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Research Article

PERSPECTIVES OF CLINICAL EXPERTS ON THE CURRENT USAGE PATTERNS AND THE PREFERENCE OF VILDAGLIPTIN IN THE TREATMENT OF TYPE 2 DIABETES

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ABSTRACT

Objective: Although the efficacy and safety of vildagliptin have been proven in randomized clinical trials, data regarding the improved and up-to-date understanding on the management of Type 2 diabetes mellitus from the context of Indian diabetic patients, are scarce. This study was conducted to assess the opinions of clinical experts on the current usage patterns of vildagliptin in the management of Type 2 diabetes among Indian patients.

Methods: A cross-sectional, questionnaire-based study was conducted to collect opinion among physicians in endocrinology across India between June 2022 and December 2022. Convenient sampling method was used. Descriptive statistics were used to summarize the characteristics of the study by employing frequencies and percentages.

Results: It was observed that 95 out of 188 clinicians preferred dipeptidyl peptidase-4 (DPP4) inhibitors (DPP4i) and only 35 out of 188 clinicians (18.6%) opted a combination of Metformin and DPP4 inhibitors as the first hypoglycemic agent for newly detected diabetes. In addition, 141 out of 188 (75%) prescribed vildagliptin only as their preferred drug in the class of DPP4 inhibitors. Further, the reason behind such a high-yielding response for vildagliptin among clinicians and their patients, was its weight-neutral property primarily and posing a low risk of adverse effects. Nearly, half of the clinicians reported a 0.6–1% drop in glycosylated hemoglobin (HbA1c) levels in patients within 3 months of vildagliptin use.

Conclusion: This study concluded that the majority of the specialists preferred using vildagliptin among other DPP4 inhibitors and pointed out that vildagliptin lowered HbA1c within 3 months of use.

Keywords: Diabetes, Oral antidiabetics, Vildagliptin, Glycemic control.

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INTRODUCTION

In India, an estimated 77 million people have diabetes in 2019; by 2045, that figure is expected to rise to over 134 million. About 90% of all occurrences of diabetes are Type 2 diabetes mellitus (T2DM), which has become a major cause of death and disability that affects increasingly younger age groups. People with Type 2 diabetes may experience multiple organ defects, which can raise the risk of premature morbidity and death, shorten life expectancy, and place an enormous financial burden on the Indian healthcare system [1].

The goal of the current T2DM treatments is to reduce hypertension, dyslipidemia, smoking, and overweight/obesity in addition to maintaining strict glycemic control. Hence, there have been several newer drugs with additional benefits introduced recently. Vildagliptin, a dipeptidyl peptidase-4 (DPP-4) inhibitor, has the highest binding capacity for the human DPP-4 enzyme when compared to other DPP-4 inhibitors. This results in increased levels of active GLP-1 and GIP incretins, which significantly improve the responsiveness of the pancreatic islet α and β cells to glucose, improving the time in range profile [2]. Vildagliptin also decreases the amount of glucose produced by the liver during the nocturnal post-absorptive period and before and after meals. Moreover, it provides efficient glycemic control along with a lower risk of weight gain, hypoglycemia, and cardiovascular events [3].

Several multicenter randomized controlled trials have demonstrated that vildagliptin treatment, whether as monotherapy or as an add-on therapy, was effective and well tolerated [4-6]. However, there was a lack of data about the prescription pattern of vildagliptin in the management of Type 2 diabetes in Indian patients. Hence, this study aimed to determine the better utility and preferability of vildagliptin over other oral hypoglycemic agents (OHA) among clinicians. Thereby, it will form a significant decision-making tool for clinicians in various Indian healthcare settings.

METHODS

We carried out a cross-sectional, questionnaire-based survey among physicians in endocrinology practice in the major Indian cities from June 2022 to December 2022.

Questionnaire

The questionnaire booklet titled VILPOWER (VILdagliPtin opinion with expert review) study was sent to the physicians who were interested to participate. The VILPOWER study questionnaire included questions on prevalence, diagnosis, comorbidities, lifestyle, patient's awareness, compliance, and pharmacotherapy. The study was conducted after receiving approval from Bangalore Ethics, an Independent Ethics Committee which is recognized by the Indian Regulatory Authority, Drug Controller General of India.

Participants

An invitation was sent to leading doctors in Endocrinology practice in March 2022 for participation in this Indian survey on diabetes. One hundred and eighty-eight doctors from major cities of all Indian states representing the geographical distribution shared their willingness to participate and provide necessary data. Physicians were asked to complete the questionnaire without discussing with peers. A written informed consent was obtained from each physician prior initiation of the study.

Statistical Analysis

Descriptive statistics were used to summarize the characteristics of the study by employing frequencies and percentages. Graphical

representation of data was done using Microsoft Excel and Word, which was also used to obtain various types of graphs like bar diagrams and column diagrams.

RESULTS

About 188 clinicians were included in this study. According to 155 out of 188 clinicians, T2DM was most common in the 40–60 age group of about 82.4%, followed by the 20–40 age group (5.8%) at the time of diagnosis. However, only 4.7% of individuals were diagnosed with T2DM in the 60–80 age group. On accounting the socioeconomic stratification of the diabetic patients in their practice, 120 out of 188 (63.8%) clinicians indicated that the majority of their diabetic patients belonged to the middle class followed by the upper class (10.63%). However, only a minority of patients (3.19%) belonged to the lower socioeconomic strata according to the clinicians' opinion.

The average glycosylated hemoglobin (HbA1c) of patients was in the range of 7.6–8.5% at the time of diagnosis according to 103 out of 188 clinicians (54.78%) followed by 8.6–9.5% according to 51 clinicians (27.1%). However, only 24 clinicians (12.76%) reported on HbA1c of 6.5–7.5% at the time of diagnosis among diabetic patients, as shown in Fig. 1.

On surveying about the first OHA advised to their newly diagnosed diabetic patients, Metformin monotherapy was the first preferred hypoglycemic agent of choice for 95 out of 188 clinicians (50.5%). However, DPP4i's was preferred by 95 out of 188 clinicians and only 35 out of 188 clinicians (18.6%) preferring a combination of Metformin and DPP4i's as the first OHA for newly detected diabetes.

Although the majority of clinicians (92 out of 188, 48.93%) opted for DPP4i's after the failure of one drug, 48 (25.53%) and 17 (9%) clinicians opted for DPP4 inhibitors as a first-line drug, and both as first-line and after one drug failure (if other than DPP4i). However, 22 clinicians (11.7%) prescribed DPP4i's only following the failure of two drugs.

A majority of clinicians, 141 out of 188 (75%) prescribed vildagliptin only as their preferred drug in the class of DPP4i's. A small share of clinicians also prescribed Teneligliptin either as a monotherapy (9 out of 188, 4.7%) or alongside vildagliptin (15 out of 188, 7.9%). Sitagliptin, however, had only a minimal share of prescriptions with only 4 out of 188 (2.1%) clinicians opting for it, as depicted in Fig. 2.

On enquiring about the percentage of their patients currently using vildagliptin, 87 out of 188 (46.2%) clinicians reported that about 31–50% of their patients were currently using vildagliptin. Sixty-five clinicians (34.5%) reported that 10–30% of their patients were using the drug while 19 specialists accounted for about 51–70% of their patients currently using vildagliptin. Only a small proportion of clinicians (10 out of 188 i.e., 10.1%) reported less than 10% of their diabetic patients of using vildagliptin.

Further, the reason behind such a high-yielding response for vildagliptin among clinicians and their patients, a higher number of clinicians (162 out of 188) reasoned their preference for vildagliptin over its other counterparts due to its weight-neutral property, helping in preserving beta cell function, it leading to less glycemic variations on use and posing a low risk of adverse effects. However, few specialists also chose individual benefits of vildagliptin for its preference.

Half of the clinicians (94 out of 188, 50%) reported a 0.6–1% drop in HbA1c levels in patients within 3 months of its use and 69 out of 188 clinicians (36.7%) reported a drop of up to 1.1–1.5% in the HbA1c levels among patients using vildagliptin. Furthermore, 18 clinicians (9.57%) reported that vildagliptin reduces HbA1c levels as high as 1.6–2% among the patients with T2DM, as shown in Fig. 3.

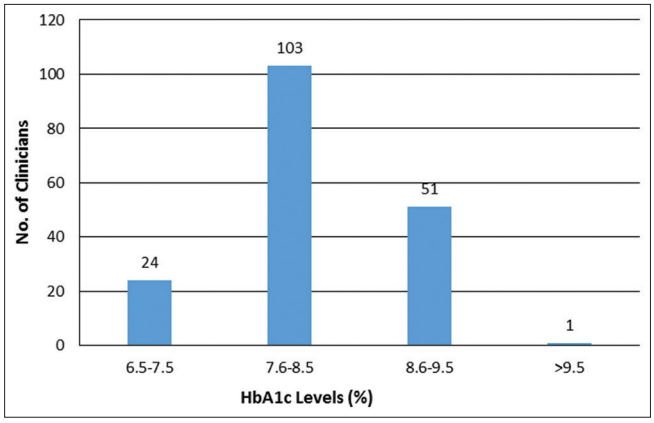

Fig. 1: Average HbA1c among patients at the time of diagnosis

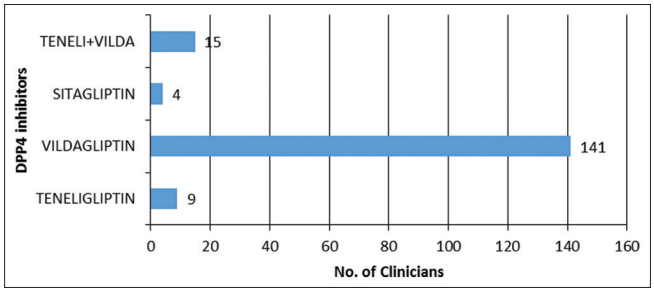

Fig. 2: Degree of preference of various DPP4 inhibitors in routine prescriptions

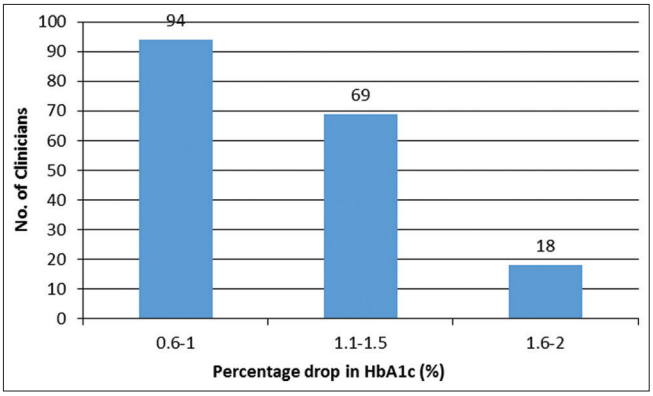

Fig. 3: Degree of decrease in HbA1c among patients using vildagliptin

DISCUSSION

The present study represented the clinical review and expert's opinion regarding the use of vildagliptin in the treatment of T2DM. In this study, 82% of the clinicians reported that the newly diagnosed diabetic patients were in the age group of 40–60 years, the middle age group, which was similar to a study where it was between 55 and 64 age group [7].

According to the specialist's opinion, T2DM was more prevalent in the middle-income population group. However, in some studies, there was a high prevalence of T2DM in the high-income groups. Meanwhile, due to inadequate diagnostic and treatment modalities leading to poor glycemic control, there was a higher prevalence of long-term complications such as cardiovascular diseases in the lower socioeconomic groups [7,8].

Based on clinician's opinion and clinical reviews, the HbA1c levels in most newly detected diabetic patients were between 6.5 and 7.5%.

Furthermore, in a similar study, clinicians reported the majority of newly diagnosed diabetic patients with HbA1c level of 6.6–7.4% [9].

In this study, 25.9% of specialists preferred DPP-4 inhibitors in combination with metformin as the first OHA in newly diagnosed diabetic patients and another 9% of clinicians also opted for monotherapy of DPP-4 inhibitors among the newly detected diabetics. However, the majority of clinicians still prefer DPP4i's only after failure of one or two drugs. Among DPP-4 inhibitors, Vildagliptin is the most prescribed drug based on the specialists' clinical reviews. It was seen the same results in similar studies where vildagliptin and metformin combinations were used [10-12].

The clinicians in this study preferred vildagliptin over its other counterparts because its monotherapy is effective and well tolerated in geriatrics. It has an HbA1c reduction effect similar to that of metformin and has lesser complications as compared to metformin. It was not accompanied by weight gain or hypoglycemia and has better GI tolerability which were described by Schweizer *et al.* and Halimi *et al*. [10,11].

It was well known that elderly patients are at a higher risk of hypoglycemic events and/or hypoglycemia unawareness as compared to other age groups. DPP-4 inhibitors and especially vildagliptin showed less to no hypoglycemic events in older diabetic patients due to its glucose-dependent action, a point well acknowledged by the specialists involved in this study and also well highlighted by Halimi *et al*. which labels vildagliptin as a good option in the treatment of elderly patients [11].

Moreover, vildagliptin can be used in combination with other OHAs such as metformin, which was a well-tolerated combination in the treatment of T2DM. The specialists in this study accepted the fact that a patient treated with vildagliptin and metformin combination showed improvement in pancreatic beta cell functioning which was also evident from a similar study by Ji *et al*. [12].

The patients' acceptability of a drug is as important as its efficacy and safety parameters. Unlike some SUs and meglitinides which should be taken before food, and alpha-glucosidase inhibitors which should be taken before ingesting the first portion of each meal, vildagliptin can be ingested at any time of the day. Unlike insulin, vildagliptin is an oral anti-hypoglycemic agent. In addition, it improves glycemic control, insulin sensitivity, alpha and beta cell function reduces lipotoxicity, and causing lesser side effects. This acceptability of vildagliptin was highlighted in this study, where 87 (46.2%) and 19 (10.1%) out of 188 clinicians reported that about 31–50% and 51–70% of their patients were, respectively, using vildagliptin efficiently which was similar to Pan and Wang [13].

In the current study, based on experts' opinion and clinical reviews, the decrease in HbA1c values after treatment with vildagliptin was 0.6–1% as acknowledged by 94 out of 188 (50%) clinicians followed by 1–2% as reported by another 87 specialists (46%), wherein, a similar study revealed the decrease in HbA1c value after the 12-week treatment with vildagliptin of range between 0.82 and 1.9% and was also labeled superior to other anti-hyperglycemic agents [14].

CONCLUSION

This study concluded that the majority of the specialists preferred using vildagliptin among other DPP4 inhibitors either alone or in combination with metformin as a first-line agent. They also pointed out that most of their patients were using vildagliptin regularly due to its weight-neutral property, helping in preserving beta cell function, less glycemic variations on use, and posing a lower risk of adverse effects. Moreover, the clinicians also highlighted that vildagliptin lowered HbA1c significantly within 3 months of its use. Thus, vildagliptin is burning a hole in the established horizons of conventional OHAs by proving that it has better tolerability, lesser side effects, and more efficacy in achieving better glycemic control.

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CONFLICTS OF INTEREST

None.

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