



Review article

Assessment of prescription pattern of anti-diabetic drugs in the outpatient department of a tertiary care hospital

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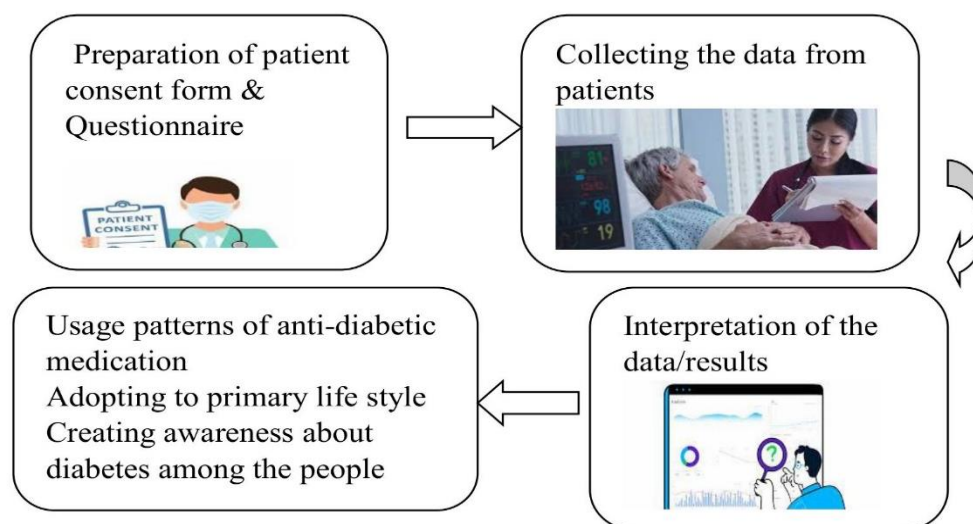
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ABSTRACT

The treatment options for diabetes mellitus and their prescribing have increased over years. This needs appropriate selection of drugs. The main objective of this study was to highlight the current prescribing trends in diabetes mellitus patients at Medak District, Telangana State. A prospective observational study was conducted on outpatient and inpatients admitted at tertiary care hospital. The study included a cohort of 100 individuals who sought of medical care. Prescriptions of the patients are collected in a designed questionnaire form and the relevant information is recorded and analysed. The analysis primarily examined the parameters such as the proportion of anti-diabetic medications prescribed, the predominant class and type of anti-diabetic medications prescribed. 100 patients' prescription patterns were studied, out of which were males and females most of the patients were in the age group of 41-60. Hypertension was the most commonly found co-morbid condition. Rapid acting insulin was mostly prescribed during hospital stay. Metformin was the most commonly prescribed drug followed by glimepiride. The most frequently prescribed drug combinations for diabetes management include sulphonyl ureas with biguanides, emerging as the most prevalent combination with 45%. The study's findings contribute valuable insights into the socio-demographic profiles and anti-diabetic drug utilization patterns among diabetes patients. It is essential to create awareness among the general population on this.



Keywords: Type 2 diabetes mellitus, Sedentary life style, Patients, Complications.

INTRODUCTION

Diabetes is one of the leading non-communicable diseases globally, significantly contributing to disability and premature mortality. It places a growing strain on healthcare systems, economic growth, and the overall well-being of a substantial segment of the population [1]. The primary types of diabetes are type 1 and type 2. Type 1 diabetes is characterized by complete insulin deficiency due to the destruction of pancreatic beta cells. In contrast, type 2 diabetes, which accounts for about 95% of all diabetes cases, is marked by insulin resistance that can result in elevated blood sugar levels [2, 3].

According to the International Diabetes Federation (IDF), there were an estimated 540 million people living with diabetes globally in 2021, with projections suggesting this number could rise to 783 million by 2045 [4]. While diabetes is more commonly found in highly developed countries, the most rapid increase in cases is occurring in developing nations. This upward trend is largely driven by the rising number of individuals diagnosed with type 2 diabetes. A significant factor contributing to type 2 diabetes is the combination of a high-energy Western diet and a lack of physical activity, highlighting lifestyle as a key risk factor. Additionally, a patient's understanding of diabetes is crucial for effective self-management. The rising prevalence of diabetes can be linked to various factors, such as limited awareness, cultural practices, economic challenges, and inactive lifestyles.

Those with a strong knowledge of the condition tend to have a better grasp of its nature and potential complications, which can help reduce the risk of severe episodes and related health issues [5].

Type 2 diabetes mellitus (T2DM) is a prevalent metabolic disorder predominantly affecting adults, accounting for 90-95% of all diabetes cases. Persistently high blood glucose levels can lead to a range of complications affecting various organs, including the kidneys, skin, nerves, heart, and blood vessels. After diagnosis, the primary reason for elevated blood glucose is often non-adherence to management strategies that include lifestyle changes and medications. One of the critical consequences of hyperglycemia is vascular damage, which can manifest as either micro or macro vascular complications.

Diabetic retinopathy is the most frequent micro-vascular issue, followed by diabetic nephropathy and neuropathy [6]. The rising prevalence of diabetes can be linked to various factors, such as limited awareness, cultural practices, economic challenges, and inactive lifestyles. On the macro-vascular side, complications stem from the

progression of atherosclerosis, which results in the gradual narrowing of the arterial walls [7].

Studies on drug consumption are crucial for understanding the societal impacts of drugs. These studies act as powerful tools for research, forming the basis for informed decision-making in healthcare. The World Health Organization offers drug use indicators that can be incorporated into these analyses. Various guidelines exist for different types of medications used in diabetes treatment [8].

Recognizing effective management strategies for treatment and prevention is essential to avoid both immediate and long-term complications of diabetes and to improve patients' quality of life. Therefore, this study aimed to evaluate the complications associated with diabetes mellitus (DM), the management practices in place, and the risk factors contributing to these complications [9].

MATERIALS AND METHODS

It is a Prospective Observational Study done in the outpatient and In-patient Departments of tertiary care teaching hospital at Medak. Sample Size collected was of 100cases. Study included DM patients aged more than 12 years, either gender and had taken treatment with oral hypoglycaemic agents. Juvenile diabetes and gestational diabetes were excluded from the study [10].

After obtaining informed consent, patients were interviewed and details regarding the socio-demographic data, anti-diabetic drug therapy and associated diseases were investigated through a designed questionnaires form and prescriptions were collected from the patients and were analysed for prescribing pattern of anti-diabetic drugs. The following parameters were analysed: Percentage of different class of anti-diabetic drugs prescribed, commonest class and type of anti-diabetic drugs prescribed and combination of anti-diabetic drugs.

RESULT

Analysis was done among the 100 patients. Out of which 47 (47%) were male and 53 (53%) were female patients and 69 (69%) Were aged between 41-60 years. Hypertension was seen as the most common comorbid condition. Out of 100 patients 31 patients were from rural area and 69 people from urban and it was mostly found in illiterates with 52% percentage followed by secondary school and intermediate.

Biguanides (metformin) was most commonly prescribed medications for treatment of DM with combination of sulfonyl urea's (glimepiride) (45%) followed by alpha glucosidase inhibitors (voglibose).

Table 1: Socio demographic details of participants

variables	characteristics	No. of patients	percentage
Sex	Male	47	47%
	Female	53	53%
Age	Less than 40 years	13	13%
	40-50 years	37	37%
	51-60 years	32	32%

	61-70 years	15	15%
	Above 70 years	03	03%
Living status	Rural	31	31%
	Urban	69	69%
Educational status	Post-graduation	08	08%
	Graduation	05	05%
	Illiterates	52	52%
	others	35	35%

Table 2: Prescribing pattern of anti-diabetic drugs

Drug regimen	Drugs prescribed to no. of patients	Percentage (%)
Dapagliflozin + metformin	02	02%
Metformin +Glimepiride	45	45%
Metformin + Glimepiride + Voglibose	12	12%
Dapagliflozin + Sitagliptin	05	05%
Sitagliptin + Metformin	12	12%
Metformin + vildagliptin	10	10%
Metformin + voglibose	01	01%
Linagliptin + metformin	01	01%
Gliclazide + Metformin	02	02%

DISCUSSION

The number of people with DM is increasing due to population growth, aging, urbanization and physical inactivity.

A prescription-based survey is considered to be one of the most effective methods to assess and evaluate the prescribing pattern of drugs. In this study, an attempt has been made to describe the anti-diabetic drug therapy.

High frequency of DM was observed in our study is in middle age (40-50 years).DM is a disease of adult population as observed by many studies in India, and other developing and developed countries. Greater prevalence in this age group may be due to change in life style, lack of exercise and stress.

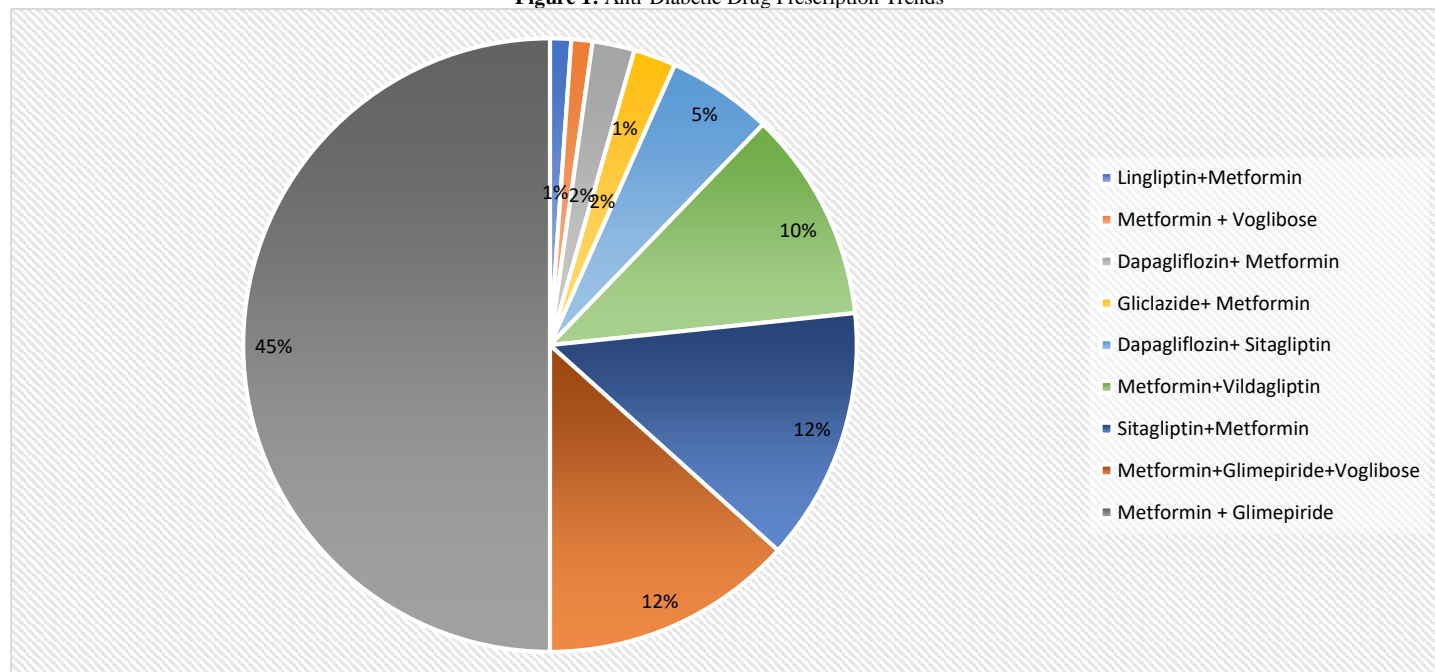
Regarding co-morbidities in agreement with several studies, hypertension, dyslipidaemia, obesity as well as cardiovascular and peripheral vascular diseases were observed as most common diabetes associated co-morbidities. In this study hypertension was the most common comorbidity in patients with DM seen in this study.

Metformin was most common component in all FDCs similarly in other studies also. Metformin is the first drug to be used in accordance with National Institute Health Care and Excellence (NICE) American Diabetes Association (ADA) and Indian Council of Medical Research (ICMR). Metformin as first line therapy has beneficial effects on HbA1C, weight, and cardiovascular mortality. It is the drug of choice for overweight and obese people in DM.

FDCs of biguanides and sulfonylurea (Gliclazide, glimepiride, Glibenclamide) were most commonly prescribed in this study and remain as first choice in similar studies too. Other Oral Hypoglycaemic Agents combined with biguanides were DPP-4 inhibitors in this.

Several studies have documented that Age, educational level, lifestyles, and physical exercise, co-morbidity, self-awareness about disease progress and target control will affect glycaemic control. Self-management is a key element for the proper management, but strategies are currently lacking in the developing countries.

Figure 1: Anti-Diabetic Drug Prescription Trends



CONCLUSION

Overall, the study's results provide significant knowledge on the socio demographic characteristics and patterns of anti-diabetic medicine use among individuals with diabetes. The varied attributes found emphasize the need of tailored and comprehensive strategies in the care of diabetes, taking into account individual disparities in age, gender, socio-economic circumstances. It is essential to create awareness among the general population on this.

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Conflict of Interest

No Potential conflict of interest relevant to this article was reported.

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