

Exploring Healthcare Provider
Practices and Opinions regarding
Lobeglitazone in
Type 2 Diabetes Therapy



Table of Content

1 Introduction.....	2
2 Rationale of the study	3
3 Study Objective	4
4 Methods.....	5
5 Results	6
6 Summary.....	26
7 Discussion	27
8 Clinical Recommendations	28
9 Consultant Opinion.....	29
10 Market Opportunities	30
11 Market positioning.....	32
12 References.....	34

INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) continues to pose a major global public health challenge, with an estimated 463 million adults affected worldwide, a number projected to rise to 700 million by 2045 [1]. T2DM is characterized by insulin resistance and beta-cell dysfunction, leading to chronic hyperglycemia, which increases the risk of severe complications like cardiovascular disease, renal impairment, and neuropathy [2]. Effective management of T2DM typically involves a combination of lifestyle changes and pharmacological interventions aimed at improving glycemic control, preventing complications, and maintaining quality of life for patients [3].

Thiazolidinediones (TZDs) have been integral in managing T2DM due to their mechanism of action, which improves insulin sensitivity through the activation of peroxisome proliferator-activated receptor gamma (PPAR γ) receptors [4]. Despite their effectiveness, TZDs such as rosiglitazone and pioglitazone have faced significant scrutiny and a decline in use due to concerns about adverse effects like fluid retention, weight gain, bone fractures, and potential cardiovascular risks [5]. However, Lobeglitazone, a new-generation TZD, has emerged as a promising alternative with a more favorable safety profile and greater selectivity for the PPAR γ receptor, offering enhanced insulin sensitivity and fewer side effects [6].

Lobeglitazone distinguishes itself from its predecessors with several clinical advantages, including improved glycemic control, favorable lipid-modifying effects (such as reducing triglycerides and increasing HDL-C), and its potential use in patients with renal insufficiency without dose adjustments [7]. Furthermore, Lobeglitazone has demonstrated positive effects on hepatic steatosis, making it beneficial for patients with T2DM and non-alcoholic fatty liver disease (NAFLD), a common comorbidity in this patient population [8].

These attributes make Lobeglitazone a valuable addition to the therapeutic arsenal for T2DM management, particularly in patients with multiple metabolic risk factors [9].

Despite these promising benefits, the real-world utilization of Lobeglitazone in clinical practice remains lower than expected, with many healthcare providers hesitant to incorporate it routinely into treatment regimens [10]. Understanding the factors influencing its adoption—whether related to safety concerns, perceived efficacy, or the availability of alternative treatments—is essential for increasing its acceptance and optimizing its therapeutic potential [11]. This study aims to investigate healthcare provider practices and opinions regarding Lobeglitazone use in T2DM therapy, providing insights into the current landscape and identifying opportunities for broader integration of this therapy into routine diabetes care [12].

RATIONALE OF THE STUDY

The rationale for this study arises from the growing interest in understanding how healthcare providers perceive Lobeglitazone within the broader context of diabetes management. Despite evidence suggesting that Lobeglitazone improves glycemic control, beta-cell function, and lipid profiles, there remains a gap in its use in clinical practice. By exploring the perceptions of healthcare providers, this study seeks to identify key drivers, barriers, and considerations in their clinical decision-making process, including concerns regarding potential adverse effects such as fluid retention and edema . The results will provide insights that could guide educational efforts, improve the acceptance of Lobeglitazone in therapy, and optimize treatment outcomes for patients with T2DM.

STUDY OBJECTIVE

The primary objective of this study is to explore healthcare provider practices and opinions regarding the use of Lobeglitazone in managing Type 2 Diabetes Mellitus. The study aims to achieve the following specific objectives:

1. Assess the frequency and factors influencing Lobeglitazone prescriptions among healthcare providers.
2. Evaluate healthcare providers' awareness and knowledge of Lobeglitazone's pharmacological benefits, such as its effect on insulin sensitivity, lipid profiles, and its use in patients with renal insufficiency.
3. Identify the concerns and challenges healthcare providers face when prescribing Lobeglitazone, including its adverse effects and patient-specific factors.
4. Determine the level of satisfaction with current clinical evidence supporting Lobeglitazone therapy and its safety profile compared to other antidiabetic medications.
5. Gauge healthcare providers' willingness to recommend Lobeglitazone to their colleagues and incorporate it into their clinical practices.

METHODS

This study employed a cross-sectional survey to capture the practices and opinions of healthcare providers regarding the use of Lobeglitazone in Type 2 Diabetes Mellitus management. A structured questionnaire was developed to address key themes such as prescription frequency, awareness of Lobeglitazone's benefits, and concerns regarding its side effects.

Study Design: The survey consisted of 20 questions aimed at collecting both quantitative and qualitative data on healthcare providers' experiences with and perceptions of Lobeglitazone. The survey was distributed to endocrinologists, diabetologists, and general practitioners actively treating patients with T2DM.

Participant Inclusion Criteria:

- Healthcare providers with at least 2 years of experience in managing Type 2 Diabetes Mellitus.
- Physicians prescribing oral hypoglycemic agents, including thiazolidinediones, as part of their clinical practice.

Data Collection: The survey was distributed booklet format to healthcare providers across multiple healthcare institutions. Participants were asked to respond to questions on their prescribing habits, their knowledge of Lobeglitazone's mechanisms of action, perceived advantages and concerns, and their level of satisfaction with current clinical evidence. Responses were collected over a period of one month.

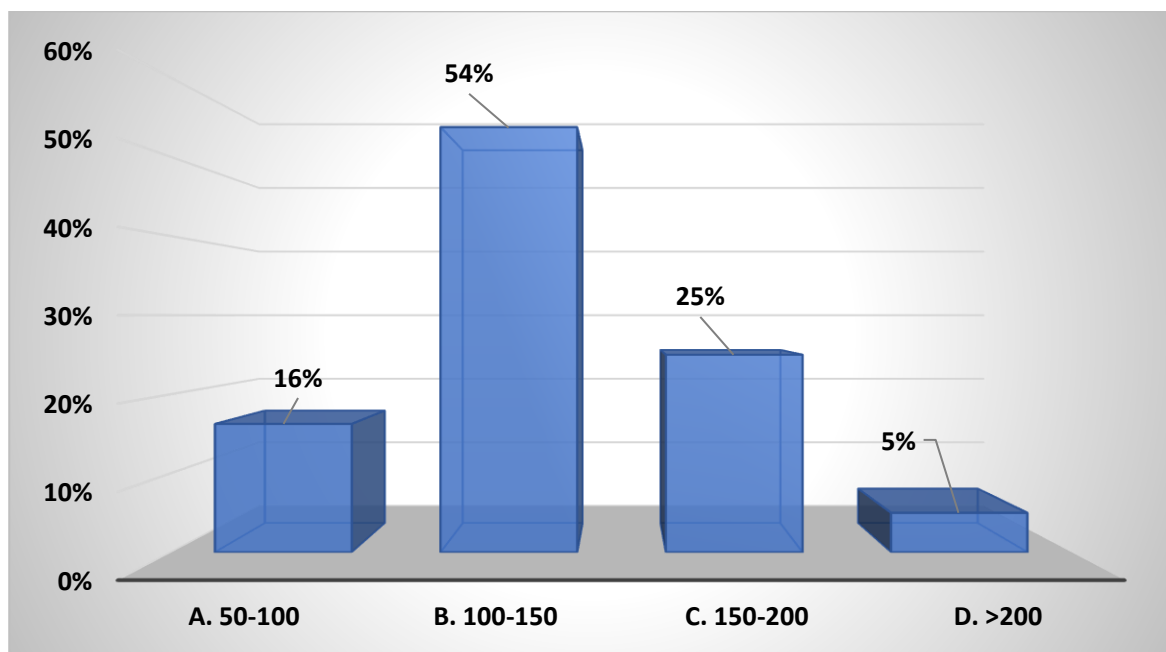
Data Analysis: Descriptive statistics were used to summarize responses to each question, including the frequency of Lobeglitazone prescription, awareness of its pharmacological benefits, and major concerns regarding its use. Results were expressed as percentages to illustrate the distribution of opinions among the respondents. Additionally, correlations between provider characteristics and prescribing behaviors were analyzed to identify trends and patterns.

RESULTS

A total of 160 HCPs participated in the survey. Below is the summary of the responses.

1. How many patients with Type 2 diabetes mellitus typically visit your clinic on a monthly basis?

- A. 50-100
- B. 100-150
- C. 150-200
- D. >200

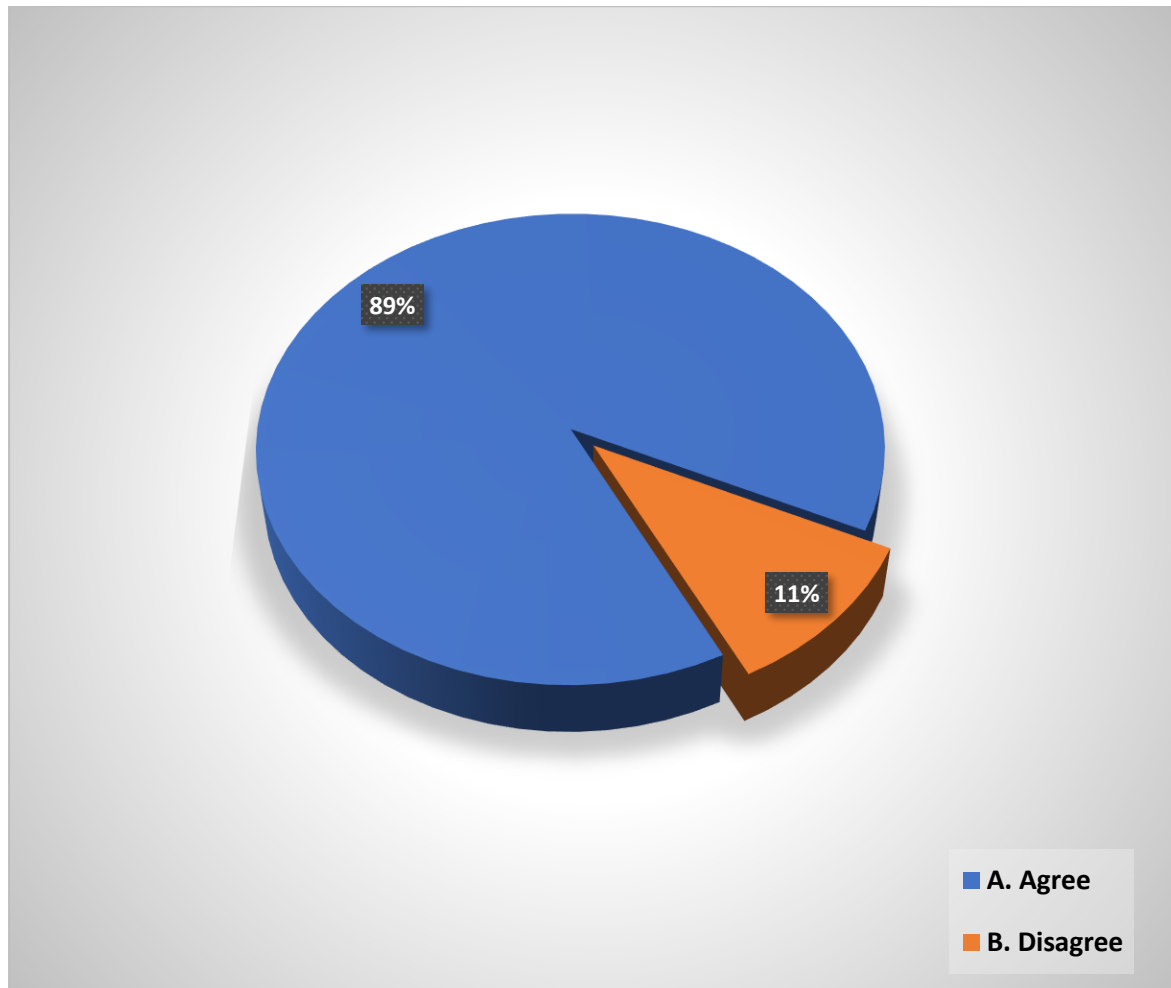


- **100-150 (54%):** A majority of clinicians see 100-150 patients monthly.
- **150-200 (25%):** A substantial group treats 150-200 patients per month.
- **50-100 (16%):** A smaller proportion sees fewer patients.
- **>200 (5%):** A minority handles more than 200 patients monthly.

2. Do you agree that the proportion of Type 2 diabetic patients taking Thiazolidinedione is lower than expected?

A. Agree

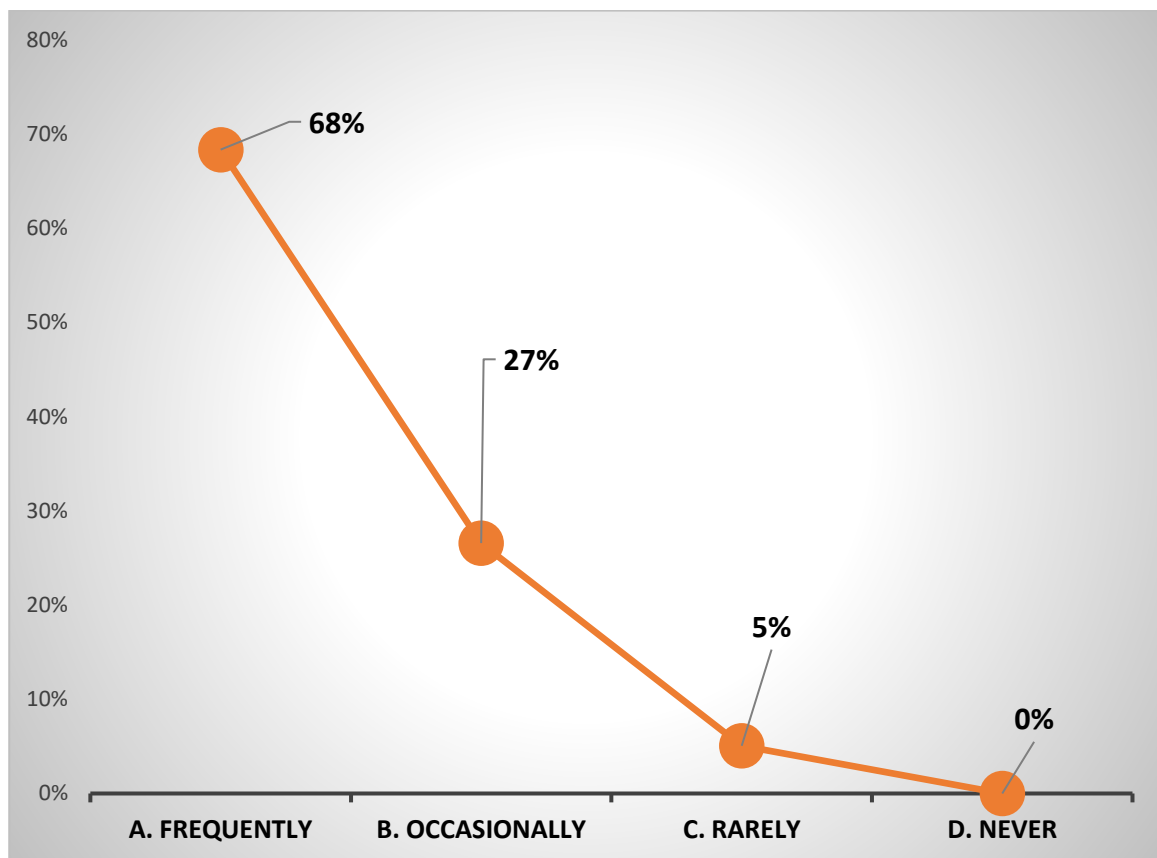
B. Disagree



- **Agree (89%):** Most clinicians agree the use of Thiazolidinediones is lower than expected.
- **Disagree (11%):** A small group disagrees with this statement.

3. In your clinical practice, how frequently do you prescribe Lobeglitazone?

- A. Frequently
- B. Occasionally
- C. Rarely
- D. Never

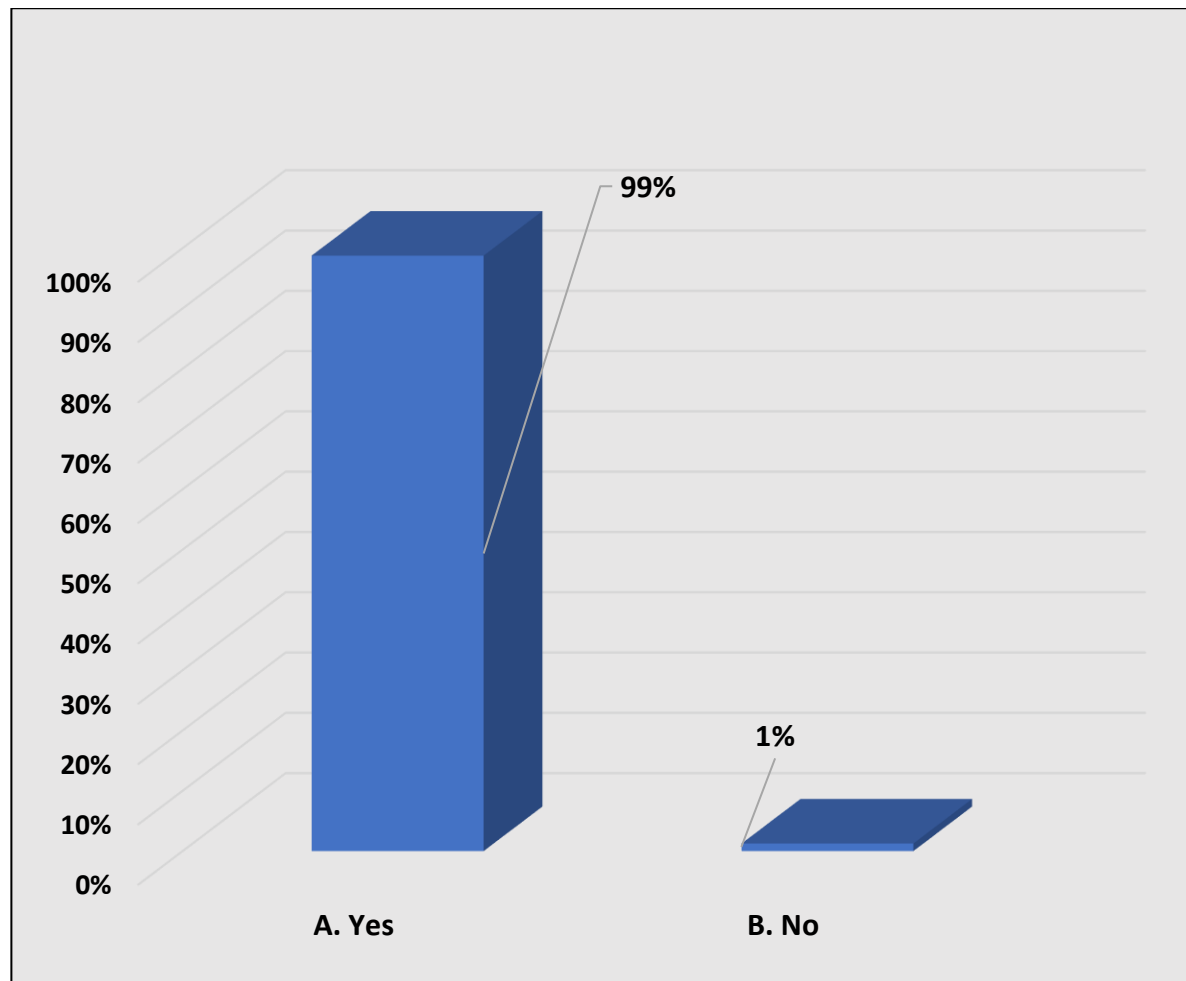


- **Frequently (68%):** The majority prescribe Lobeglitazone often.
- **Occasionally (27%):** A notable portion prescribes it occasionally.
- **Rarely (5%):** Few clinicians rarely prescribe it.
- **Never (0%):** None of the respondents avoid Lobeglitazone.

4. Are you aware that Lobeglitazone has 12 times more affinity for the PPAR γ receptor compared to Rosiglitazone and Pioglitazone?

A. Yes

B. No

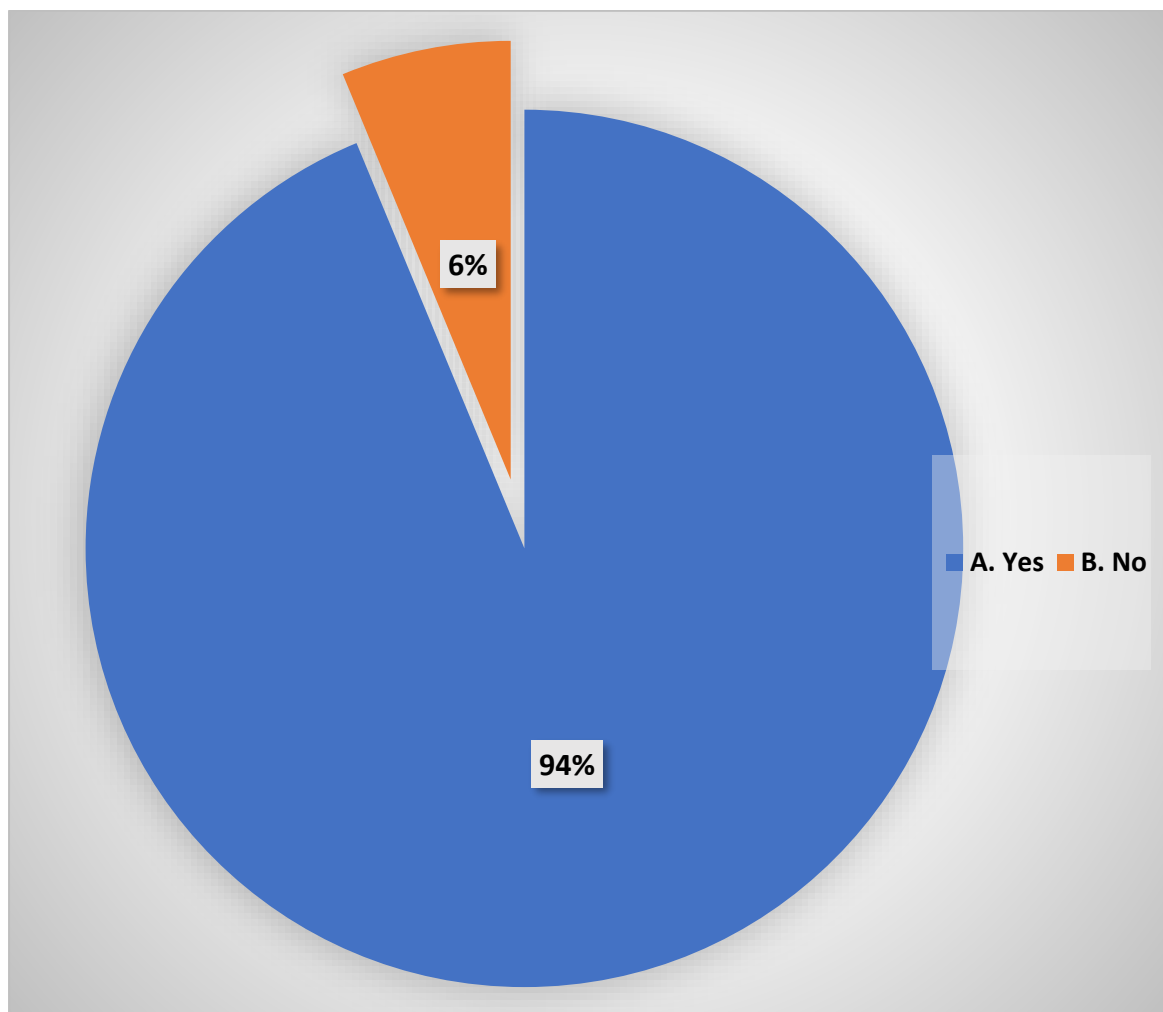


- **Yes (99%):** Nearly all clinicians are aware of this higher receptor affinity.
- **No (1%):** A small minority were not aware.

5. Are you aware that Lobeglitazone acts by improving insulin sensitivity as well as inhibiting hepatic lipogenesis and improving beta-cell function?

A. Yes

B. No

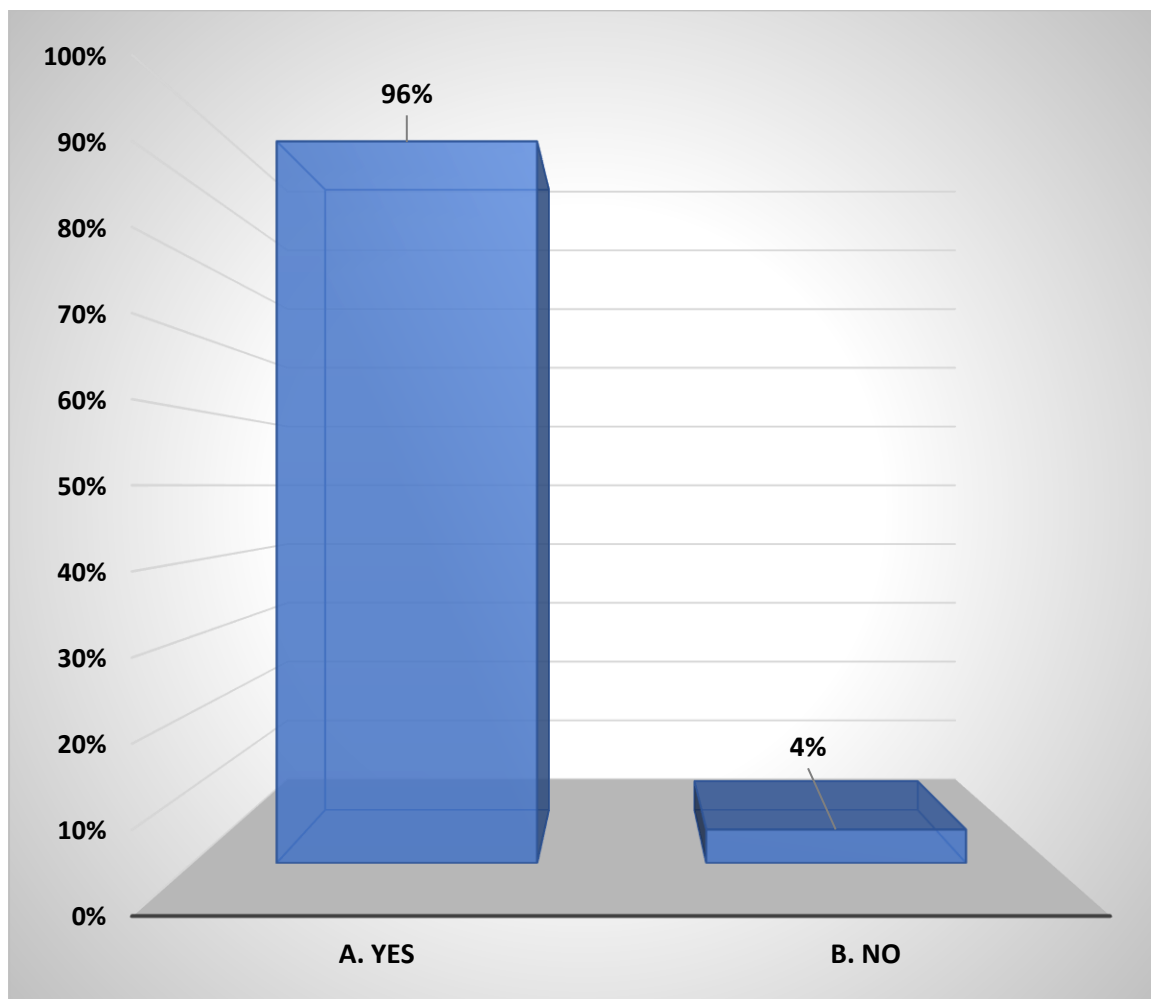


- **Yes (94%):** The vast majority are aware of Lobeglitazone's multiple mechanisms of action.
- **No (6%):** A small portion is not familiar with this fact.

6. Are you aware that Lobeglitazone improves lipid profiles (blood triglycerides, LDL-C decrease, and HDL-C increase)?

A. Yes

B. No

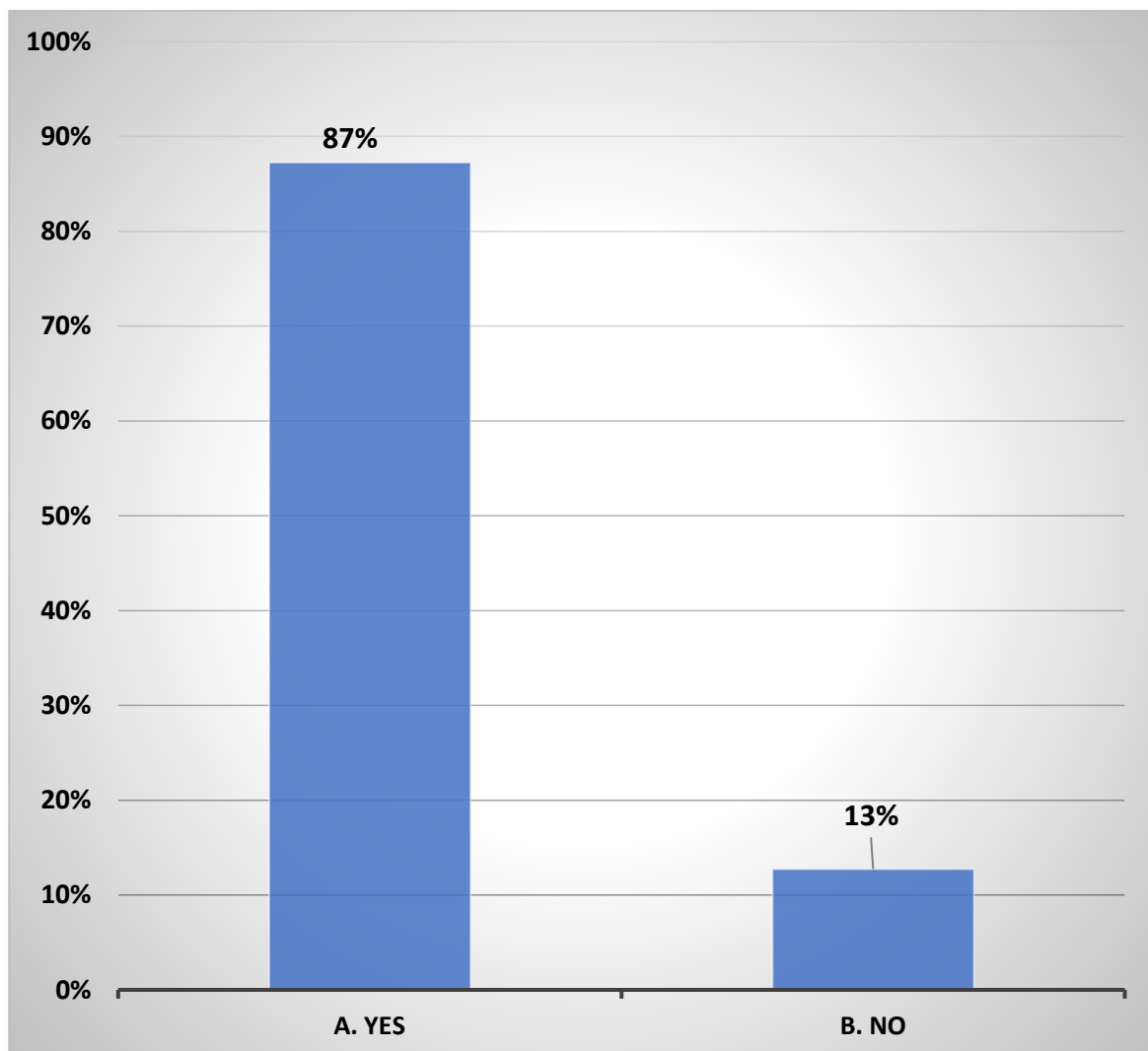


- **Yes (96%):** Most clinicians recognize Lobeglitazone's benefits on lipid profiles.
- **No (4%):** Only a few were unaware of this benefit.

7. Do you agree that Lobeglitazone can be used in patients with renal insufficiency without dose reduction?

A. Yes

B. No

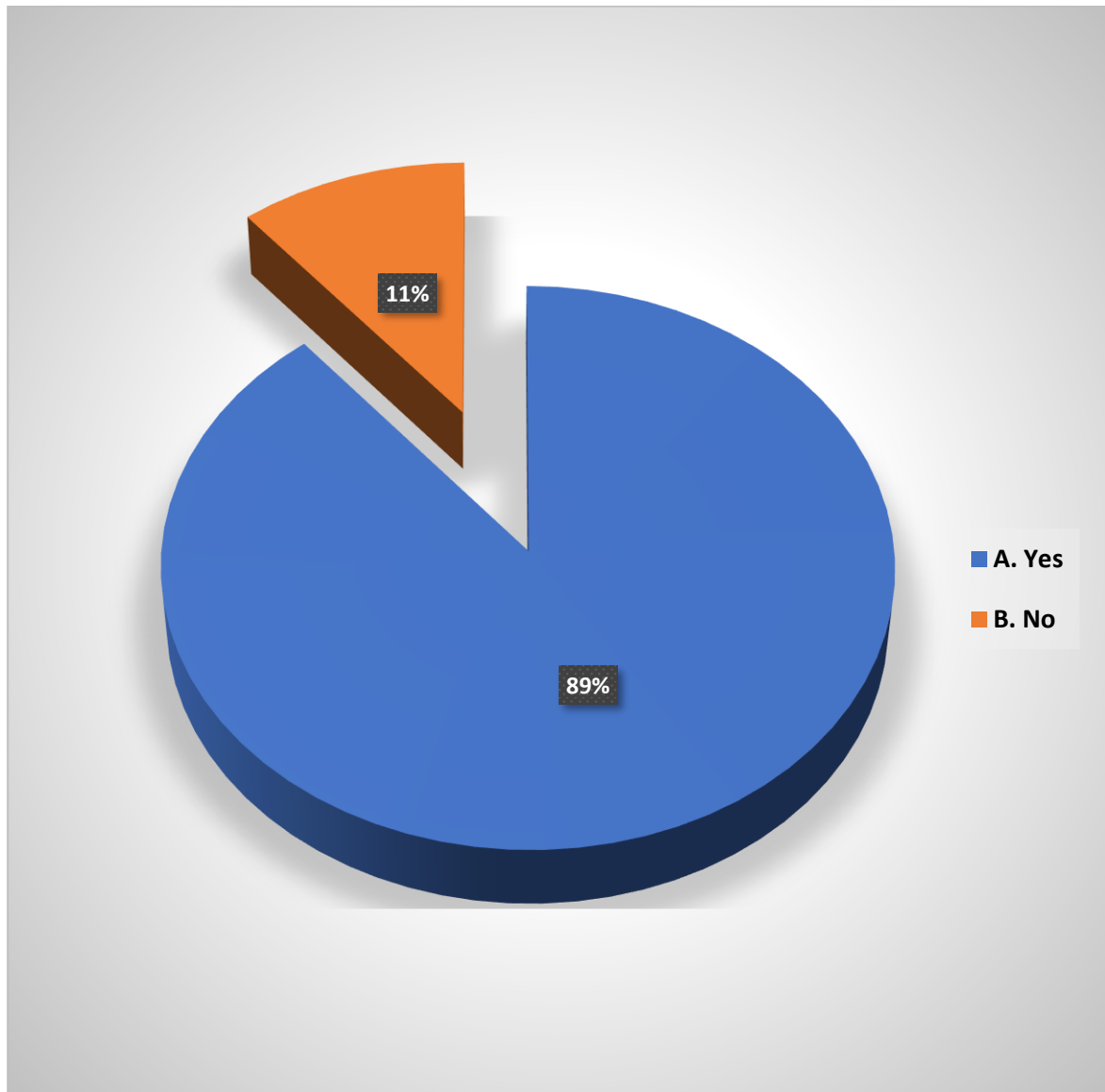


- **Yes (87%):** Most clinicians agree it can be used without dose adjustment.
- **No (13%):** Some expressed concerns over this usage.

8. Do you think it is rationale to combine dapagliflozin with Lobeglitazone?

A. Yes

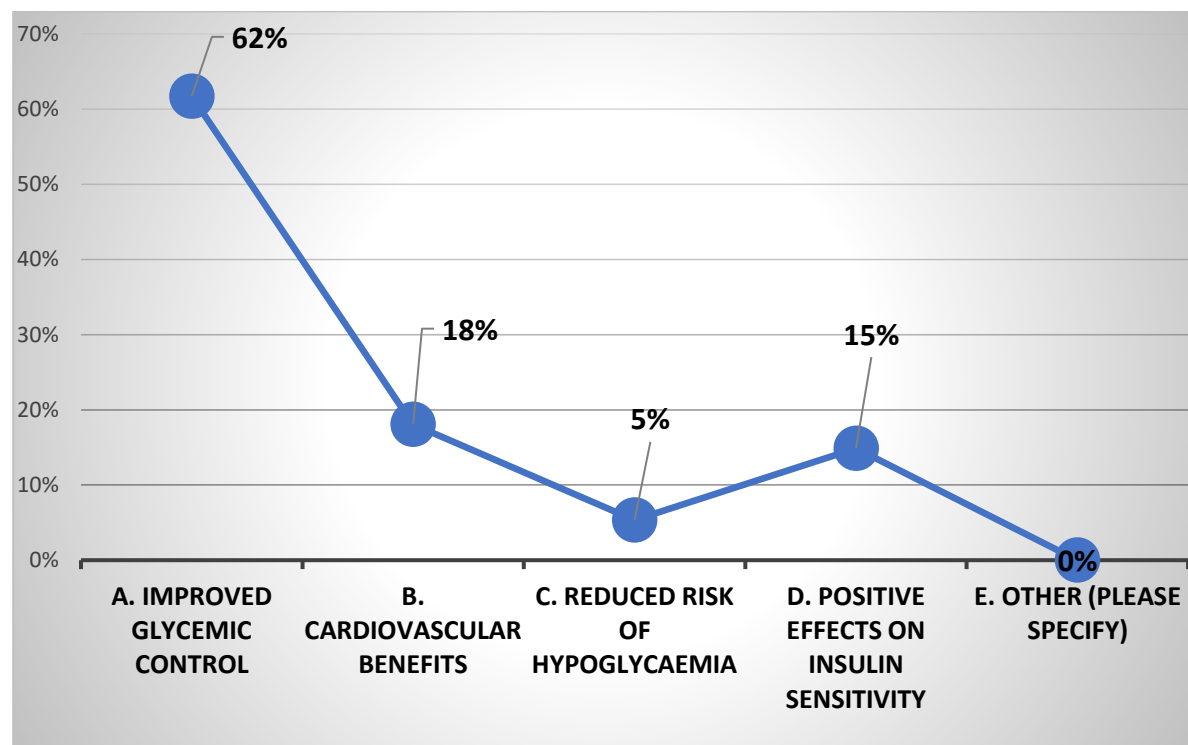
B. No



- **Yes (89%):** A majority believe it is a rational combination.
- **No (11%):** A minority disagrees.

9. What are the potential advantages of Lobeglitazone in managing diabetes mellitus?

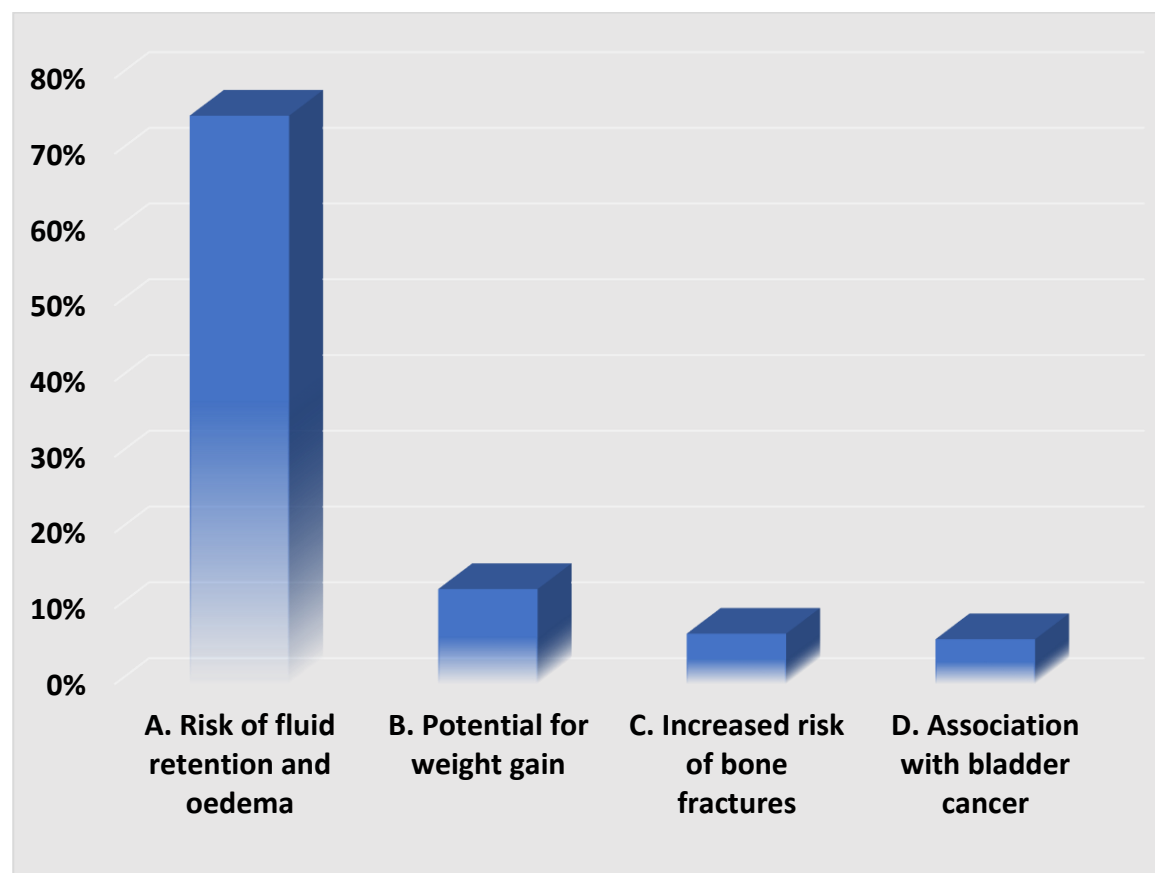
- A. Improved glycemic control
- B. Cardiovascular benefits
- C. Reduced risk of hypoglycaemia
- D. Positive effects on insulin sensitivity
- E. Other (please specify)



- **Improved glycemic control (62%):** The majority see improved glycemic control as the primary benefit.
- **Cardiovascular benefits (18%):** Some clinicians value its cardiovascular effects.
- **Positive effects on insulin sensitivity (15%):** A significant portion noted insulin sensitivity improvements.

10. What are the main concerns you have regarding the use of Lobeglitazone?

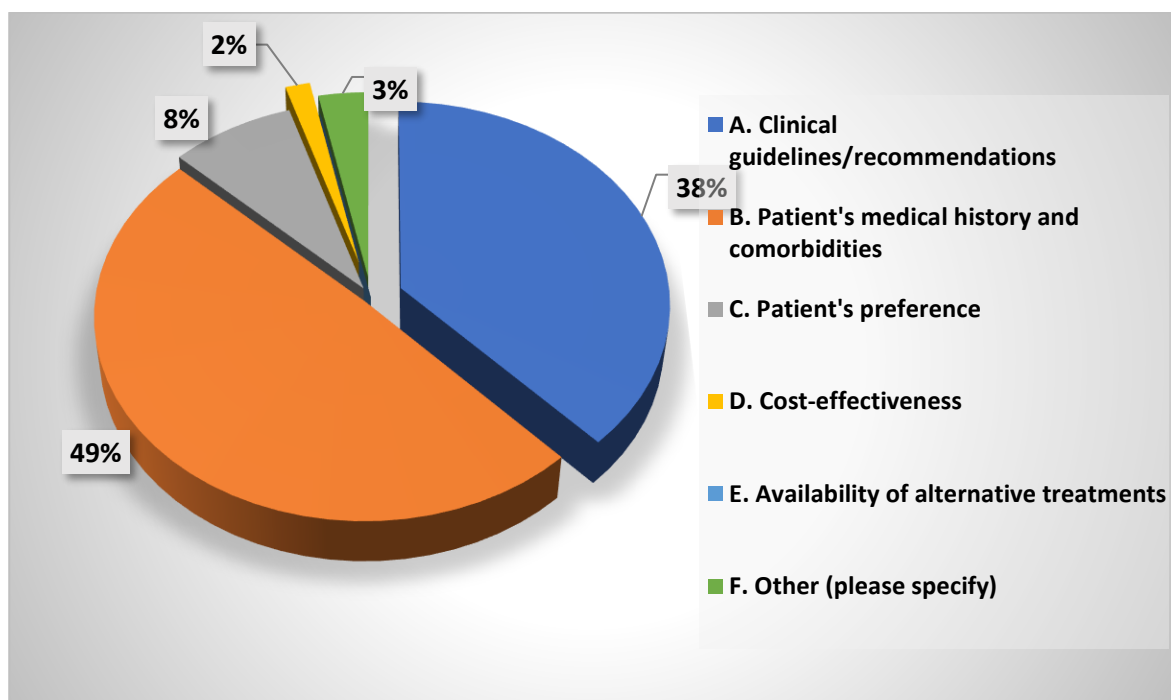
- A. Risk of fluid retention and oedema
- B. Potential for weight gain
- C. Increased risk of bone fractures
- D. Association with bladder cancer



- **Risk of fluid retention and edema (75%):** The most cited concern was fluid retention.
- **Potential for weight gain (13%):** Weight gain was another concern.
- **Increased risk of bone fractures (7%) & Association with bladder cancer (6%):** A small group worried about bone fractures.

11. What factors influence your decision to prescribe Lobeglitazone?

- A. Clinical guidelines/recommendations
- B. Patient's medical history and comorbidities
- C. Patient's preference
- D. Cost-effectiveness
- E. Availability of alternative treatments
- F. Other (please specify)

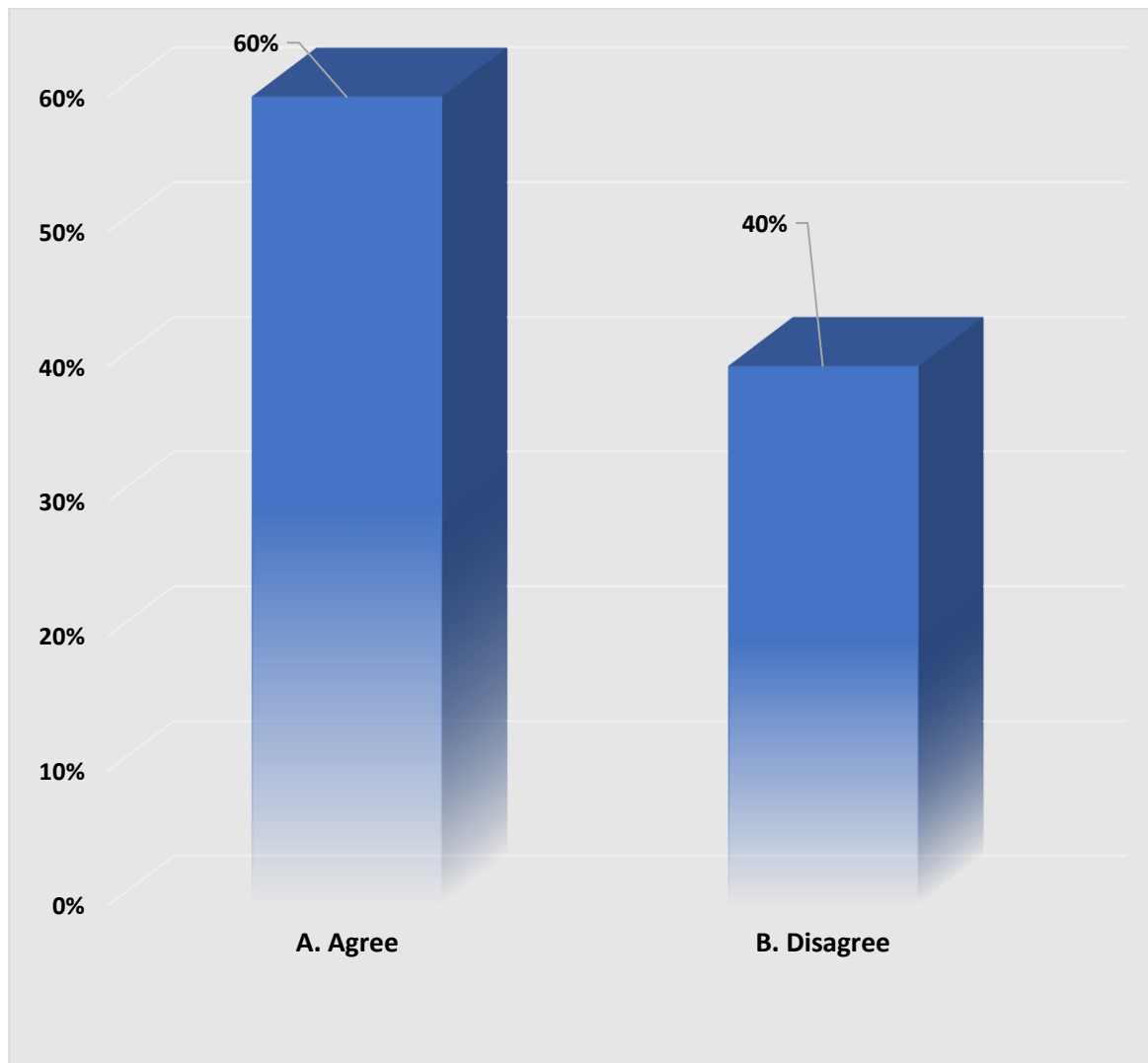


- **Patient's medical history and comorbidities (49%):** Clinical factors were the top consideration.
- **Clinical guidelines/recommendations (38%):** Many relied on guidelines.
- **Patient's preference (8%):** A smaller group took patient preferences into account.
- **Cost-effectiveness (2%):** Cost played a minor role in decision-making.

12. Do you agree that Lobeglitazone's safety profile is similar to Sitagliptin?

A. Agree

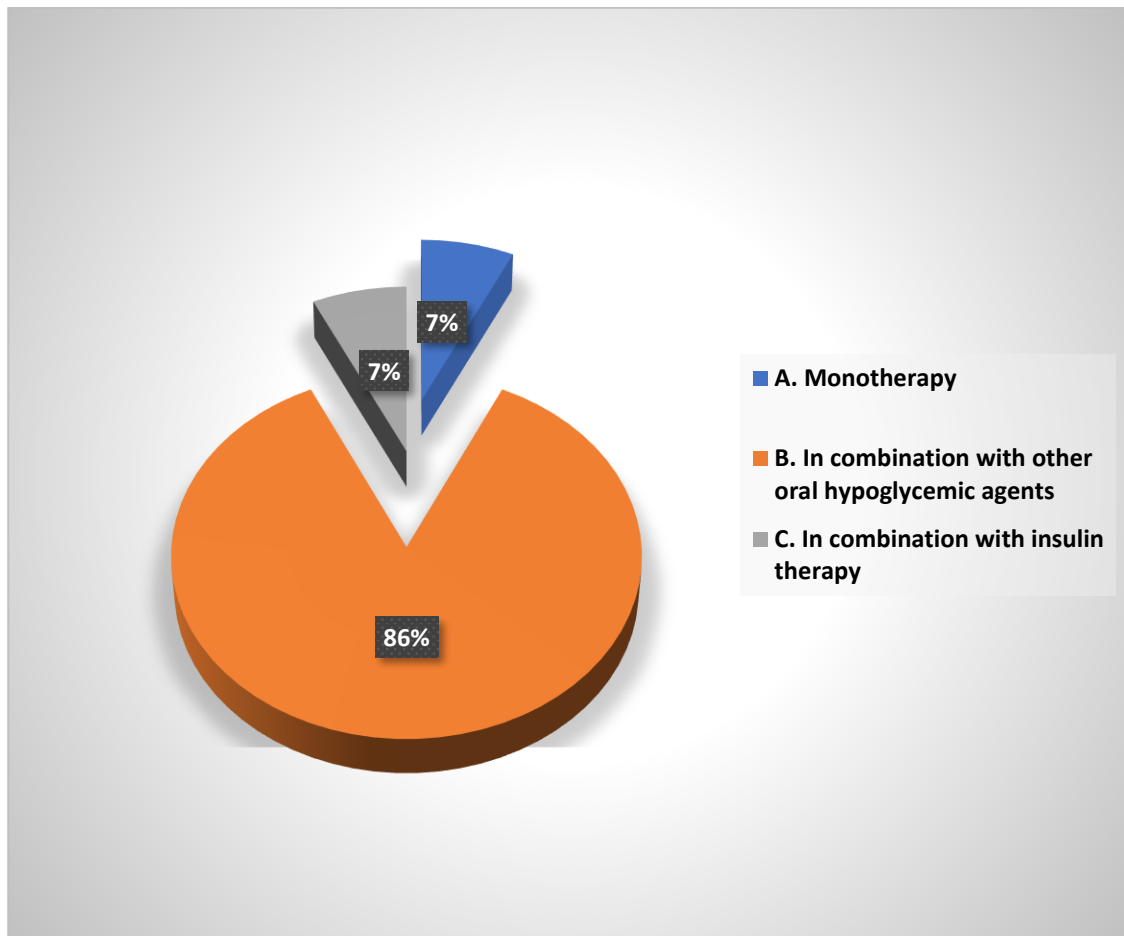
B. Disagree



- **Agree (60%):** Most clinicians see similar safety profiles.
- **Disagree (40%):** A substantial minority disagree.

13. In your clinical practice, how do you prefer to prescribe Lobeglitazone?

- A. Monotherapy
- B. In combination with other oral hypoglycemic agents
- C. In combination with insulin therapy



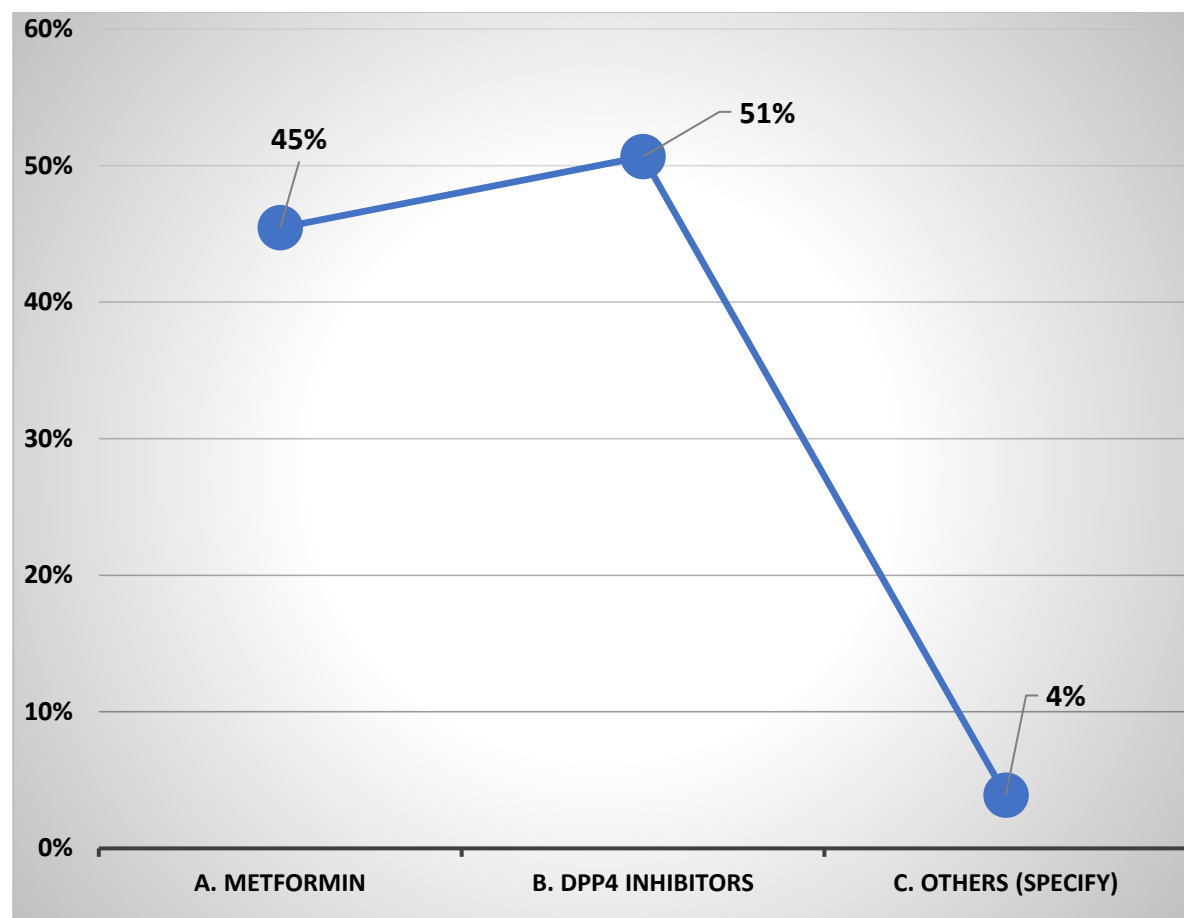
- **In combination with other oral hypoglycemic agents (86%):** The majority prescribe it in combination therapy.
- **Monotherapy (7%):** Few use it as monotherapy.
- **In combination with insulin (7%):** A small group combine it with insulin.

14. In your clinical practice, which oral hypoglycemic do you prefer prescribing with Lobeglitazone?

A. Metformin

B. DPP4 Inhibitors

C. Others (specify)

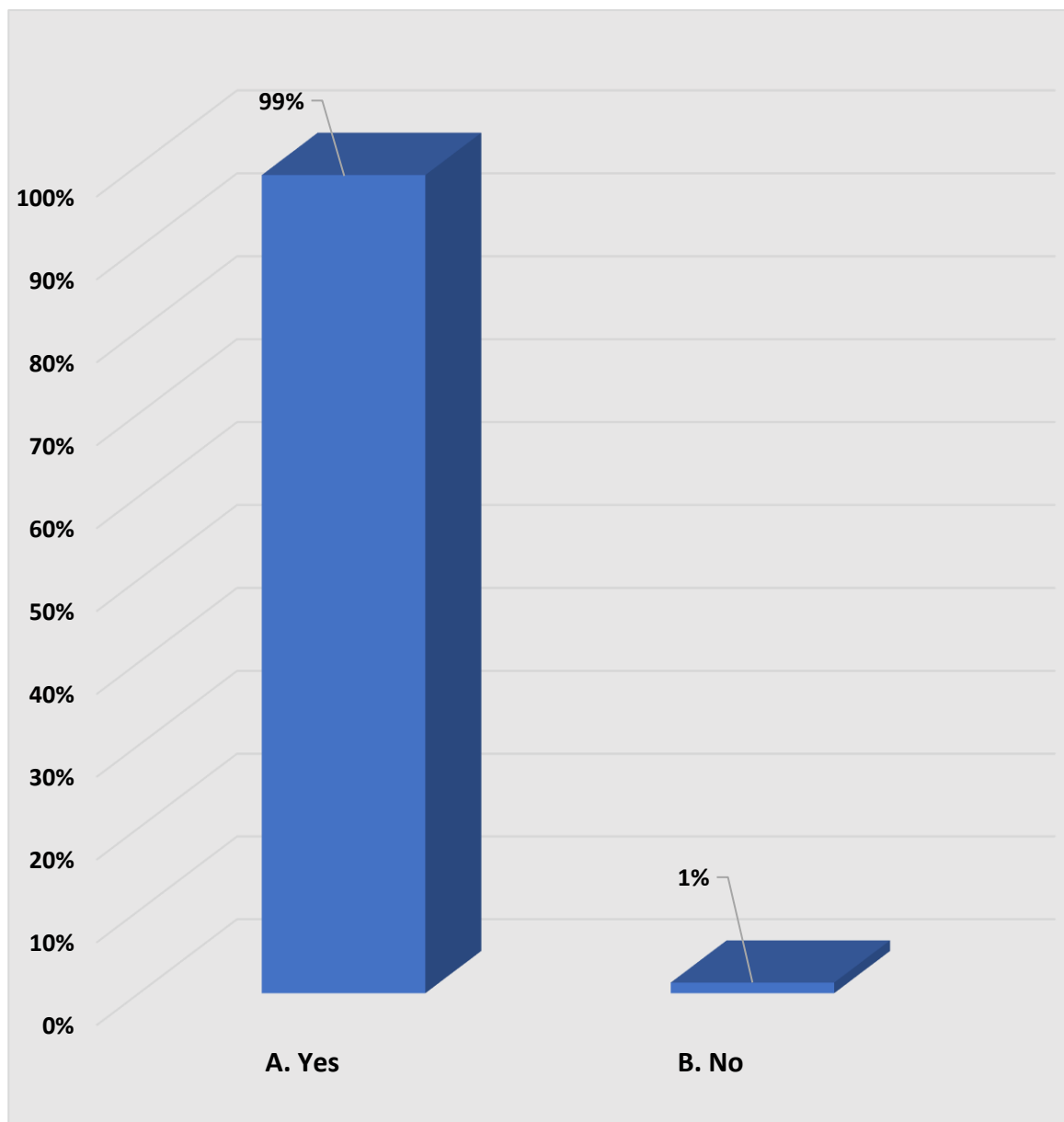


- **DPP4 Inhibitors (51%):** The top preference for combination therapy was DPP4 inhibitors.
- **Metformin (45%):** A large number preferred combining it with metformin.
- **Others (4%):** Few chose other alternatives.

15. Do you agree that combining Lobeglitazone with metformin can minimize weight gain and does not increase the risk of hypoglycemia?

A. Yes

B. No

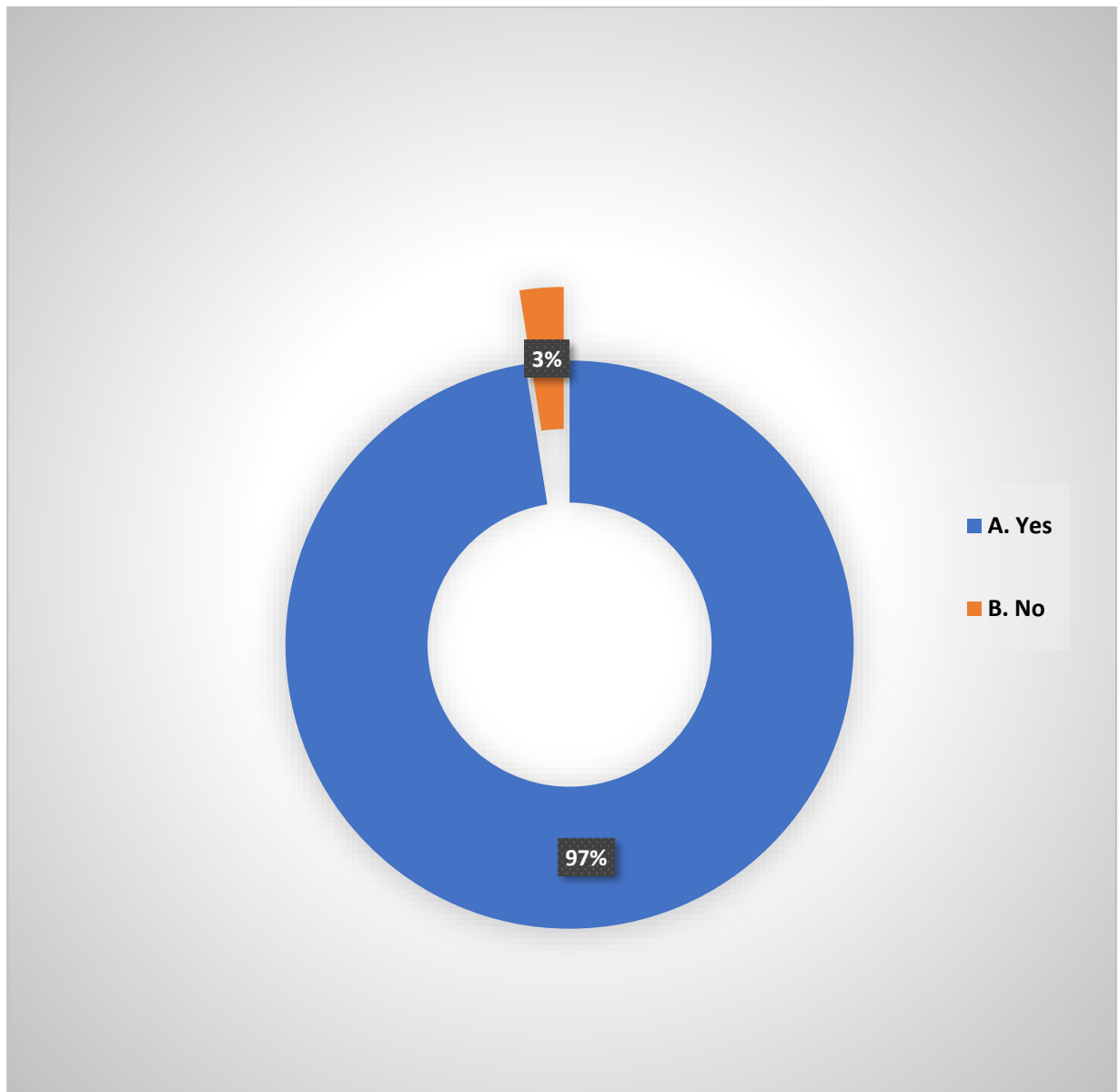


- **Yes (99%):** Nearly all clinicians agreed.
- **No (1%):** A very small group disagreed.

16. Are you aware that Lobeglitazone significantly improves hepatic steatosis in patients with T2DM with NAFLD?

A. Yes

B. No

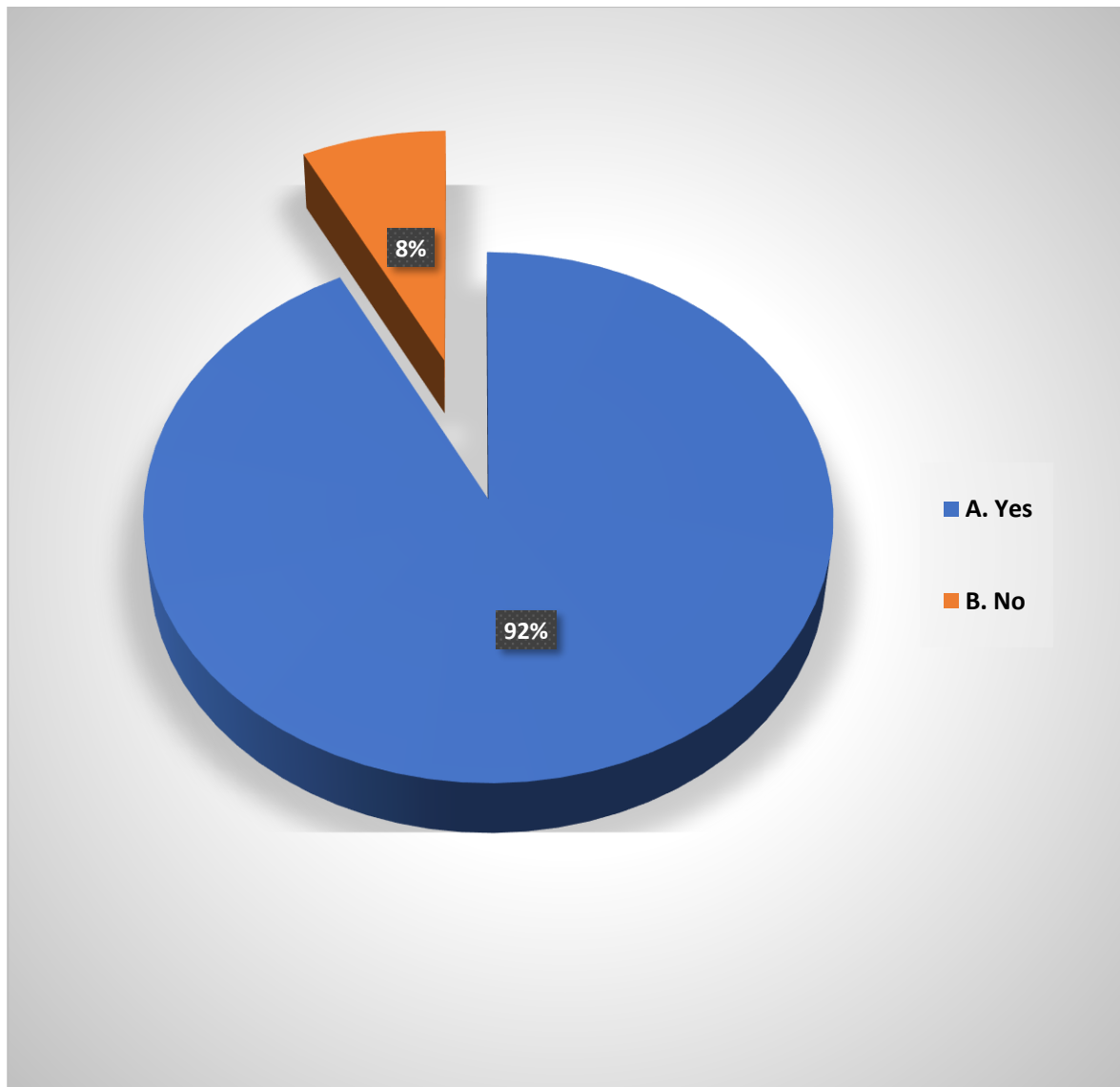


- **Yes (98%):** Most were aware of its benefits for hepatic steatosis.
- **No (3%):** Only a few were unaware.

17. Are you aware that the incidence of peripheral edema is less with Lobeglitazone compared to Pioglitazone?

A. Yes

B. No

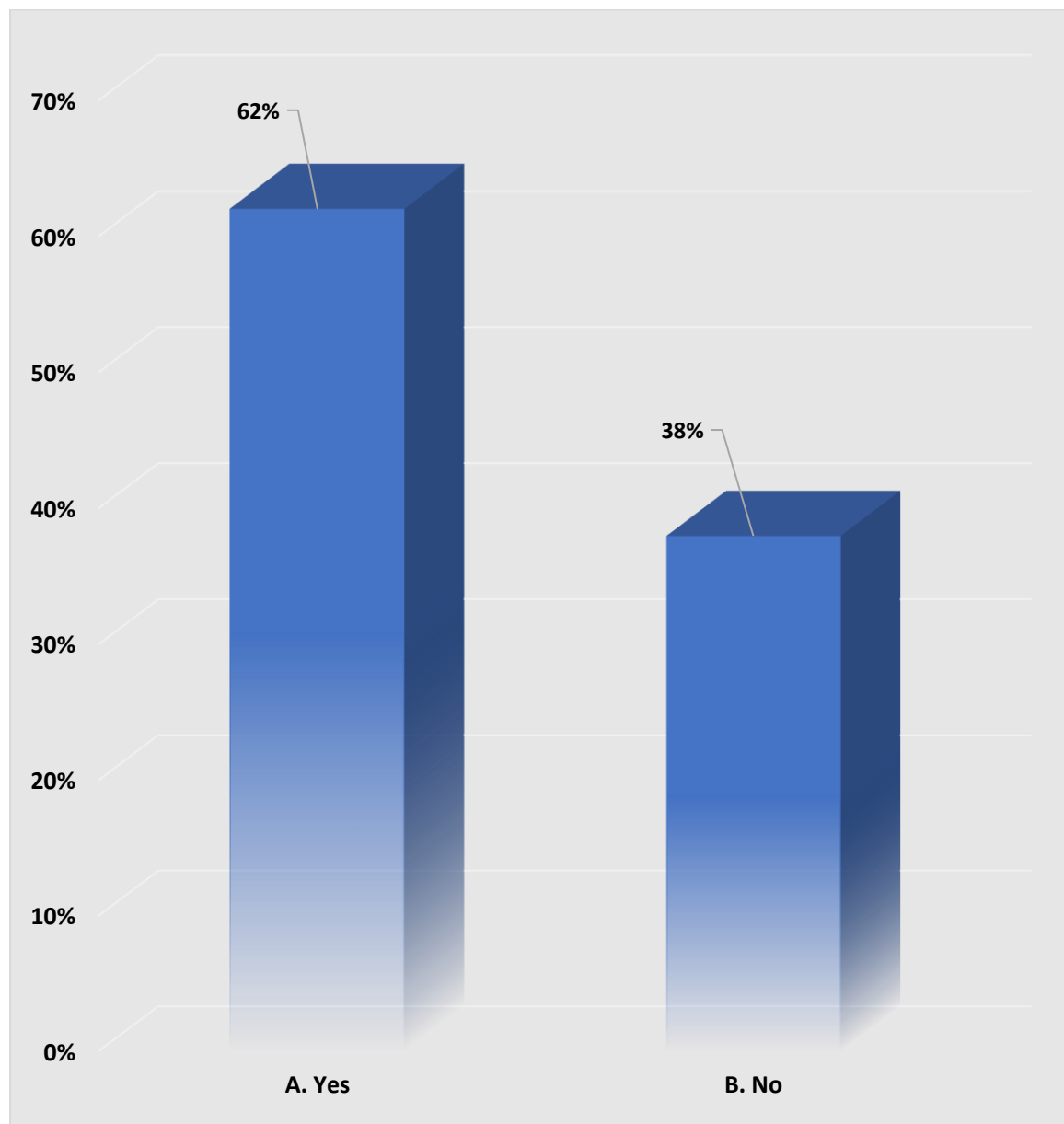


- **Yes (93%):** Most clinicians recognized this advantage.
- **No (8%):** A few were unaware.

18. Have you encountered any adverse effects or challenges with patients using Lobeglitazone?

A. Yes

B. No

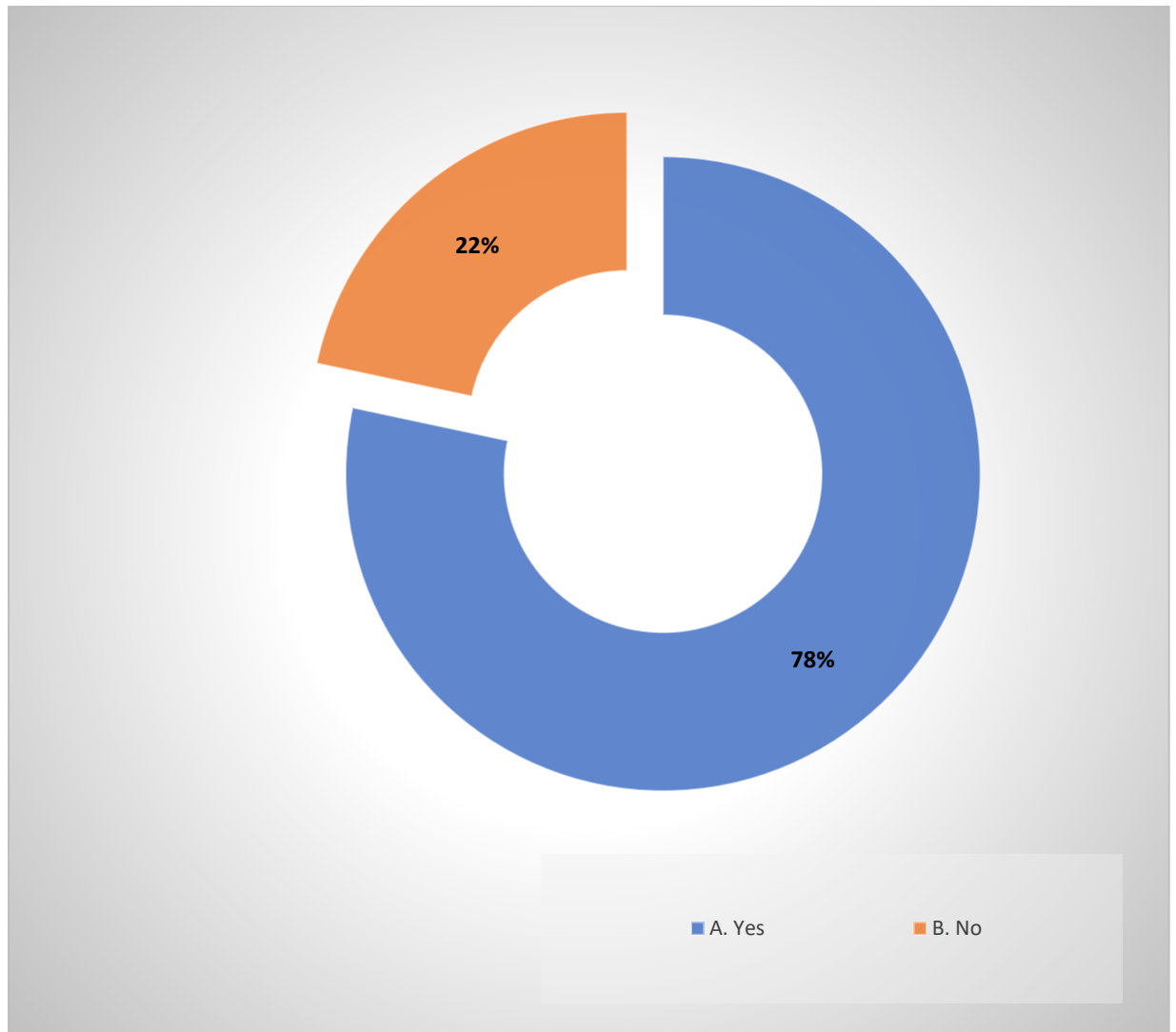


- **Yes (62%):** A significant portion has encountered challenges or adverse effects.
- **No (38%):** A smaller group reported no issues.

19. Are you satisfied with the currently available clinical evidence for Lobeglitazone?

A. Yes

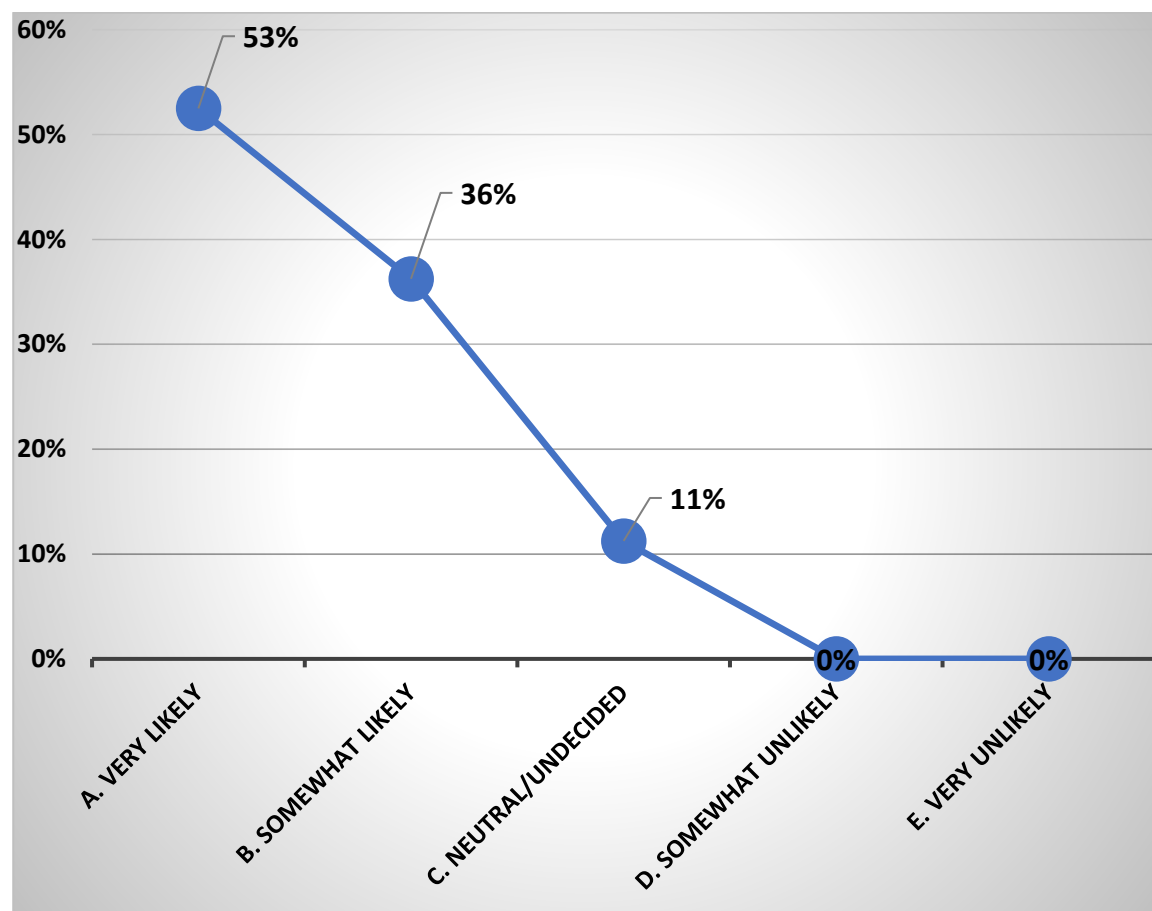
B. No



- **Yes (78%):** Most are satisfied with the available evidence.
- **No (22%):** Some feel more evidence is needed.

20. How inclined are you to recommend incorporating Lobeglitazone into treatment options for patients with T2DM?

- A. Very likely
- B. Somewhat likely
- C. Neutral/Undecided
- D. Somewhat unlikely
- E. Very unlikely



- **Very likely (53%):** More than half are very likely to recommend it.
- **Somewhat likely (36%):** A significant portion are somewhat likely.
- **Neutral/Undecided (11%):** A small group remains undecided.

SUMMARY

This study provides valuable insights into the clinical practice of prescribing experiences and opinions on Lobeglitazone in Type 2 Diabetes Therapy. The majority of clinicians frequently encounter Type 2 Diabetes patients and prescribe.

- **Patient Volume:** The majority (54%) of healthcare providers reported seeing between 100-150 patients with Type 2 Diabetes Mellitus (T2DM) monthly. Another 25% reported seeing 150-200 patients, while 16% saw 50-100, and a small percentage (5%) treated over 200 patients.
- **Thiazolidinedione (TZD) Prescription Rates:** A significant majority (89%) agreed that the proportion of patients with T2DM taking Thiazolidinediones is lower than expected, indicating a gap between the clinical benefits of these drugs and their actual usage.
- **Lobeglitazone Prescribing Frequency:** 68% of healthcare providers prescribed Lobeglitazone frequently in their clinical practice, with 27% prescribing it occasionally, and only 5% rarely using it.
- **Awareness of Lobeglitazone's Mechanism and Benefits:** The vast majority of respondents (99%) were aware that Lobeglitazone has 12 times more affinity for PPAR γ receptors than Rosiglitazone and Pioglitazone, and 94% knew about its insulin-sensitivity and beta-cell function improvements. Additionally, 96% were aware of its lipid profile benefits.
- **Renal Function and Combination Therapies:** 87% of providers agreed that Lobeglitazone can be used in patients with renal insufficiency without dose reduction. Moreover, 89% supported the rationale of combining Lobeglitazone with dapagliflozin.

- **Clinical Benefits and Concerns:** The primary advantages cited for Lobeglitazone were improved glycemic control (62%) and cardiovascular benefits (18%). However, concerns about fluid retention and edema (75%) and weight gain (13%) were highlighted as key drawbacks.
- **Safety and Combination Preferences:** 60% of respondents agreed that Lobeglitazone's safety profile is comparable to Sitagliptin, and 86% preferred prescribing it in combination with other oral hypoglycemic agents, particularly DPP4 inhibitors (51%) and Metformin (45%).
- **Adverse Effects and Satisfaction with Evidence:** 62% of clinicians reported encountering adverse effects in patients using Lobeglitazone, and while 78% expressed satisfaction with the available clinical evidence, 22% felt more data is needed.

DISCUSSION

Based on the survey data, The results reveal that while Lobeglitazone is gaining traction among healthcare providers for T2DM management, there remain several barriers to its widespread adoption. The underutilization of TZDs, in general, may be attributed to past safety concerns related to older agents like Rosiglitazone and Pioglitazone. However, the strong awareness of Lobeglitazone's improved safety and efficacy profile suggests a positive shift in perception. Most clinicians are prescribing Lobeglitazone in combination with other agents, likely due to its complementary effects on insulin sensitivity and lipid metabolism.

Despite its growing acceptance, concerns about adverse effects—specifically fluid retention and weight gain—persist, which may explain why some clinicians remain hesitant. The awareness that Lobeglitazone has a reduced risk of peripheral edema compared to Pioglitazone (93%) indicates that ongoing

education on these benefits could further encourage its use. Additionally, the ability to use Lobeglitazone in patients with renal insufficiency without dosage adjustments is seen as a major advantage, particularly in the Indian population, where diabetes-related kidney disease is prevalent.

The inclination to combine Lobeglitazone with newer agents like dapagliflozin highlights a shift towards more holistic, multi-faceted approaches to diabetes management, aiming for better glycemic control without the added risk of hypoglycemia. However, the concerns related to fluid retention, weight gain, and bone fractures require ongoing clinical monitoring and may necessitate patient-specific risk stratification before prescribing Lobeglitazone.

CLINICAL RECOMMENDATIONS

Based on the survey findings and clinical evidence, the following recommendations are proposed:

- **Patient Selection:** Lobeglitazone should be considered for patients with T2DM who have inadequate glycemic control on other oral hypoglycemic agents, especially those with insulin resistance or dyslipidemia.
- **Combination Therapy:** It is recommended to use Lobeglitazone in combination with agents like Metformin or DPP4 inhibitors, as this can enhance efficacy and minimize potential side effects.
- **Renal Insufficiency:** Lobeglitazone is suitable for patients with mild to moderate renal impairment without dose reduction, providing an advantage over some other antidiabetic agents.

- **Safety Monitoring:** Regular monitoring for signs of fluid retention, weight gain, and bone health should be conducted, particularly in patients with a history of cardiovascular or skeletal issues.
- **NAFLD and Dyslipidemia:** In patients with T2DM and NAFLD or dyslipidemia, Lobeglitazone offers additional benefits in reducing hepatic steatosis and improving lipid profiles, making it a valuable option for this patient group.

CONSULTANT OPINION

Experts consulted in this study agree that Lobeglitazone represents an important advancement in the treatment of T2DM, particularly for patients requiring enhanced insulin sensitivity and improved lipid management. Its use in renal-insufficient patients and its relatively low risk of hypoglycemia when combined with Metformin or DPP4 inhibitors were seen as key strengths.

However, some consultants expressed caution regarding its potential for fluid retention and weight gain, recommending that it be prescribed carefully in patients with existing cardiovascular or renal concerns. Furthermore, while satisfied with the current clinical evidence, some experts emphasized the need for more long-term safety data, particularly regarding bone health and cancer risk, to ensure its widespread adoption.

MARKET OPPORTUNITIES

Lobeglitazone presents a compelling opportunity within the global antidiabetic market, particularly in regions where Type 2 Diabetes Mellitus (T2DM) prevalence is rising, such as India and Southeast Asia. As a next-generation thiazolidinedione (TZD), it offers significant benefits in glycemic control, lipid profile management, and insulin sensitivity improvement. This makes Lobeglitazone uniquely positioned to address the complex metabolic challenges faced by T2DM patients.

Targeting Insulin Resistance and Comorbidities: One of the key market opportunities lies in Lobeglitazone's ability to address insulin resistance, which is prevalent in many T2DM patients. This agent's strong PPAR γ receptor affinity (12 times greater than older TZDs) sets it apart in managing insulin sensitivity. Moreover, with a growing focus on comorbid conditions such as dyslipidemia, cardiovascular risk, and non-alcoholic fatty liver disease (NAFLD), Lobeglitazone's beneficial effects on lipid metabolism and hepatic steatosis make it a promising candidate for broader therapeutic application. Healthcare providers increasingly seek multifaceted treatments that address both blood glucose levels and associated conditions like dyslipidemia and fatty liver disease, offering Lobeglitazone a dual-purpose appeal.

Renal Insufficiency and Combination Therapy: A substantial opportunity also exists for Lobeglitazone in the management of T2DM patients with renal insufficiency. Its profile, which allows for use in patients with renal impairment without the need for dose adjustments, is a significant advantage over many other antidiabetic agents. This opens up potential for Lobeglitazone to become a preferred option among healthcare providers managing patients with both T2DM and chronic kidney disease (CKD), a common complication in long-standing diabetes.

Additionally, the rise in combination therapies presents another market opportunity. Lobeglitazone's compatibility with other commonly prescribed oral hypoglycemic agents, such as DPP4 inhibitors, SGLT2 inhibitors (e.g., dapagliflozin), and Metformin, aligns with current treatment trends that emphasize personalized and comprehensive diabetes management. Co-marketing strategies with these agents, particularly in fixed-dose combinations, can further extend its reach.

Growing Need for Safer TZD Options: With the past safety concerns surrounding older TZDs like Rosiglitazone, there is a growing demand for safer alternatives in the TZD class. Lobeglitazone, with its improved safety profile—lower incidence of fluid retention and peripheral edema compared to Pioglitazone—can fill this gap. As patients and healthcare providers remain cautious about adverse effects like weight gain, bone fractures, and fluid retention, Lobeglitazone's lower risk in these areas represents a market differentiator.

Untapped Potential in NAFLD and Cardiovascular Disease: As research continues to establish stronger links between diabetes, fatty liver disease, and cardiovascular risks, the ability of Lobeglitazone to reduce hepatic steatosis in patients with NAFLD offers a significant therapeutic benefit. With NAFLD becoming a growing concern among T2DM patients, Lobeglitazone can be marketed not just as a glucose-lowering agent, but as a metabolic enhancer addressing broader systemic issues. Cardiovascular safety is another area where Lobeglitazone can position itself as a valuable treatment, given the high cardiovascular risk in diabetes patients.

MARKET POSITIONING

Lobeglitazone can be strategically positioned as a next-generation TZD that addresses the limitations of its predecessors while providing enhanced efficacy and safety. Its strong affinity for the PPAR γ receptor, coupled with its favorable impact on both glycemic control and metabolic parameters such as lipids and liver function, distinguishes it from other TZDs and antidiabetic therapies.

Positioning as a Holistic Therapy for T2DM Management: Given the increasing emphasis on comprehensive diabetes management, Lobeglitazone's ability to tackle not only blood glucose levels but also improve insulin sensitivity, reduce hepatic steatosis, and positively impact lipid profiles makes it a well-rounded therapeutic option. It should be marketed as a “multi-benefit” treatment for T2DM, offering solutions for both glycemic control and the metabolic complications associated with the disease, including dyslipidemia, NAFLD, and insulin resistance.

Emphasizing Safety and Tolerability: One of the major hurdles TZDs have faced in the past is concerns regarding safety, particularly with regard to cardiovascular risk, fluid retention, and weight gain. Lobeglitazone's safety profile offers an opportunity to reshape the perception of TZDs, highlighting its lower risk of fluid retention and edema compared to Pioglitazone, and its more favorable cardiovascular outcomes. Marketing campaigns should focus on reassuring healthcare providers about Lobeglitazone's improved tolerability and its ability to be safely used in patients with renal impairment without dose adjustments. These messages can help alleviate concerns and encourage greater adoption.

Focus on Combination Therapy: Another key element of Lobeglitazone's market positioning should be its compatibility with other oral hypoglycemic

agents. In particular, its synergistic effects when combined with SGLT2 inhibitors and Metformin should be a central focus in promotional efforts. The combination of Lobeglitazone with dapagliflozin or Metformin addresses the need for multi-targeted treatment approaches, offering enhanced glycemic control without significantly increasing the risk of hypoglycemia or weight gain. Fixed-dose combinations could also be explored as a way to strengthen Lobeglitazone's market presence.

Educational Outreach to Build Confidence: To successfully position Lobeglitazone in the market, extensive educational outreach efforts targeting healthcare providers will be essential. These initiatives should focus on presenting the clinical evidence supporting Lobeglitazone's efficacy and safety, with an emphasis on addressing concerns about adverse effects. Additionally, it will be important to highlight the advantages of prescribing Lobeglitazone in patients with renal insufficiency and its role in managing complex metabolic profiles in T2DM patients.

Targeting the NAFLD and Cardiovascular Segments: As the links between T2DM, NAFLD, and cardiovascular disease become clearer, Lobeglitazone's positive impact on hepatic steatosis and lipid profiles can be used to target these specific patient segments. Marketing campaigns should emphasize Lobeglitazone's dual-action benefits in managing not only diabetes but also the associated comorbidities, appealing to healthcare providers treating complex metabolic disorders.

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