

Utilization Pattern of Dipeptidyl Peptidase Iv Inhibitors in Diabetes Mellitus Patients

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ABSTRACT

Type 2 diabetes mellitus is a rapidly growing global health concern, with its prevalence projected to increase significantly in the coming years. The disease is linked to multiple long-term complications that affect various organ systems, contributing to increased morbidity, mortality, and healthcare burden worldwide. Due to its multifactorial nature, management strategies for type 2 diabetes involve a wide range of pharmacological options targeting different underlying mechanisms, such as improving insulin secretion, enhancing insulin sensitivity, delaying carbohydrate absorption, and promoting glucose excretion.

Among these therapeutic options, DPP-4 inhibitors, commonly referred to as “gliptins,” have gained considerable importance. These oral agents act by inhibiting the DPP-4 enzyme, thereby prolonging the activity of incretin hormones like glucagon-like peptide-1 (GLP-1) and glucose-dependent insulinotropic polypeptide (GIP). This results in improved glucose-dependent insulin release and reduced glucagon secretion, helping to achieve better glycemic control.

Over the past decade, DPP-4 inhibitors have been widely used due to their favorable safety profile and ease of administration. This review highlights their mechanism of action, clinical utility, and overall role in the comprehensive management of type 2 diabetes mellitus.

KEYWORDS: DPP-4 inhibitors; gliptins; type 2 diabetes mellitus; HbA1c; incretin; sitagliptin; vildagliptin; saxagliptin; linagliptin; alogliptin.

1. INTRODUCTION

Type 2 diabetes mellitus is a long-term metabolic disorder that requires continuous care and a comprehensive approach to prevent complications. Its prevalence has been increasing rapidly worldwide, making it a major public health concern. The growing number of affected individuals has led to a substantial rise in healthcare costs and disease-related complications, placing pressure on healthcare systems. As the burden continues to expand, there is an urgent need for effective strategies to improve disease management and outcomes. Fortunately, advances in research have provided multiple approaches that can help control blood glucose levels and reduce associated risks.

The progression of type 2 diabetes is complex and is mainly characterized by reduced insulin action and a gradual decline in pancreatic beta-cell function. In addition, other factors such as increased glucose reabsorption in the kidneys and impaired incretin activity also contribute to persistent hyperglycemia. Management typically includes lifestyle modifications like healthy diet and regular physical activity, along

with pharmacological therapies that target different aspects of the disease, including insulin secretion, insulin sensitivity, and glucose absorption or excretion.

Among these treatments, DPP-4 inhibitors, also known as gliptins, have gained attention for their role in improving glucose control. By enhancing incretin hormone activity, these agents help regulate insulin and glucagon levels. This review focuses on their mechanism of action and therapeutic importance in managing type 2 diabetes.

2. AIM AND OBJECTIVES :

2.1 AIM OF THE STUDY:

The patient prescribing patterns of Dipeptidyl Peptidase -4 inhibitors in a multi specialty hospital outpatients setting.

2.2 NEEDS OF THE STUDY:

Studying the utilization pattern of dipeptidyl peptidase IV inhibitors in diabetes mellitus patients is crucial for several reasons:

- **Rising Burden of Diabetes and Expanding Drug Use**

With the increasing prevalence of type 2 diabetes worldwide, the use of newer antidiabetic agents such as DPP-4 inhibitors has grown significantly. Understanding how these drugs are being prescribed in real-world settings is essential to ensure their rational and effective use.

- **Variation in Prescribing Practices**

Despite clear treatment guidelines, prescribing patterns for DPP-4 inhibitors may vary across different healthcare settings, physicians, and patient populations. Studying these variations can help identify gaps between recommended and actual clinical practice.

- **Assessment of Safety, Efficacy, and Cost-Effectiveness**

DPP-4 inhibitors are generally considered safe, but their long-term use, combination therapy patterns, and cost implications require evaluation. Analyzing utilization patterns helps in assessing whether these drugs are being used appropriately and economically.

- **Improving Patient Outcomes and Clinical Decision-Making**

Evaluating real-world usage provides valuable insights into treatment effectiveness and patient adherence. This information can guide healthcare professionals in optimizing therapy and improving overall patient outcomes in diabetes management.

The study of utilization patterns of DPP-4 inhibitors in patients with type 2 diabetes mellitus is essential to evaluate their real-world prescribing trends, ensure their rational, safe, and cost-effective use, and ultimately support better clinical decision-making and improved patient outcomes

2.3 OBJECTIVES OF THE STUDY:

- To describe the doses pattern of Dipeptidyl peptidase-4 inhibitors in the treatment of diabetes mellitus in a tertiary care center.
- To evaluate the impact of other Oral hypoglycemics in treating diabetes mellitus by considering baseline characteristics like HbA1c, pre and post prandial plasma glucose ;levels.
- To evaluate the relationship of Dipeptidyl Peptidase-4 inhibitors with SGOT, SGPT, creatinin, microalbumin elevation.

3. METHODOLOGY

Study Design

This investigation will be conducted as a single-center, prospective observational study.

Study Duration

The study will be carried out over a period of six months.

Study Criteria

Inclusion Criteria:

- Adult outpatients attending the diabetic clinic who are newly prescribed DPP-4 inhibitors.

Exclusion Criteria:

- Pediatric patients
- Pregnant women
- Patients already receiving DPP-4 inhibitor therapy
- Hospitalized (inpatient) individuals

Statistical Analysis

The responses from the patients will be analyzed by using the statistical data ,will be analyzed using SPSS software (version 10).

4.RESULTS

ANALYSIS OF PATIENT CLINICAL PROFILE:

4.1. INTRODUCTION

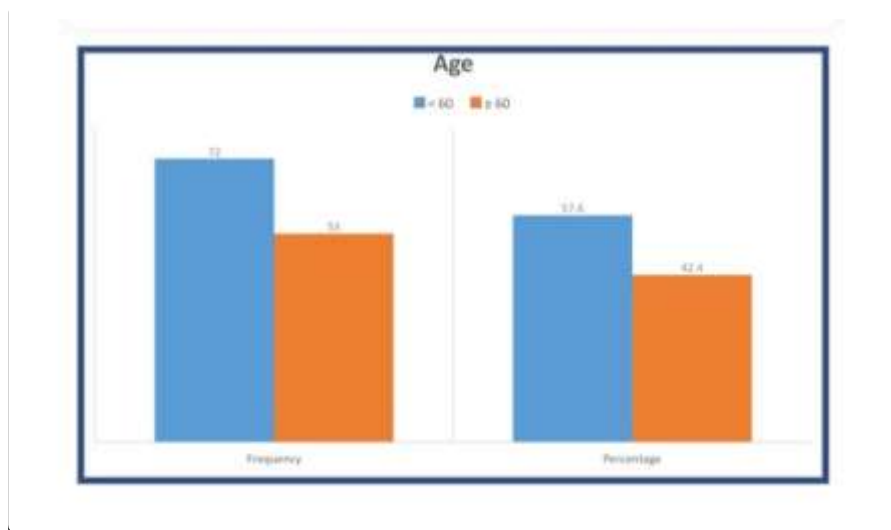
This analysis represents data collected from approximately 125 respondents regarding Demographic details, social and physical data, clinical profil of diabetes, and their treatment patterns.

4.2. DEMOGRAPHIC PROFILE

Age distribution [125 responses]

Both the ages ,<60 and ≥60 age grouped people were included

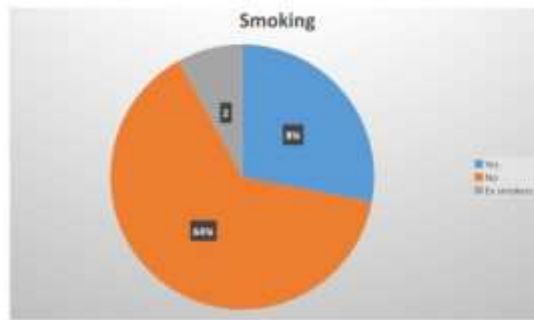
S.no	Age	No.of Patients	Percentage
1.	<60	72	57.6
2.	≥60	53	42.4



4.3. SOCIAL AND PHYSICAL PROFILE

The rate of smokers among the population[125 responses]

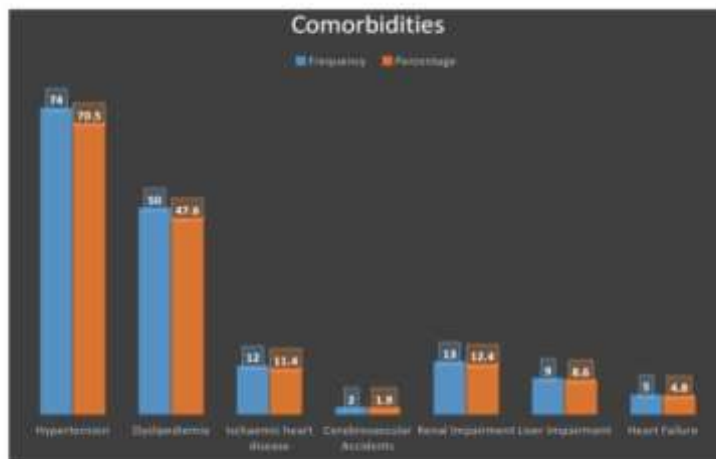
s.no	smoking	No.of patients	Percentage
1.	yes	35	28
2.	no	80	64
3.	Ex smoker	10	08



4.4. CLINICAL PROFILE

The data of comorbidities among the study population [125 responses]

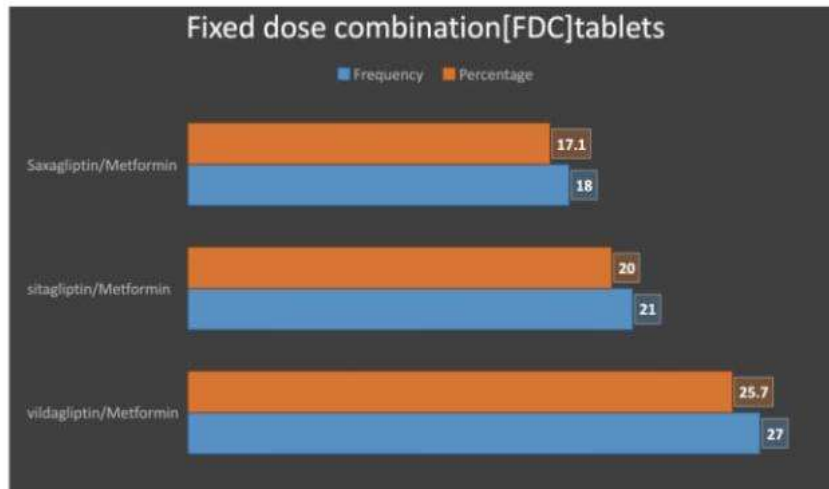
S.no	comorbidities	No.of patients	percentage
1	hypertension	74	70.5
2	dyslipidemia	50	47.6
3	Ischaemic heart disease	12	11.4
4	Cerebrovascular accidents	2	1.9
5	Rental impairment	13	12.4
6	Liver impairment	9	8.6
7	Heart failure	5	4.8



4.5. FIXED DOSE COMBINATION

Fixed dose combination distribution [125 responses]

s.no	Fixed dose combination	No.of patients	percentage
1	Vildagliptin/metformin	27	25.7
2	Sitagliptin/metformin	21	20
3.	Saxagliptin/metformin	18	17.1



DISCUSSION

The analysis of the study population provides useful insights into the demographic and clinical patterns associated with the use of DPP-4 inhibitors. A greater proportion of participants were below 60 years of age, indicating that these medications are more commonly initiated in relatively younger adults compared to the elderly group. Lifestyle factors also showed an interesting trend, with the majority of patients being non-smokers, suggesting that smoking status may not be a primary determinant in the initiation of DPP-4 inhibitor therapy.

The present study provides a clear overview of the demographic and clinical profile of patients receiving DPP-4 inhibitors. A larger proportion of individuals were below 60 years of age (72, 57.6%) compared to those aged ≥ 60 years (53, 42.4%), indicating a higher utilization of these agents among relatively younger patients. Regarding lifestyle factors, non-smokers constituted the majority (80, 64%), followed by smokers (35, 28%) and ex-smokers (10, 8%), suggesting that DPP-4 inhibitor use was more frequently observed in non-smoking individuals.

Analysis of comorbid conditions revealed that hypertension was the most common (74, 70.5%), while dyslipidemia was also notably prevalent (50, 47.6%). Other conditions included renal impairment (13, 12.4%), ischemic heart disease (12, 11.4%), liver impairment (9, 8.6%), heart failure (5, 4.8%), and cerebrovascular accidents (2, 1.9%). These findings highlight the presence of multiple risk factors among diabetic patients.

In terms of treatment patterns, fixed-dose combinations were widely prescribed, with vildagliptin plus metformin being the most common (27, 25.7%), followed by sitagliptin plus metformin (21, 20%) and saxagliptin plus metformin (18, 17.1%). This reflects a preference for combination therapy to improve glycemic control and patient compliance.

Regarding treatment patterns, fixed-dose combinations were widely used, with vildagliptin combined with metformin being the most commonly prescribed regimen. This preference may be attributed to its effectiveness, convenience, and improved patient adherence. Overall, the study reflects real-world prescribing trends and supports the rational use of DPP-4 inhibitors in diabetes management.

CONCLUSION

DPP-4 inhibitors are well-tolerated antidiabetic agents with good safety, especially useful in elderly

patients, those with renal impairment, and low risk of hypoglycemia. In this study, most users were below 60 years (57.6%) and predominantly non-smokers (64%). Hypertension (70.5%) and dyslipidemia (47.6%) were the most common comorbidities. Despite newer therapies offering added cardiovascular benefits, DPP-4 inhibitors remain valuable in combination treatment, particularly in cost-sensitive settings like India. The study was conducted in a **multispecialty hospital outpatient setting**.