Percentage of class of drug prescribed in patients of Diabetes mellitus

As majority are type two patients so Metformin is most commonly prescribed drug in combinations like 47.05% of two drug combination in which Metformin+ Glimipride with 61.17% on top while 17.64% for Metformin & insulin. There were 28.23% three drug combinations and 10% four drug combination in which one of the drug was metformin used to treat the patients of diabetes.



**Figure 2** The combination drug used in management of diabetes mellitus patients.

**DISCUSSION:**

The current study had provided a better understanding of the prescribing practices and pattern and strategies of intervention in health care system. So to study the prescribing pattern is kind of analysis of prescribing pattern and cost effectiveness and rationality. During the past years metformin has become the prime choice in the management of diabetes mellitus type two because of its effect on insulin resistance. Thus the metformin was the main drug in our study of prescription pattern. Conventional management of diabetes type two with single drug often fails so as a result increasingly prescribing pattern of combination drugs for better control on clinical symptoms and preventing the progression of the disease. In this study we have observed that majority are type two diabetes patients and main choice of management was two drug and three drug combination followed by four and single drug use.

The education to the patient by awareness also helps in improving the compliance which will be the additional benefit of this study. As community pharmacist is the only healthcare professional after medical professional who has been in direct access with the patients and in metabolic lifelong disorder like diabetes the joint venture by the doctor and pharmacist can play a crucial role in education patients and bringing positive and better health outcomes.

**CONCLUSION:**

Biguanides, Sulfonylurea, Insulin and Thiazolidinedione are most commonly prescribed drug. Combination drug is unavoidable in diabetes but proper combination selection of clinical judgment will be beneficial and reduce drug related problems. From the study it was concluded that Biguanides like metformin is the most commonly prescribed medicine in the management of diabetes mellitus. The two drug combination was mainly prescribing pattern in the management and the joint venture of the doctor and pharmacist in studying the prescribing pattern in lifelong disorder by creating awareness to improve their quality of life and outcome of the health and improve the healthcare sector.

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