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Corresponding Author

Ameet Rathod,
Mankind Pharmaceuticals, Mumbai,
India
ameet.rathod@mankindpharma.com

Author Designation

¹Senior Consultant
²Endocrinologist
³Consultant
⁴Assistant General Manager
⁵Vice President and Head Medical
Affairs

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Perspective and Practices Amongst the HCP's (Diabetes) Towards Quality of Life (QoL) and Antidiabetic Management Strategies in T2DM: Survey Across India

¹Saptarshi Bhattacharya, ²Ameya Sudhakar, ³Priti Jayantilal Sanghavi, ⁴Ameet Rathod and ⁵Kunal Khobragade

¹Department of Endocrinology, Indraprastha Apollo Hospital, Delhi, India

²Govind Clinic, Mumbai, India

³Sanghvi's Diabetes Clinic, Mumbai, India

^{4,5}Mankind Pharmaceuticals, Mumbai, India

ABSTRACT

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disease and reported to have detrimental effect on quality of life. QoL is an important parameter in diabetes treatment modality. Multiple guidelines such as the American Diabetes Association 2019 guideline recommend oral antidiabetic drugs (OADs) such as sulfonylureas to be used as monotherapy (if metformin is not tolerated) or as combination therapy. As per the meta-analysis, newer sulfonylureas like Glimepiride and Gliclazide are related with a lower chance of cardiovascular-related and all-cause mortality than other sulfonylureas. This survey was planned to analyze the perspective and practices of Consulting Physicians (CP's) and Endocrinologist's (Endo's) while treating T2DM with focus on Gliclazide (newer SU), glucose monitoring tests and quality of life. This questionnaire-based survey was carried out in 2023 among CP's and Endo's across India. A pre-validated questionnaire was administered through personal interviews of participating CP's and Endo's. In this survey a total of 1491 CP's and Endo's participated. 61% CP's and Endo's chose glycemic control as the major factor while selecting oral antidiabetics. While considering QoL in T2DM, 72% of CP's and Endo's suggested re-evaluating patients for oral antidiabetic selection routinely (as per patients' clinical and laboratory parameters). While 56% of CP's preferred to refer their patients for nutritionist opinion in dietary adjustment. 76.5% of CP's strongly agreed that it is important to consider patients' opinion while selecting OAD's. 75% CP's and Endo's suggested that they prefer Sulfonylureas as add-on therapy with alpha glucosidase inhibitors (AGI) in PPHG. 95% CP's prefer Gliclazide+Dapagliflozin + Metformin combination particularly for tight glycemic control and 93% of CP's prefer Gliclazide+Linagliptin combination as a safe measure for patients with renal disorders. This comprehensive survey highlighted the CP's and Endo's perspectives and practices in the management of type 2 diabetes mellitus (T2DM) related to quality of life. It was concluded that Gliclazide, a modern sulfonylurea has emerged as an affordable alternative after administration of an alpha-glucosidase inhibitor (AGI) to control post prandial hyperglycemia (PPHG), also it was well received by patients and majority of CP's and Endo's because of better Quality of life (QoL). Most preferred combination of Gliclazide was with Dapagliflozin and Metformin to achieve tight glycemic control, whereas in T2DM patients with renal impairment, Linagliptin was found to be most preferred add-on DPP4i with Gliclazide to control hyperglycemia.

INTRODUCTION

Type 2 diabetes mellitus (DM) is a chronic metabolic disorder whose incidence has been steadily increasing worldwide. Diabetes has a significant negative influence on a person's sociopsychological, physical, economic well-being thereby overall quality of life (QoL)^[1,2].

World Health Organization (WHO) defined QoL as "a complete state of well-being, physically, mentally and socially and not only the absence of disease or infirmity. Uncontrolled or poorly controlled diabetes affects organ functions badly, which ultimately affects the patient's QoL^[2].

Measurement of QoL is considered vital for the care of diabetic patients. These measures have been used to guide and evaluate treatment interventions^[3]. Treatment satisfaction may play an important role in adherence to the anti-diabetic treatment. Various factors such as route of drug administration, cost of therapy and time spent on managing the illness affect treatment satisfaction in patients suffering from diabetes.

The concept of patient-centered diabetes care requires a patient's consistent self-care behaviors such as attention to diet, exercise, preventive care measures, drug adherence and self-monitored blood glucose. For decades, sulfonylureas (SUs) have been important drugs in the therapeutic armamentarium of diabetes. They have been used both as monotherapy and in combination therapy^[4].

The focus on newer drugs and concerns about the risk of severe hypoglycemia and weight gain with some SU drugs have led to debate about their safety and usefulness. It should be remembered that the adverse events associated with SUs should not be attributed to the entire class, since many modern SUs, such as gliclazide is associated with better safety profiles. In addition, treatment individualization by using SU drugs in combination with other drugs, as well as careful monitoring and patient education, ensures maximum benefit with minimal side effects^[4].

Current guidelines, developed by experts from Europe, Asia, Africa and Middle East, promote the safe and intelligent use of SU in combination with other glucose-lowering drugs^[4].

Hence, we rolled out this survey across India with the aim to understand the perspective and practices of HCP's (Diabetes) while treating T2DM with special emphasis on Gliclazide (modern SU) efficacy and its overall impact on improving patients' quality of life and glycemic control.

Aims and Objectives: To analyze the HCP's (Diabetes) perspective and practices towards use of various OAD's and newer SU i.e. Gliclazide with various approaches towards T2DM management and its impact on QoL.

MATERIALS AND METHODS

This survey was carried out from 24th Oct to 27th Nov 2023 and included HCP's (Healthcare Professionals having specialized Diabetes clinics) from all zones of India. A predesigned and pre-validated questionnaire was administered through personal interview of HCP's (Diabetes). The questionnaire included the various sections such as demography, parameters related to QoL with use of oral antidiabetic drugs (OADs) and preferred practices by HCP's (Diabetes). The data was collected by using a digitally enabled comprehensive platform. The collected data was entered in Microsoft Excel 2013 and analyzed by using descriptive statistics and presented as percentages, bar chart and tables.

RESULTS AND DISCUSSIONS

Demographic Profile of the HCP's (Diabetes).

A total 1491 HCP's (Diabetes) participated. They are comprising of General Physician (MBBS with post-graduate qualification in Diabetes), Consulting physician (MD General Medicine with diabetes clinics) and Endocrinologists (MD, DM).

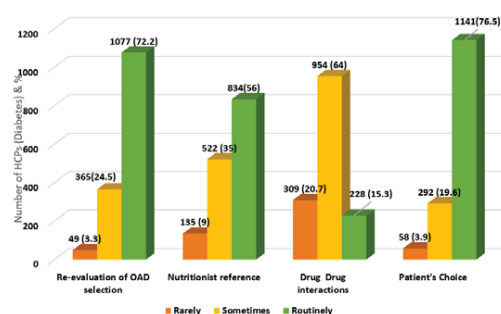


Fig. 1: Practices and Factors Amongst HCP's (Diabetes) to Improve QoL in T2DM

As shown in Fig 1, 72% of HCP's suggested that they do periodic re-evaluation of T2DM patients for OADs (Oral Anti-Diabetic Drugs) selection, while 56% refer their patients for 'nutritionist' opinion in dietary adjustment, 76.5% considered patient's choice while selecting OAD's. With respect to drug-drug interaction's, 64% HCP's agreed that, it is one of the most important factor while selecting OAD because of Co-morbidities and related polypharmacy and comorbidities.

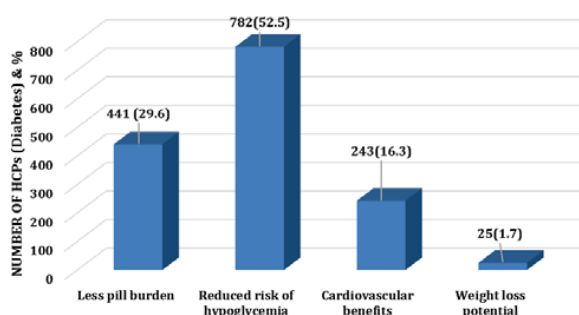


Fig. 2: Perspective of HCP's Towards Improving Patient's Adherence and QoL in T2DM

Table 1 Geographic Distribution of HCP's (Diabetes)

HCP's (Diabetes)	Qualifications	Total (N) 1491
General Physician (GP)	MBBS with post-graduate qualification in Diabetes	78 (5.23%)
Consultant Physician (CP)	MD (General Medicine) with diabetes clinics	711 (47.68%)
Endocrinologist's (Endo's)	MD. DM.	702 (47.08%)
Region wise distribution of consulting physician and endocrinologists		
Regional Distribution (All India)	East Zone	243 (16.29%)
	West Zone	344 (23.07%)
	North Zone	475 (31.85%)
	South Zone	429 (28.77%)

As shown in Fig 2, 52% of HCP's considered reduced risk of hypoglycemia and 30% considered less pill burden as the most important factor contributing to patient's adherence to drug therapy and subsequently improving QoL.

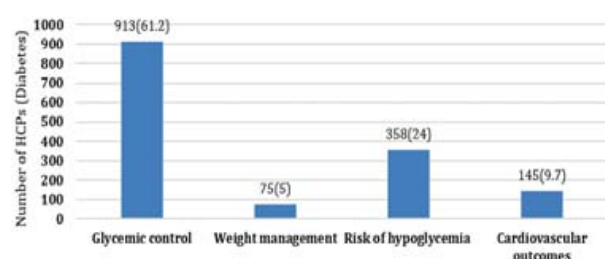


Fig. 3: Perspective of HCP's (diabetes) towards selection of oral antidiabetic drugs and improvement in QoL in T2DM.

As shown in Fig 3, the large number of HCP's (61%) target the 'glycemic control' while selecting any OAD's, whereas, 24% HCP's give importance to the drug safety i.e. risk for hypoglycemia while selecting OAD's, hence 'efficacy' and 'safety' are most crucial to improve QoL.

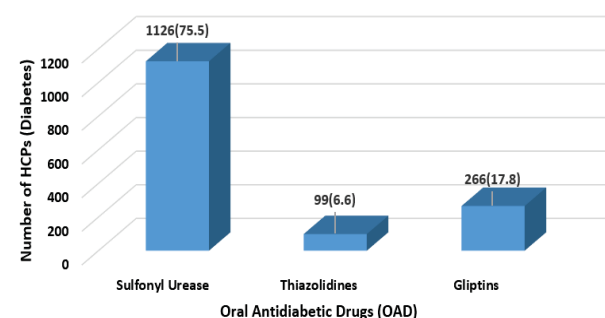


Fig. 4: Preferences of HCP's (diabetes) for add-on OAD group selection in post-prandial hyperglycemia (PPHG) along with AGI's

As shown in Fig 4, that around 75% HCP's (diabetes) suggested that they prefer Sulfonylureas (SU's) as add-on therapy, importantly with AGI's (alpha-glucosidase inhibitors) in controlling PPHG, while sizeable number of HCP's (18%) preferred to add-on gliptines with SU's.

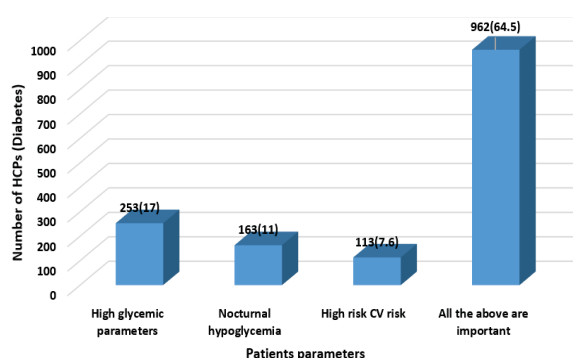


Fig. 5: Preferences of T2DM Patient's Parameter for Continuous Glucose Monitoring (CGM)

As shown in Fig. 5, 65% HCP's preferred to do CGM in all subgroups of T2DM patients presenting with three important parameters.

Gliclazide+ Linagliptin FDC in Renal Disorder

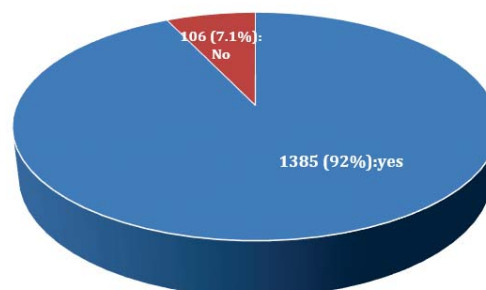


Fig.6 A: Preferences for Gliclazide FDCs with Other OAD in Renal Disorder

Gliclazide+ Dapagliflozin +Metformin FDC for Tight Glycemic control

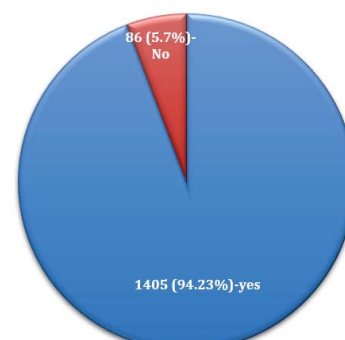
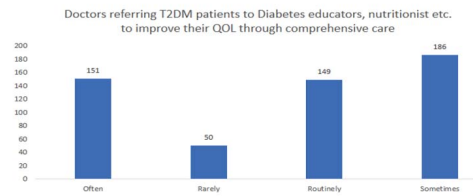


Fig. 6 B: Preferences for Gliclazide FDCs with other OAD for tight glycemic control

As shown in Fig 6 A and B, while selecting Gliclazide FDC's (Fixed Dose Combinations) therapy, around 93%

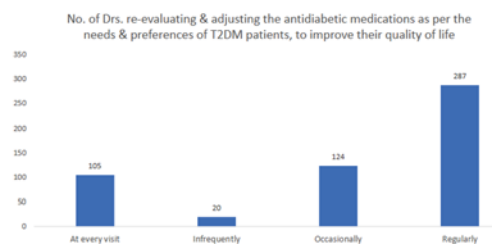
of HCP's prefer Gliclazide+Linagliptin (2-drug FDC) as a safe measure for patients with renal disorders and 95% prefer Gliclazide+Dapagliflozin+Metformin (3-drug FDC) for tight glycemic control.



A wide variation in the opinion is observed with respect to no. of Drs referring T2DM patient to Diabetes educators, nutritionist etc. to improve their overall quality of life:

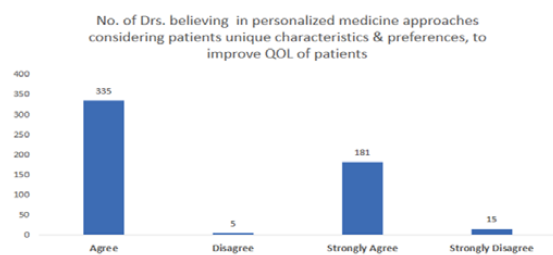
a) 186 (35%) - sometimes b) 149 (28%) - routinely c) 151 (28%) does it often d) 50 (9%) doing it rarely.

Fig. 7: In Your Clinical Practice, do you Often Refer Patients with Type 2 Diabetes to Diabetes Educators, Nutritionists, or Behavioural Health Specialists to Improve Their Quality of Life Through Comprehensive Care?



Almost half of the T2DM patients (53%) regularly considers re-evaluating & adjusting the antidiabetic medications as per the needs & preferences of T2DM patients.

Fig. 8: How Frequently do your Re-Evaluate and Adjust Antidiabetic Medications to Address the Changing Needs and Preferences of Patients, Thereby Improving Their Quality of Life?



Majority of Doctors 335 (62%) believe in personalized medicine approaches considering patients unique characteristics & preferences to improve Quality of life of T2DM patients.

Fig. 9: Do you Believe that Personalized Medicine Approaches, Taking into Account Patients' Unique Characteristics and Preferences, have a Significant Impact on Enhancing the Quality of Life in Type 2 Diabetes Management?

This study aimed to investigate the prevalence of various OADs used by HCPs in India for T2DM management. It also sought to explore HCP perspectives on the impact of these medications,

particularly newer SUs like Gliclazide, on patient QoL. Additionally, the study examined HCP practices regarding holistic diabetes management, including nutritional care and patient-centered approaches.

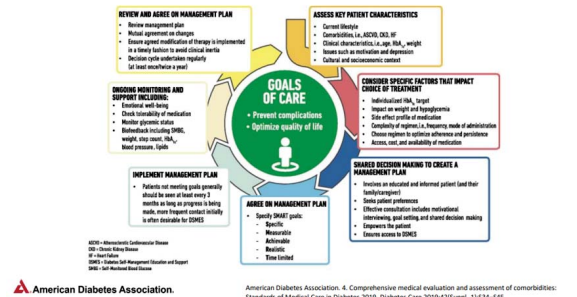


Fig. 10: Decision Cycle for Patient-Centered Glycemic Management in Type 2 Diabetes

Sulfonylureas (SUs) is major group of drugs used for treatment of T2DM. Consideration of QoL of patient is important factor while prescribing OADs. Methods for monitoring of glycemic parameters depend on HCP's (diabetes) preferences and need of patient^[5]. Newer generations of SUs were developed considering the patients need, efficacy and tolerability such as Glimiperide and Gliclazide.

In the present survey, as depicted in Fig 1, Nutrition management is considered a cornerstone of therapy as a practice of holistic approach to improve QoL in T2DM. Majority of the HCP's (Diabetes) followed the practice of routine nutritionist reference for dietary advise. This is in line with Marrero, David^[6].

The American Diabetes Association suggests that a nutritionist should be included as a member of the care team. As per Monk et al, patient related factors were most frequently noted as reasons for poor effectiveness of nutrition therapy^[7].

As depicted in Fig 2, most important factors contributing to patient's adherence were reduced risk of hypoglycemia and less pill burden. This is in line with Pourhabibi^[8].

Important barriers for treatment adherence were polypharmacy and high dosing frequency. This can cause exhaustion amongst the patients and as a result, they stop taking them.

As shown in fig 3. Glycemic control and risk of hypoglycemia were the most important factors considered while prescribing OADs. This is in line with Kota^[9].

Majority of CP's agreed that patient's opinion and risk of drug interactions with concomitant medications are important factors while doing OAD selection. This is in line with the survey conducted by Alhadramy and Piragine^[10,11].

With respect to practices of add-on therapy selection in patients with PPHG, majority of consulting physician preferred Sulfonylureas as add-on therapy with alpha glucosidase inhibitor (AGI) over DPP 4 inhibitors and thiazolidines, as depicted in Fig. 4. AGI have a potential to reduce the progression of diabetes as well as macro- and microvascular complications, Baron, Alain^[12].

Majority of HCP's (Diabetes) in our survey practiced Continuous glucose monitoring (CGM) in patients with poor glycemic control, nocturnal hypoglycemic episodes and with high CV risk as depicted in Fig.5, this is in line with Nihaal Reddy^[13].

It is recognized that traditional measures of glucose control (such as glycated hemoglobin A1c) provide little information regarding the need for day-to-day changes in therapies. While intermittent self-monitored blood glucose (SMBG) provides additional information to make treatment decisions, significant barriers to its use exist, such as inconvenience and lack of timely and regular feedback. Furthermore, important information regarding glucose trends may be missed. Continuous glucose monitoring (CGM) has become increasingly reliable and has demonstrated efficacy in terms of improving A1c, reducing hypoglycemia, and improving the time in target glucose range (TIR).

In the present survey, practices of HCP's (Diabetes) for OAD combination therapy were as per the American Diabetes Association (ADA) 2020 Recommendations. In case of T2DM patients with established CVD, the antidiabetic regimen should contain SGLT-2 inhibitors, or GLP-1 receptor agonists with demonstrated cardiovascular benefit., however, after evaluating drug-specific and patient-related factors.

Gliclazide+ Linagliptin was considered safe and effective combination in poor renal function by majority of the HCP's (Diabetes) in our survey as depicted in Fig. 6A. This is in line with Supratik Bhattacharyya^[14]. There was a significant improvement in renal function with respect to eGFR level and albuminuria reduction. They concluded that Gliclazide and DPP-4 inhibitor (linagliptin) combination is an alternate option to glimepiride in diabetes patients with chronic kidney disease^[14].

FDCs play a crucial role in achieving glycemic targets effectively. However, understanding the difference between rational and irrational FDC combinations is necessary from the safety, efficacy and tolerability perspective. As depicted in Fig 6B, most of the HCP's (Diabetes) in the present survey preferred Gliclazide+ Dapagliflozin+Metformin combination for tight glycemic control.

Limitations: Considering the Pan India epidemiological survey, sample size is relatively <required.

CONCLUSION

This comprehensive survey provides valuable information about HCP's perspectives and practices in the management and improvement in QoL in type 2 diabetes mellitus (T2DM). Gliclazide has emerged as an affordable alternative after administration of an alpha-glucosidase inhibitor (AGI).

Clinicians mostly prefer continuous glucose monitoring (CGM) in the treatment of T2DM. Modern sulfonylureas (SUs) have been well received by patients and many HCP's (Diabetes) have noted their convenience. The survey highlighted the effectiveness of Gliclazide and the combination of Dapagliflozin and Metformin in tight glycemic control. In addition, the combination of Gliclazide and Linagliptin was found to be a beneficial measure for T2DM patients with renal impairment. These findings are very important for future research, decision making and clinical practice in the management of T2DM.

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