CONSUMER BEHAVIOUR AND MARKET INVESTIGATION OF ANTIDIABETIC DRUGS IN A MAJOR CITY OF INDIA

Dissertation submitted to

The IIHMR University, Jaipur
For the partial fulfillment for the award of the degree of
Master of Business Administration (MBA)
in
Pharmaceutical Management

by
TANISHA JAIN
Roll. No. 0351

Under the Supervision and Guidance of
Dr. Saurabh Kumar Banerjee
Dean and Professor (School of Pharmaceutical Management),
IIHMR University, Jaipur

2023

DECLARATION BY STUDENT

I hereby declare that this dissertation titled consumer behavior and market investigation of antidiabetic drugs in a major urban city of India is the e bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Signature

Tanisha Jain

(0351)

CERTIFICATE

Certificate No-1101587

TENHARD INDIA

TENHARD INDIA PRIVATE LIMITED
CIN: U22300 DL 2020 PTC366500
C 56/12, C Block, Sector 62, Noida
Uttar Pradesh - 201301
www.tenhardindia.com
info@tenhardindia.com

Work Completion Certificate

To whom it may concern

This is to certify that **Tanisha Jain** (**MS IIHMR University**) has successfully Completed Summer Internship in the Sales & Marketing Department.

The work is completed on **19.05.2023** successfully.

Thanking you and assuring you for our best services always.

Name of Work/Project: **Summer Internship**

Work Period: **20.02.2023 to 19.05.2023**

TENHARD INDIA PVT LTD
NOIDA
www.tenhardindia.com

Regards,

Rahul

Rahul
Manager, Tenhard India

This is to certify that all works mentioned above have been physically completed in accordancewith the specifications, provision, and conditions of the contract.

CERTIFICATE

This is to certify that dissertation titled **Consumer behavior and market investigation of Antidiabetic drugs in a major urban city of India** is a record of the research work undertaken by **Tanisha Jain** in partial fulfillment of the requirements for the award of the degree of **MBA (Pharmaceutical Management)** from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide: Dr. Saurabh Kumar Banerjee Dean and Professor, IIHMR University, Jaipur Date	School Dean: Saurabh Kumar Banerjee, Dean SPM, IIHMR University, Jaipur Date

ABSTRACT

This research paper intends to examine customer behavior and carry out a market investigation study of anti-diabetic medications in an Indian metropolitan city. In addition to providing insights into market dynamics and pharmaceutical companies' business strategies, the study aims to identify the variables influencing customer preferences and purchase choices for anti-diabetic medications.

This study was conducted using a mixed-methods technique. A theoretical framework was first developed by conducting a thorough assessment of pertinent literature on consumer behavior, market analysis, and the pharmaceutical sector. Then, primary data were gathered using structured questionnaires given to a sample of urban inhabitants with diabetes. To evaluate the data and reach relevant findings, descriptive and inferential statistical methods were used.

The effectiveness of the medicine, brand reputation, price, side effects, and a doctor's advice all surfaced as important determining factors. The study also emphasized the significance of information accessibility and pharmacy accessibility as influencing variables. Consumer preferences were found to be impacted differently by demographic parameters such as age, income, and education level.

Companies may improve their product offerings, save costs, and maximize pricing and promotional efforts by better understanding consumer preferences and behaviors. The results also provide advice for healthcare professionals on how to interact with patients in a productive manner, deal with their issues, and boost treatment compliance.

Understanding customer preferences, market trends, and variables affecting drug selection are crucial, according to the research. The knowledge acquired from this study can help pharmaceutical firms, healthcare professionals, and regulators make well-informed choices to address the changing demands of patients, enhance treatment results, and help control diabetes in urban populations.

Keywords: Anti-diabetics, Customer behavior, Pharmaceuticals, accessibility, public health, urban population.

ACKNOWLEDGEMENT

A task becomes easier when you get the moral support and encouragement, and if these names are not listed, the project work would remain incomplete.

My sincere thanks and admiration to **Dr. Saurabh Kumar Banerjee, Dean and Professor, School of Pharmaceutical Management, IIHMR University, Jaipur,** for providing priceless counsel, unshakable support, and essential mentorship during the duration of this study endeavour. Their extensive expertise, continual encouragement, and steadfast devotion have played a critical part in determining the direction of this project and boosting my entire research experience.

I am thankful to him for his rapid and responsive contact, as well as his readiness to address my queries and concerns, which has considerably assisted the smooth completion of this project.

Finally, I'd want to express my deepest gratitude to my family and friends, whose steadfast support and unshakeable trust in me have been an incredible source of inspiration during this research trip. Their keen attention and unflinching faith have been crucial to my success.

Tanisha Jain

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF GRAPHS

ABREVIATIONS

ABBREVIATION	FULL FORM
GDM	Gestational diabetes
OHA	Oral Hypoglycemic agents
DPP 4I	Dipeptidyl Peptidase 4 inhibitors
SGLT2 inhibitors	Sodium glucose cotransporter-2 inhibitors
GLP 1 receptor agonists	Glucagon like peptide 1 receptor agonists
GIT	Gastrointestinal
HbA1c	Glycated hemoglobin
IDF	Indian Diabetes Federation
ICMR	Indian Council of Medical Research
IV	Intravenous
WHO	World health organization
CV	Cardiovascular
R & D	Research and development
FDA	Food and Drug Administration
ANDA	Abbreviated New drug Application

CHAPTER 1

INTRODUCTION

Diabetes

Diabetes is a long-standing health problem that occurs when the pancreas is unable to produce the necessary amount of insulin or when the body is unable to sufficiently use the insulin produced.

Inadequate insulin synthesis or utilization results in hyperglycemia, or an increase in blood glucose levels. Prolonged durations of high glucose levels have been linked to negative effects on the body's tissues and organs, causing physical injury and disability. [1]

Types of diabetes

Type 1: Although type 1 diabetes can appear at any age, it most typically appears during childhood and adolescence. This kind of diabetes is distinguished by the body's inability to produce insulin, needing frequent insulin injections to maintain ideal blood glucose levels and overall well-being. [2]

Type 2: Type 2 diabetes is seen in approximately 90% of all diabetes cases and is more frequent in adults. In those with diabetes type 2, the body is less efficient at using the insulin it generates. The treatment of type 2 emphasizes the significance of living a healthy lifestyle, which includes increased physical activity and a well-balanced diet. It is crucial to remember, however, that many people with type 2 diabetes may ultimately need insulin or oral drugs to adequately maintain their blood sugar levels. [2]

Gestational diabetes (GDM) affects both the expecting woman and the growing fetus. It is defined by high blood sugar levels throughout pregnancy. GDM usually resolves after childbirth; nevertheless, mothers with GDM and their babies are at risk of developing type 2 diabetes in the future. [2]

Treatment of diabetes

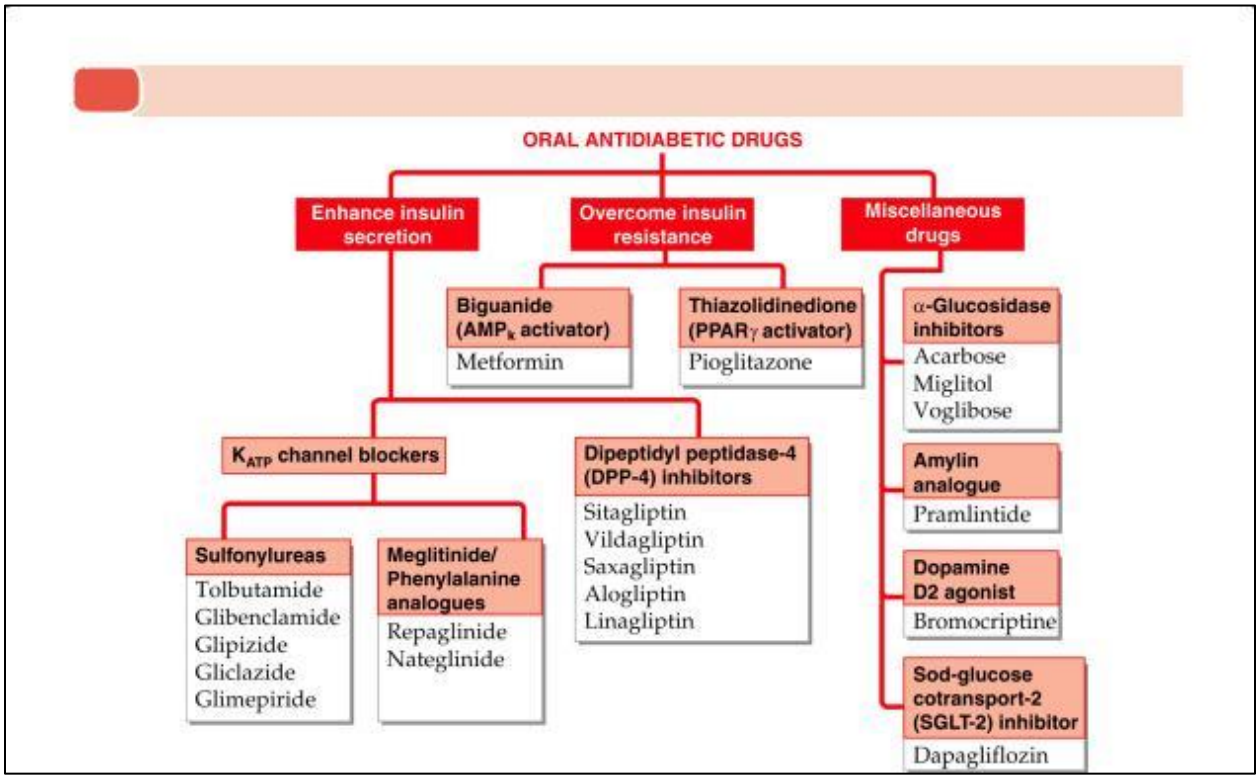


Figure 1: Classification of oral Antidabetic drugs

Source: KD Tripathi

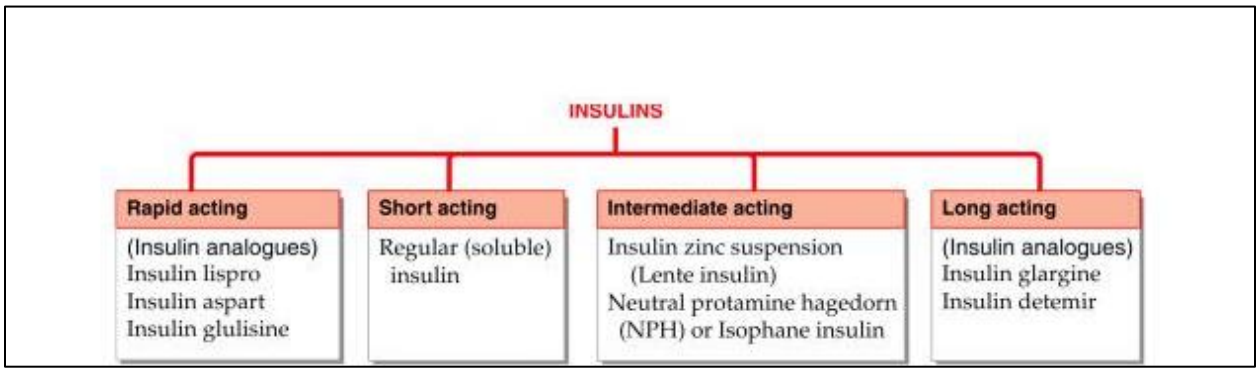


Figure 2: Types of insulins

Source: KD Tripathi

Diabetes incidence has increased to worrisome proportions worldwide, causing serious problems for people, healthcare systems, and the pharmaceutical sector. Diabetes, because of its chronic nature and global impact on millions of individuals, demands proper care through a variety of therapeutic measures, including the use of antidiabetic medicines. To achieve the best possible patient results and commercial success, it is essential for pharmaceutical firms as well as healthcare practitioners to understand consumer behavior and market dynamics around these products.

With millions of people affected globally, diabetes has become an epidemic on a global scale. According to the IDF, there were roughly 463 million people living with diabetes worldwide in 2019. It is expected that by 2045, this amount would have risen to 700 million. [2]. There is a growing need for efficient treatment alternatives as diabetes prevalence rises. The market for anti-diabetic medications has seen substantial expansion and competition in recent years, and they are essential for controlling illness. Pharmaceutical businesses that want to succeed in this changing environment must thoroughly research the industry and understand customer behavior.

Nationwide research on diabetes conducted by the ICMR found that India now has 62.4 million diabetics. By 2030, this is projected to reach more than 100 million. Diabetes prevalence among adults in India has crossed 20% in urban areas and is 10% in rural areas [1].

Insulin and oral hypoglycemic agents (OHA) are two kinds of anti-diabetic medications that are now used to treat diabetes. These medications work in distinct ways to lower blood glucose levels and maintain efficient optimal glucose concentration in the serum.

Despite the efficacy of modern anti-diabetic drugs, suboptimal hyperglycemia treatment remains due to variables such as patient noncompliance, clinical inertia, insulin resistance, lack of physical activity, and inadequate dietary control. Few studies in India have concentrated on diabetes treatment and given an understanding of the patient profile and management at the moment. Most diabetics—more than 50%—have diabetic vascular problems, poor glycemic control, uncontrolled hypertension, and dyslipidemia.

The definition of rational drug usage is "that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of

time and at the least cost to them and their community." Studies on drug utilization can be used to evaluate population drug usage rationality [1].

Demand for and use of healthcare items are significantly influenced by consumer behavior. Adoption and adherence to antidiabetic medications are significantly influenced by factors such patient preferences, perceptions, and attitudes towards treatment alternatives. The accessibility and availability of antidiabetic drugs are also greatly impacted by the market's dynamic structure, which includes regulatory frameworks, price plans, and rivalry among pharmaceutical firms [1].

This study paper's objective is to offer a thorough examination of consumer behavior and market research in relation to diabetes medications. We want to provide insight on the fundamental elements that underlie decision-making processes, shape market trends, and ultimately affect the efficacy of anti-diabetic pharmacological therapy by investigating the interactions between consumers, healthcare professionals, and pharmaceutical corporations.

The pharmaceutical sector must have a thorough understanding of customer behavior, especially when it comes to antidiabetic medications. Pharmaceutical firms may better cater their marketing strategies, product development, and communication efforts to better fit the requirements and preferences of their target consumers by understanding the elements that influence consumers' purchase decisions. Increased market share, greater drug adherence, and improved patient outcomes can result from these insights.

Additionally, healthcare professionals such as doctors, chemists, and diabetes educators might gain advantage from an awareness of consumer behaviors. With the use of these insights, they may be better able to inform and interact with patients, which may eventually improve medication adherence and overall illness management.

This study will examine many crucial factors through a methodical literature review, qualitative interviews, and quantitative surveys:

Consumer Decision-Making Processes: In this section, we'll examine the variables that influence people's decisions about antidiabetic medications, including their effectiveness, safety, side effects, cost, and convenience. Healthcare organizations and pharmaceutical firms may create specialized tactics to improve patient involvement and medication adherence by understanding these decision-making processes.

Views and Attitudes: This research attempts to ascertain consumers' views and attitudes regarding various antidiabetic treatment classes, such as oral medicines, injectables, and cutting-edge therapy choices. Analyzing these impressions allows us to pinpoint obstacles to acceptance and create specialized training initiatives to clear up misperceptions and boost patient acceptability.

Market Dynamics: The inquiry into market dynamics will include a look at the pricing strategies, reimbursement plans, and regulatory frameworks that are in place for antidiabetic medications, as well as a comparison of the competitive environment. Understanding these dynamics can help in identifying market possibilities, potential obstacles, and areas for development to guarantee the accessibility and affordability of these treatments.

Digital Health Solutions: With the development of digital health technology, a variety of creative solutions have been developed to aid in the treatment of diabetes. In this study, we will investigate how consumer behavior, treatment adherence, and market landscape are impacted by digital health instruments, such as wearables and smartphone applications.

This study article intends to offer insightful information for medical professionals, decision-makers, and pharmaceutical corporations by analyzing the complex interaction between consumer behavior and market dynamics in the context of antidiabetic medications. In the end, these discoveries will support the development of patient-centric strategies, optimized medication therapy, and a better market environment, resulting in better results for people with diabetes.

CHAPTER 2

REVIEW OF LITERATURE

SR. NO.	TITLE	AUTHORS	STUDY PATTERN	SALIENT FEATURES
1.	Assessment of Prescription Pattern of Antidiabetic Drugs in the Outpatient Department of a Tertiary Care Hospital	Ashutosh Kakade, Ipseeta Ray Mohanty, Sandeep Rai	Observational, cross-sectional, and descriptive research design.	• The research calculates the proportion of anti-diabetic medications that are administered as monotherapy or combination treatment. • Sulfonylureas (Glimepiride) and metformin were the two medications for diabetes that were most often administered. • Biguanides and sulfonylureas were the two medication classes most frequently used among those used as monotherapy for diabetes. • Metformin and Glimpiride is the most prescribed combination drug. • Vildagliptin and Metformin was the most often prescribed Fixed combination drug.
2.	Physician and pharmacist opinion	Rastogi Vaibhav,	Cross-sectional survey type of study.	• Despite the fact that numerous pharmaceutical firms, recent company and

	on diabetes mellitus and the most commonly prescribed anti-diabetic drug in various districts of Uttar Pradesh, India	Kumar Bhaskar, Kumar Deepak, Kumar Arvind, Porwal Mayur, Yadav Pragya, Prasad Neelkant, Rastogi Pallavi		consumer changes are providing new problems and chances for growing profitability. • In the relevant product categories, namely Metformin alone, Metformin and Glimepiride, Metformin and Gliclazide, and Metformin and Voglibose, the brands Glyciphage, Melmet, and Obimet had the greatest sales in the respective region.
3.	Prescribing pattern and efficacy of anti-diabetic drugs in maintaining optimal glycemic levels in diabetic patients	Akshay A. Agarwal, Pradeep R. Jadhav , Yeshwant A. Deshmukh	Cross-sectional, prospective, observational study	• While there is an increasing tendency towards the utilization of insulin for the therapy of diabetes Type 2, oral hypoglycemic medications continue to dominate the prescribing pattern. • The effectiveness of anti-diabetic medications was only 41% in helping patients achieve optimum glycemic control; as a result, it is important to step up the pace of current medication use in conjunction with lifestyle

				changes to prevent diabetes complications. • The majority of doctors continue to treat Type 2 diabetes with sulfonylureas and biguanides. • Metformin was the most often given medicine, with Glimepride close behind. • Near physiologic administration of Insulin provides better glycemic control.
4.	Study of Consumer's Pharmaceutical Buying Behavior Towards Prescription and Non-Prescription Drugs	Neelkanth M Pujari, Anupam K Sachan, Puja Kumari, Priyanka Dubey	To determine the responses to the research questionnaire, quantitative research has been used in empirical research.	• The aim of this study was to investigate the factors that impact pharmacy customers' decisions to purchase both prescription and over-the-counter medications. • The decision-making process and the variables influencing the selection of a pharmacy, generic drugs, and medications with comparable prices have also been researched. • Medical prescriptions have a substantial impact on 38% of people's medication purchasing decisions, 14% of

				people follow chemist recommendations, 20% buy branded drugs, 16% buy generics, 5% consider medicine cost, and 7% consider accessibility.
5.	Prescription of oral hypoglycemic agents for patients with type 2 diabetes mellitus: A retrospective cohort study using a Japanese hospital database	Makito Tanabe, Ryoko Motonaga, Yuichi Terawaki, Takashi Nomiyama, Toshihiko Yanase	Cohort, retrospective, longitudinal study type.	• Among patients who were initially prescribed an OHA other than a DPP-4 inhibitor, the second prescription most commonly selected, in addition to the initial OHA, was a DPP-4 inhibitor, with biguanides being the subsequent choice. • The DPP-4I group of patients saw the largest improvement in HbA1c levels after receiving an OHA initially for a continuous period of two years. • Incretin medication has various advantages, including preserving pancreatic beta-cells, lowering the risk of weight gain, and reducing the number of hypoglycemia episodes.
6.	Cost comparison between Branded medicines and Jan	P. Yuvanesh, Dr. P. Geetha	Cross sectional survey	• Concerns concerning the accessibility of appropriate medications in adequate

	Aushadhi medicines			quantities, of high quality, and at fair prices are shared by international and national organizations working on health-related projects and initiatives. • In the majority of the nations in the area, generic medications reduced drug costs by 61 percent. • About 6 Janaushadhi medications are 0–50% less expensive than branded medications, while 14 Janaushadhi medications are more than 50% less expensive than branded medications out of a total of 20 antidiabetic medications. • The average cost difference range for antidiabetics was found out to be 0-90%.
7.	Prescription Pattern Analysis of Antidiabetic Drugs in Diabetes Mellitus and Associated Comorbidities	Mohd Mahmood, Ronda Charitha Reddy, J R Soumya Lahari, Sadiya Fatima, Pooja Shinde, S Anand Reddy,	Prospective observational study	• Compared to women, people with diabetes mellitus tend to be men. • Polypharmacy is one of the issues which can be avoided by avoiding the prescription of certain IV fluids, multivitamins, etc. in turn

		Pranali S Pandit		reducing the cost of prescription. • Since most of the participants in the study had type 2 diabetes mellitus, oral hypoglycemic medications are most frequently administered.
8.	Consumer behavior towards antidiabetic drugs in South India.	Sankar P, Sasidharan S, Sankar B.	Cross-sectional study	• Emphasizes the significance of drug effectiveness, safety, and cost in customer decision-making.
9.	Consumers' behavior towards oral antidiabetic drugs in Bhubaneswar, Odisha: A cross-sectional study	Mishra D, Aluri S.	Cross-sectional study	• Consumer behavior in relation to diabetes medications is substantially influenced by patient education, medical recommendations, and brand reputation.
10.	Indian antidiabetic drug market: An update.	Bharadwaj VK, Singla N, Ravi RK, Gupta V.	Mixed methods	• This study investigated the antidiabetic medicine market landscape in India, highlighting the competitive climate, pricing tactics, and distribution methods, with a focus on multinational corporations' dominance and the existence of generic alternatives.

11.	Influence of socio-demographic factors on treatment adherence and treatment outcome in type-2 diabetes mellitus: An Indian perspective.	Das S, Nayak R, Biswas S, Datta P, Mukherjee A.	Cross- sectional study	• When it comes to influencing consumer attitudes towards diabetes medications, demographic factors are crucial. Age, income, education, and employment all have an impact on drug choices, adherence, and treatment results, according to research done in India by Das et al. (2020).
12.	Gender differences in medication preferences and adherence among patients with type 2 diabetes mellitus in Northern India.	Vashistha V, Mishra D, Singh R.	Cross- sectional study	• Gender disparities in medication choices and compliance among diabetics were identified.
13.	Strategic marketing of pharmaceuticals: An analysis of the market's status quo.	Manos D, Manos A, Geropanta E, Manos N.	Cross- sectional study	• Examined the marketing tactics and promotional methods used by medication manufacturers to advertise their antidiabetic products. • The study emphasized the value of physician influence, direct-to-consumer advertising, and brand positioning.
14.	Patient satisfaction with diabetes treatment:	Kalyango JN, Owino E, Nambuya AP,	Cross- sectional study	• Patient satisfaction and adherence to diabetes medications have been

	Association with medication adherence and glycemic control among adult diabetic patients attending medical outpatient clinic at Mulago Hospital.	Nambafu O, Alupo P.		studied, with an emphasis on the influence of pharmacological effectiveness, side effects, convenience, and treatment results. • Kalyango et al. (2019) conducted a study that focused on patient satisfaction with diabetes treatment and its relationship with medication adherence, emphasizing the importance of patient-centered care.
15.	Influence of demographic factors on consumer behavior towards antidiabetic drugs in urban areas of India.	Joshi, V., & Patel, P. (2018).	Cross-sectional study	• Investigated the impact of demographic characteristics on consumer behavior towards diabetes medicines in Indian cities. • Age, income, education level, and employment all had different effects on drug preferences, decision-making processes, and treatment adherence, according to the study. • These findings highlight the need of taking demographic differences into account when establishing marketing

				and communication strategies.

CHAPTER 3

METHODOLOGY

RESEARCH DESIGN:

An integrated research methodology (cross-sectional study) including both qualitative and quantitative methodologies will be used in this study. By using this method, it would be possible to gain a thorough understanding of market dynamics and consumer behavior in relation to antidiabetic medicine use in an Indian urban setting.

DATA COLLECTION:

Primary data: To gather the primary data, surveys and interviews will be used. To collect quantitative data on consumer preferences, variables impacting medicine choice, information sources, and demographic data, a structured questionnaire will be created. An urban resident sample who has been diagnosed with diabetes will be given the questionnaire. A group of participants will also be subjected to in-depth interviews in order to get qualitative insights into their experiences and viewpoints.

Secondary data: Secondary data can be collected from academic articles, market reports, trade journals, and official government documents. This information will serve as a theoretical underpinning and aid in the examination of the source data.

STUDY SAMPLE AND SETTING:

The sample for this study would be made up of people living in an urban area in India, including 50 diabetic patients, 50 chemists and 25 physicians. To guarantee the inclusion of people from various demographic backgrounds, including various age groups, genders, economic levels, and educational backgrounds, a purposive sample approach will be used. The sample size will be chosen in accordance with the saturation principles, ensuring adequate data saturation for qualitative insights and a suitable sample size for quantitative analysis.

DATA ANALYSIS:

Quantitative Analysis: The quantitative survey data will be evaluated using statistical tools.

Qualitative analysis: Thematic analysis will be used to analyze the qualitative information from the in-depth interviews.

ETHICAL CONSIDERATIONS:

The entire study procedure will adhere to ethical standards. All participants will be asked for their informed permission, and their anonymity and privacy will be maintained. The research will be done in compliance with the rules and ethical standards that have been established by the research institution and the appropriate authorities.

LIMITATIONS OF THE STUDY:

The use of self-reported data, the possibility of recall bias, and the fact that the study's conclusions can only be applied to one particular Indian major center are only a few of the study's shortcomings. By using exacting methods for data collecting and analysis and making sure that the sample procedures are acceptable, the study will make an effort to overcome these constraints.

CHAPTER 4

OBJECTIVES

The research paper titled "Consumer Behavior and Market Investigation of Antidiabetic Drugs in an Urban City of India" aims to achieve the following objectives:

- To examine the factors influencing consumer behavior towards antidiabetic drugs: This objective involves exploring the various factors that impact consumer preferences, decision-making processes, and purchasing behavior regarding antidiabetic medications. It aims to identify the key determinants that influence consumer choices in the urban city of India.

- To investigate the market dynamics of antidiabetic drugs in the urban city: This objective involves conducting a comprehensive market investigation to understand the market trends operating in the urban city. It aims to analyze the market segmentation, market share, pricing strategies, and distribution channels related to antidiabetic drugs.

- To determine the impact of demographic characteristics on customer behavior, such as age, gender, income, education level, and occupation. Its specific goal is to investigate how these demographic characteristics influence customer preferences and purchase decisions for diabetes medications. The study aims to discover notable changes in consumer behavior depending on these demographic parameters.

- To assess consumer satisfaction and adherence to antidiabetic drugs: This objective aims to evaluate consumer satisfaction levels with their chosen antidiabetic medications and the extent of adherence to prescribed treatment regimens. It involves assessing factors

that contribute to patient satisfaction, including drug efficacy, side effects, convenience of use, and overall treatment outcomes.

- To provide recommendations for effective marketing strategies and interventions: Based on the findings of the research, this objective aims to offer actionable recommendations to pharmaceutical companies, healthcare providers, and policymakers.

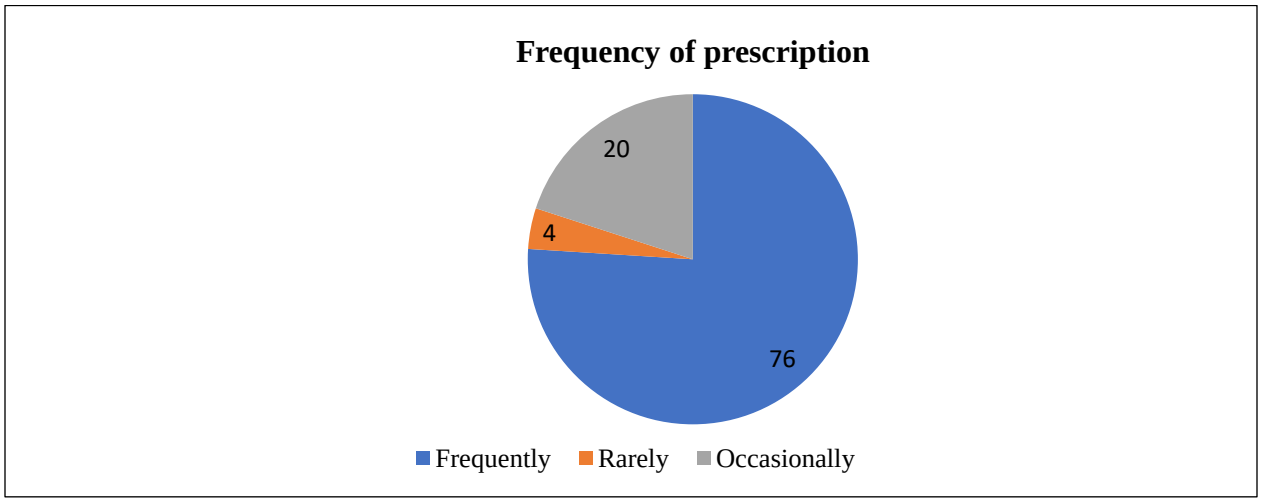
By achieving these objectives, the research paper aims to contribute to the existing knowledge on consumer behavior, market dynamics, and strategies related to antidiabetic drugs in the specific urban context of India. The outcomes of the study can inform decision-making processes, support evidence-based practices, and contribute to the effective management of diabetes in urban population.

CHAPTER 5

RESULTS

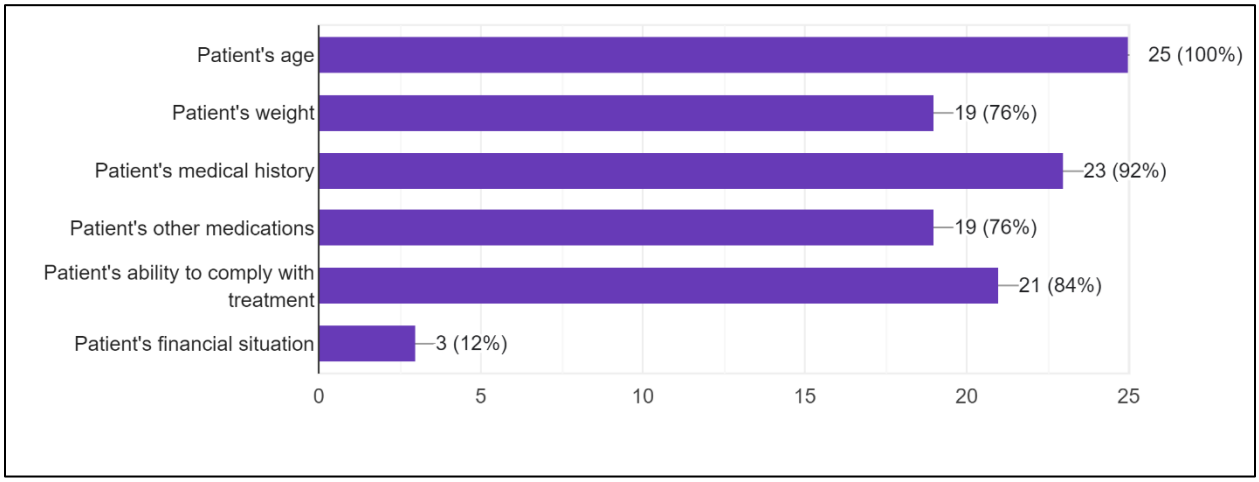
PHYSICIAN'S PERSPECTIVE:

How often do you prescribe antidiabetic drugs to your patients?



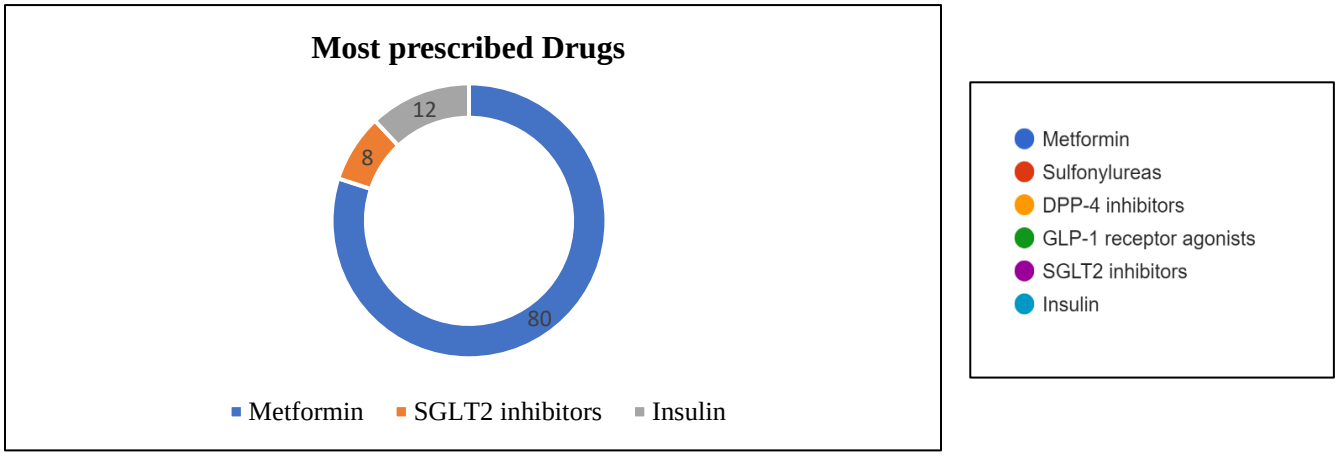
Graph 5.1 Frequency of antidiabetic prescriptions

What factors do you consider when deciding on the appropriate antidiabetic drug for your patients? (Please select all that apply)



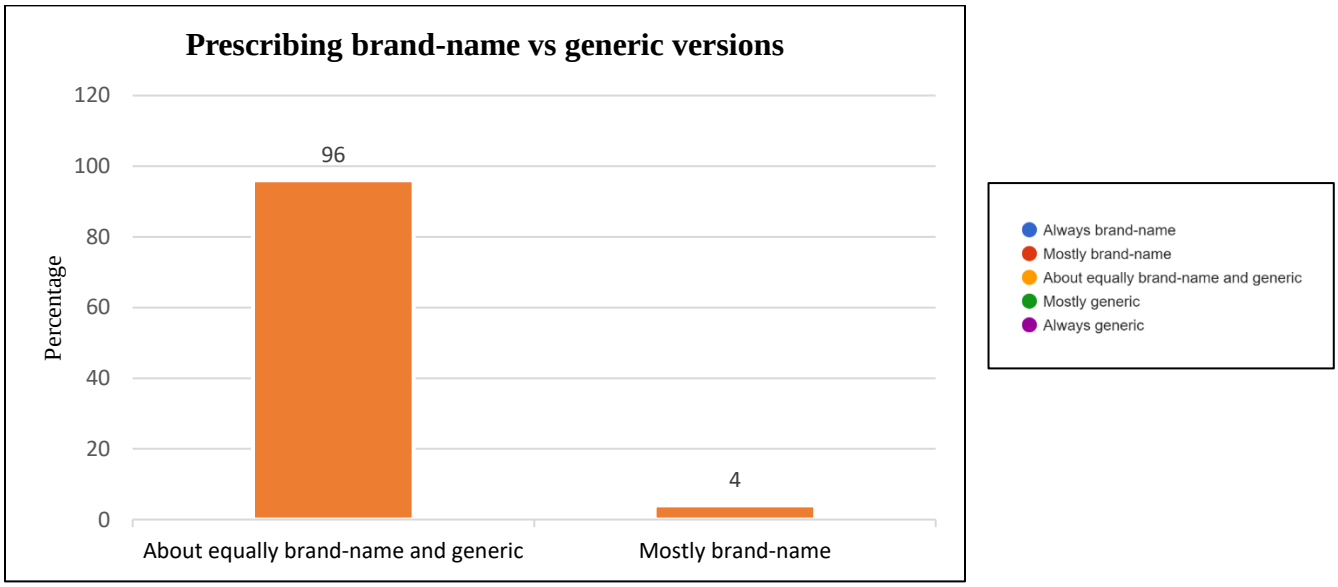
Graph 5.2 Deciding factors for appropriate prescription.

What is the most prescribed antidiabetic drug among your patients?



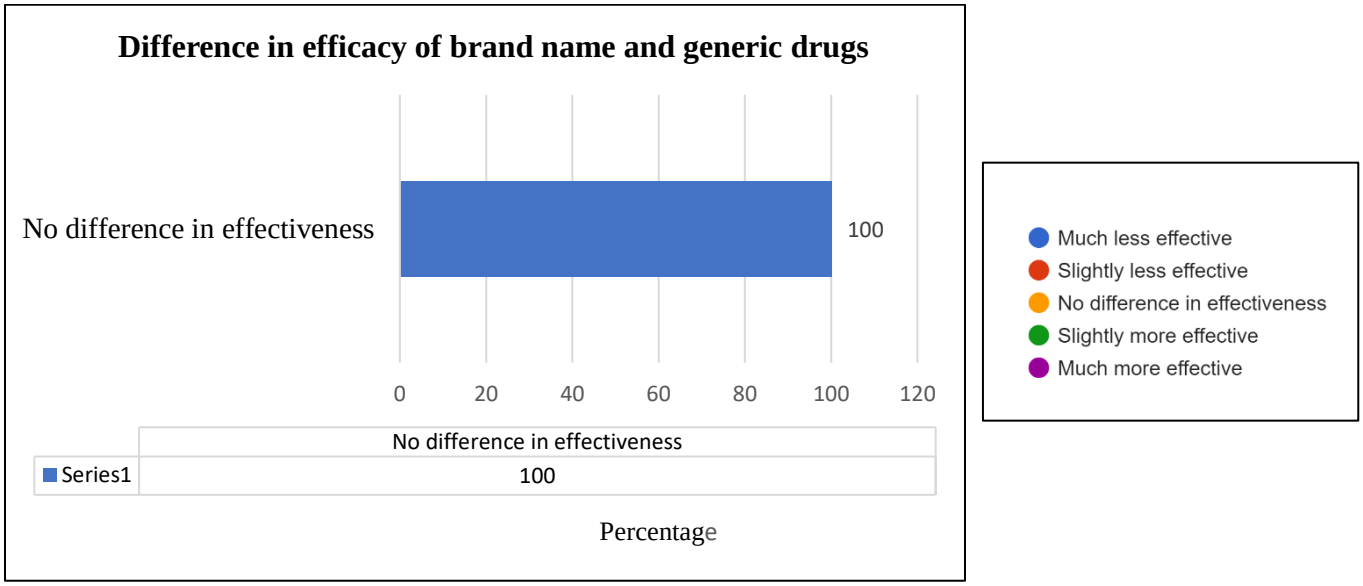
Graph 5.3 Most prescribed antidiabetic drugs

How often do you prescribe brand-name antidiabetic drugs versus generic versions?



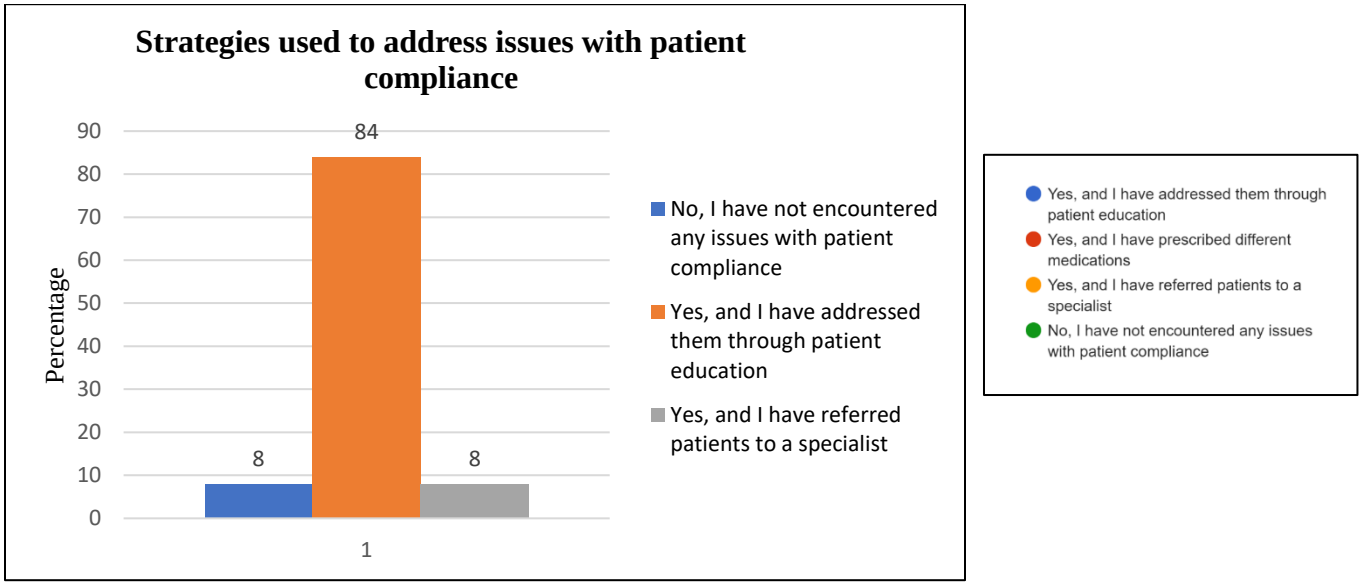
Graph 5.4 Brand-name antidiabetic drugs versus generic versions

What is your opinion on the efficacy of generic antidiabetic drugs compared to brand-name drugs?



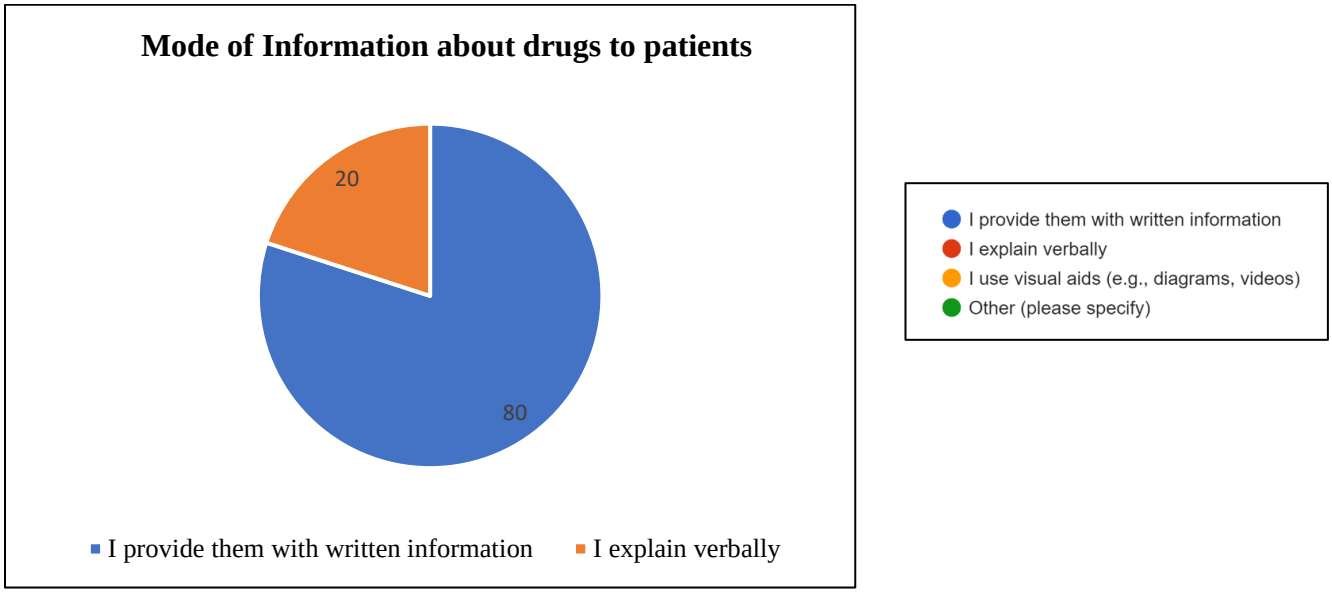
Graph 5.5 Difference in efficacy of brand name and generic drugs

Have you encountered any issues with patient compliance with their antidiabetic drug treatment? If so, what strategies have you used to address these issues?



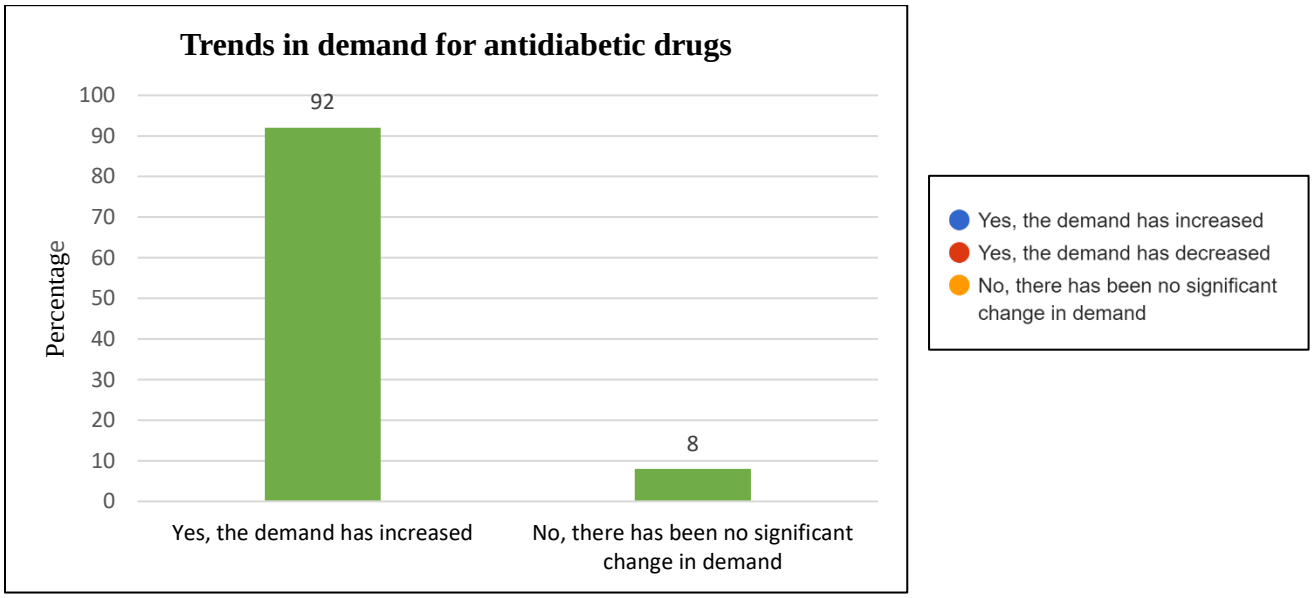
Graph 5.6 Strategies used to address issues with patient compliance.

How do you inform your patients about the potential side effects and risks of antidiabetic drugs?



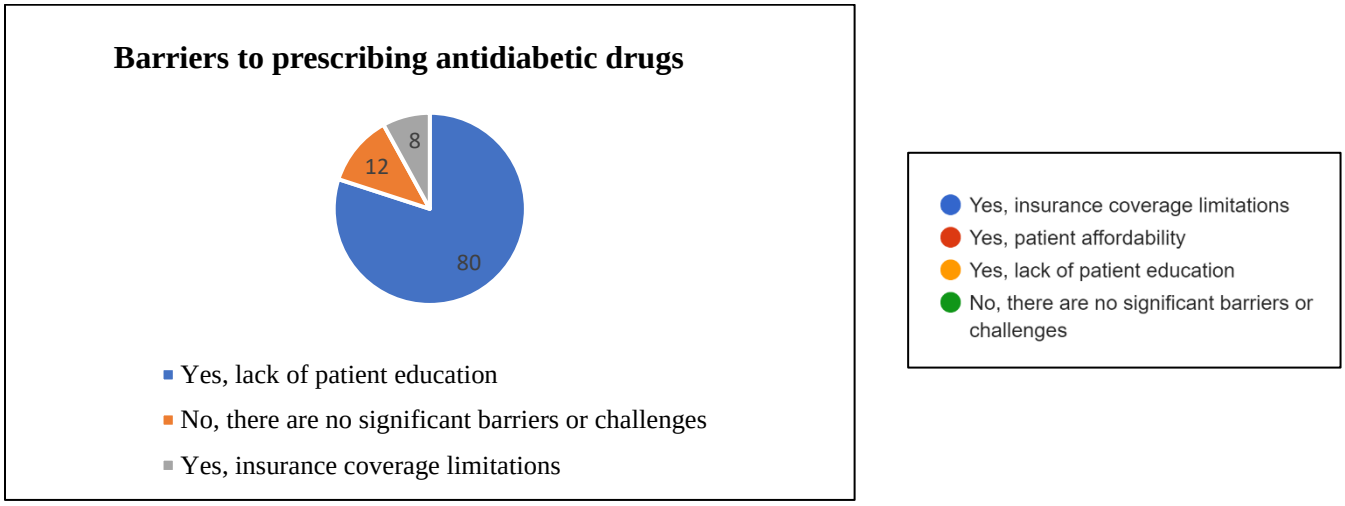
Graph 5.7 Mode of Information to patients

Have you noticed any trends or changes in the demand for antidiabetic drugs among your patients in the past few years?



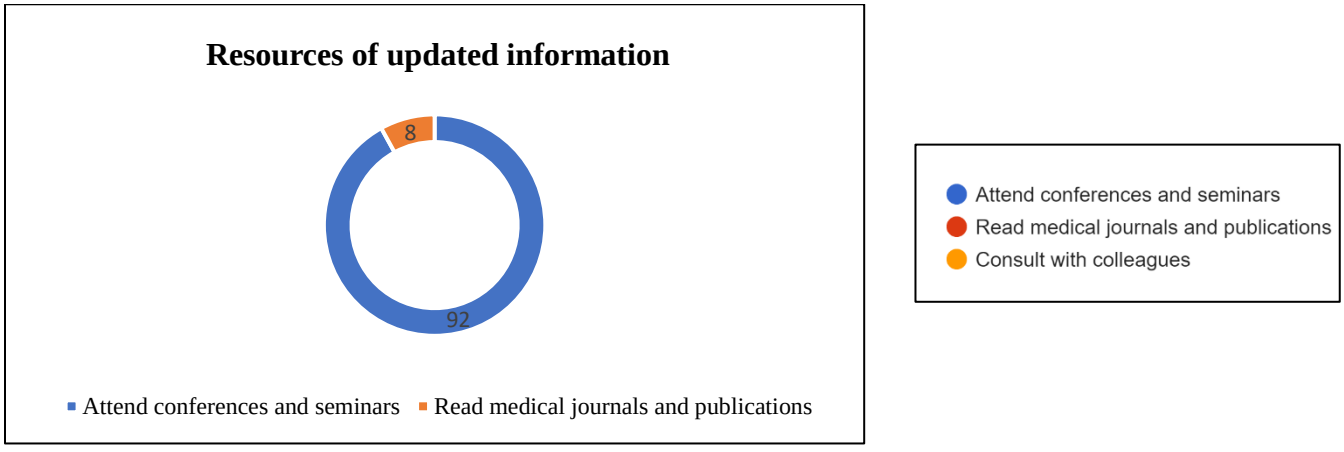
Graph 5.8 Trend in demand for antidiabetic drugs

Are there any challenges or barriers to prescribing antidiabetic drugs in your practice? If so, what are they?



Graph 5.9 Barriers to prescribing antidiabetic drugs

How do you stay updated on the latest developments and research related to antidiabetic drugs?



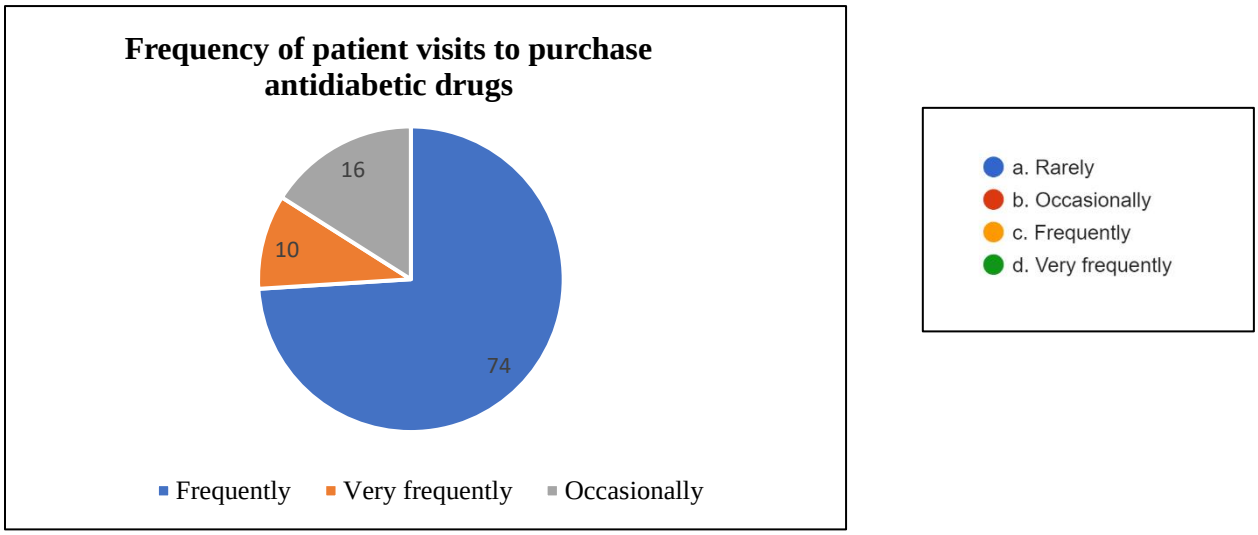
Graph 5.10 Resources to stay updated on the information

PHYSICIAN'S PERSPECTIVE:

- Approximately 76% physicians prescribe antidiabetic drugs to patients frequently.
- Factors like patient's age, medical history, their ability to comply with the treatment are taken into consideration when prescribing drugs.
- Metformin, a Biguanide, is the most often given medicine for Type 2 diabetes, accounting for 80% of prescriptions. In contrast, insulin therapy is the major therapeutic option for Type 1 diabetes.
- Brand name and generic drugs are equally prescribed by the physician and are considered to be an equally efficient therapy but a minor portion (about 4%) of the physicians also preferred prescribing brand-name drugs only owing to consumer preferences and awareness.
- 100% of the physician's believed that there was no difference in efficacy of the treatment between brand name and generic drugs.
- Also, patients tend to comply to the treatment better since generic drugs are economic as it is a long-term therapy.
- Most physicians address the problems encountered during the treatment by providing information and educating the patient verbally or in the written format. Patients are referred to specialists in critical conditions.
- Owing to the degrading lifestyle of the generation, the demand for antidiabetic drugs has increased over the years.
- Lack of patient education on the drugs and the disease is a barrier in the prescribing practice of the physicians.
- Most of the sample population (92%) attend conferences to stay updated on the latest developments and research related to antidiabetic drugs.

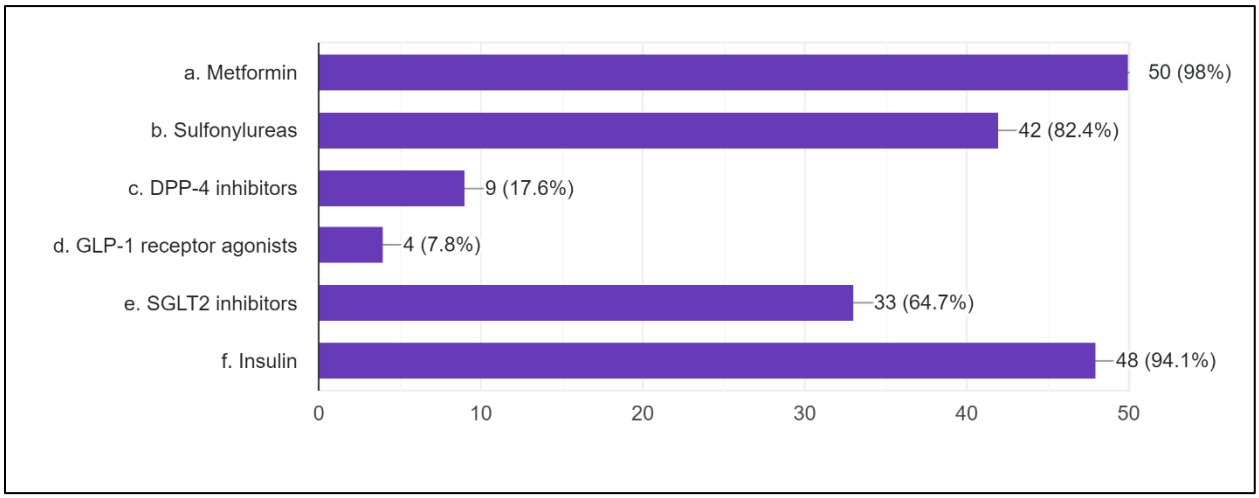
PHARMACIST'S PERSPECTIVE:

How often do patients visit your pharmacy to purchase antidiabetic drugs?



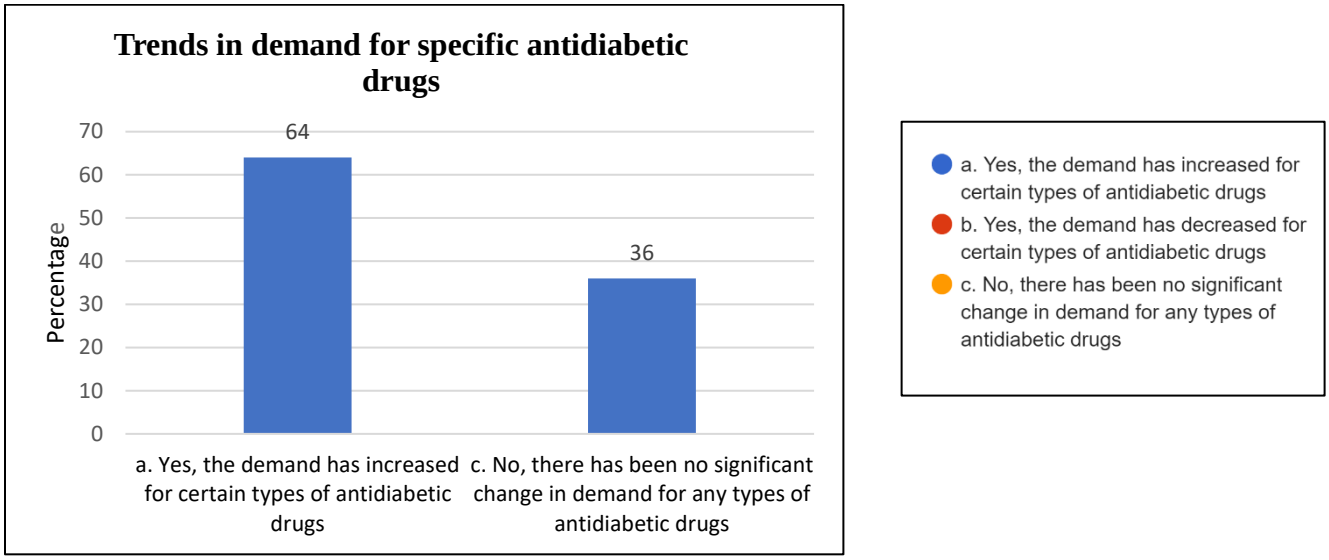
Graph 5.11 Frequency of patient visits to purchase antidiabetic drugs

Which types of antidiabetic drugs do you usually stock in your pharmacy? (Please select all that apply)



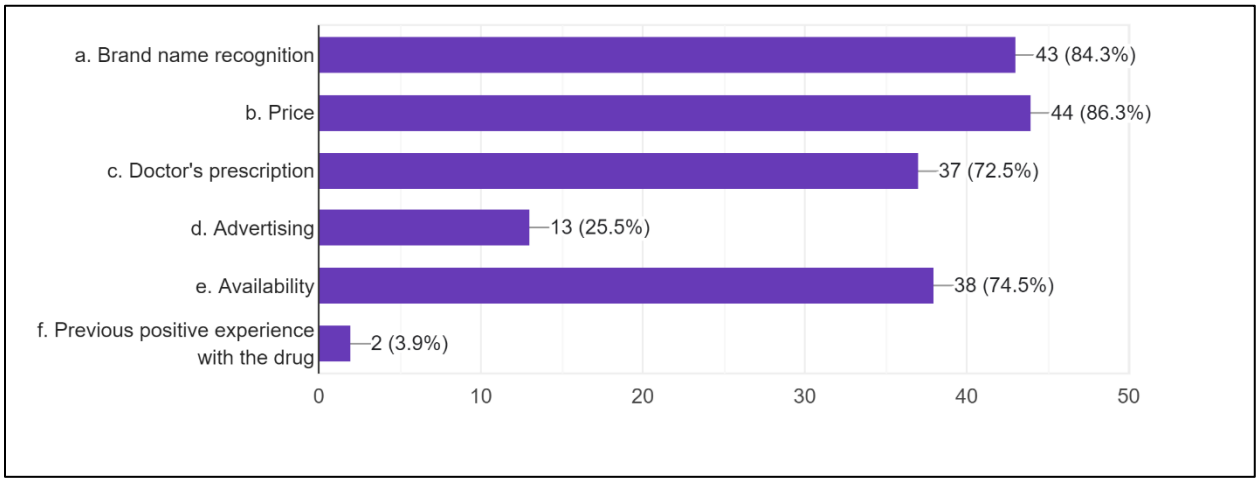
Graph 5.12 Antidiabetic drugs usually stocked up in pharmacies

Have you noticed any trends or changes in the demand for specific types of antidiabetic drugs among your customers in the past few years?



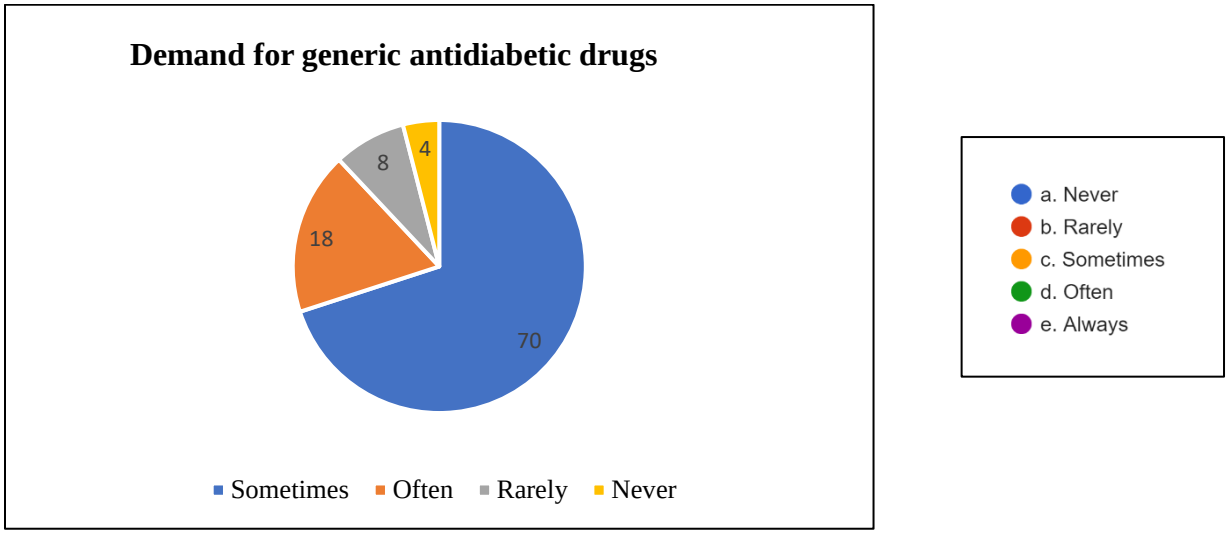
Graph 5.13 Trend in demand for specific antidiabetic drugs

What factors do you think influence customers' decisions to purchase a particular antidiabetic drug from your pharmacy? (Please select all that apply)



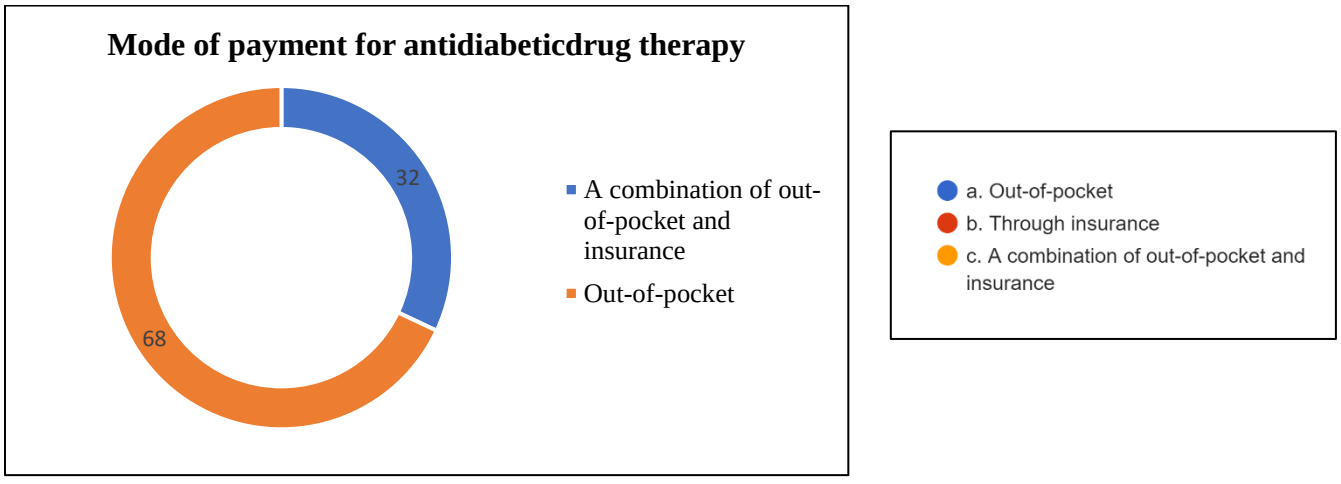
Graph 5.14 Factors influencing customer purchase decisions

How often do customers ask for generic antidiabetic drugs rather than brand-name drugs?



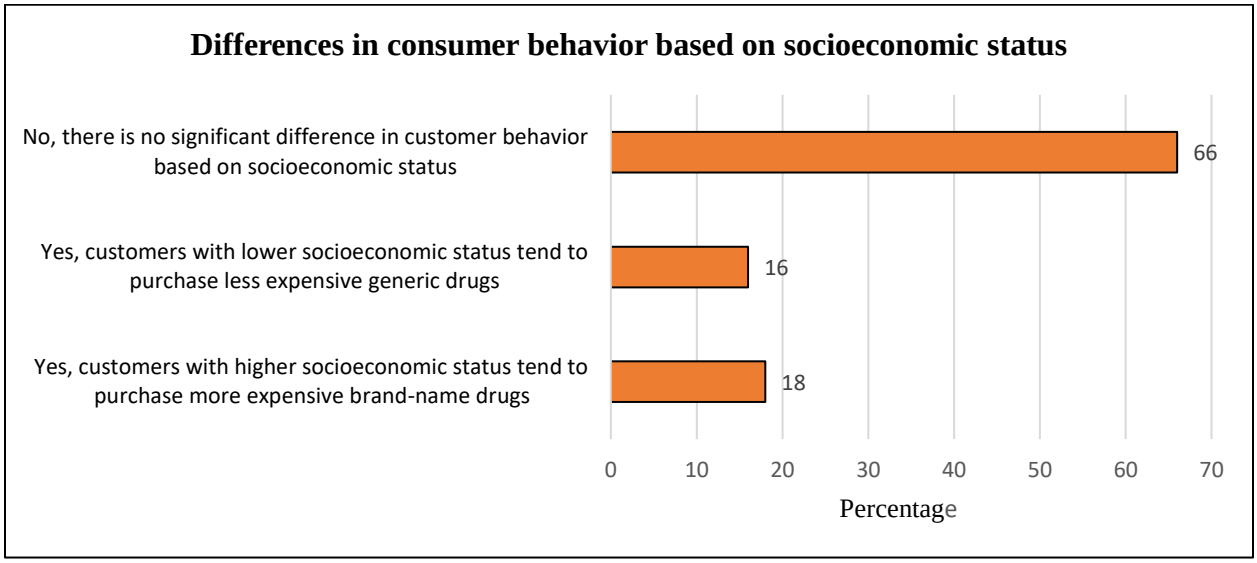
Graph 5.15 Demand for generic antidiabetic drugs

How do customers usually pay for their antidiabetic drugs at your pharmacy?



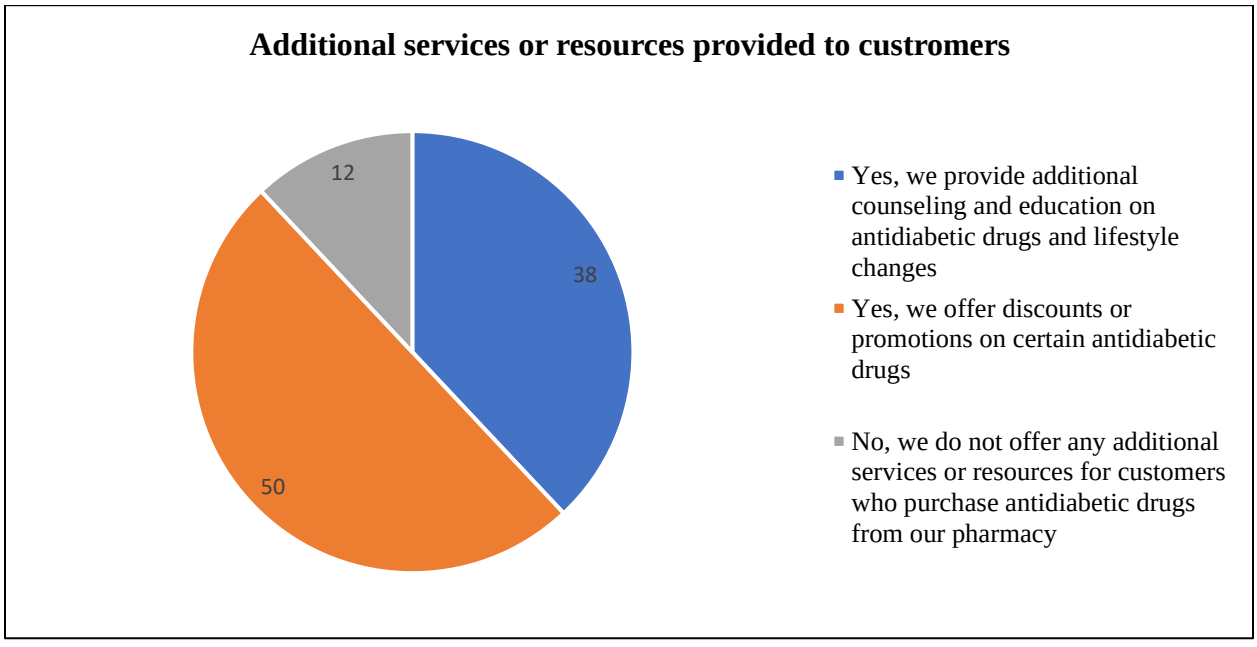
Graph 5.16 Mode of payment for antidiabetic therapy

Have you noticed any differences in customer behavior and preferences based on their socioeconomic status?



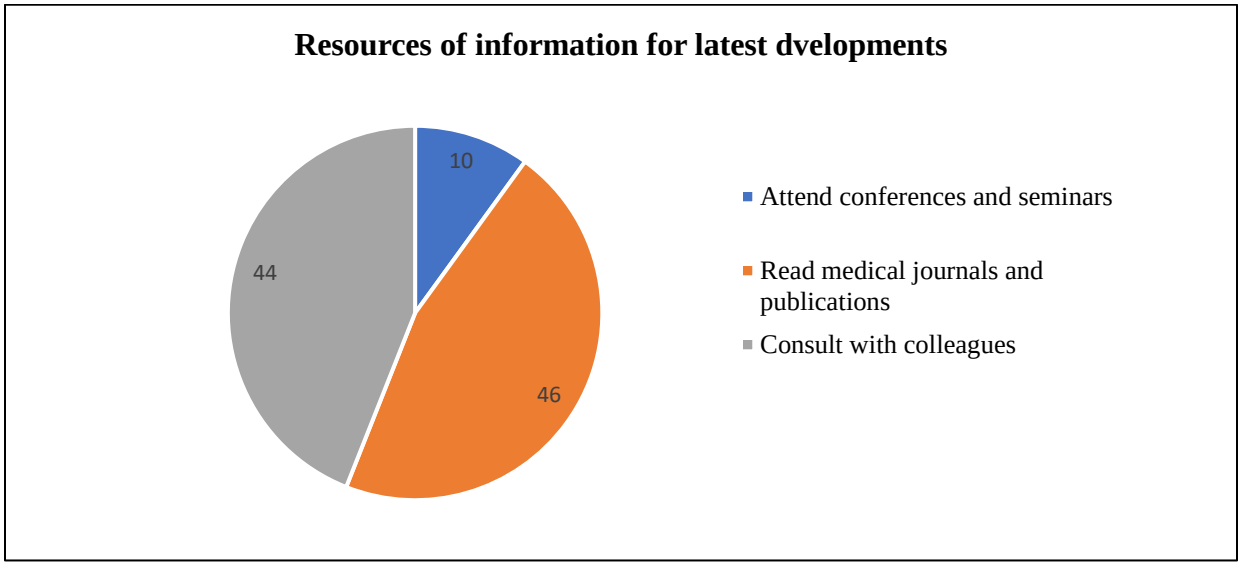
Graph 5.17 Differences in consumer behavior based on socioeconomic status

Do you offer any additional services or resources for customers who purchase antidiabetic drugs from your pharmacy?



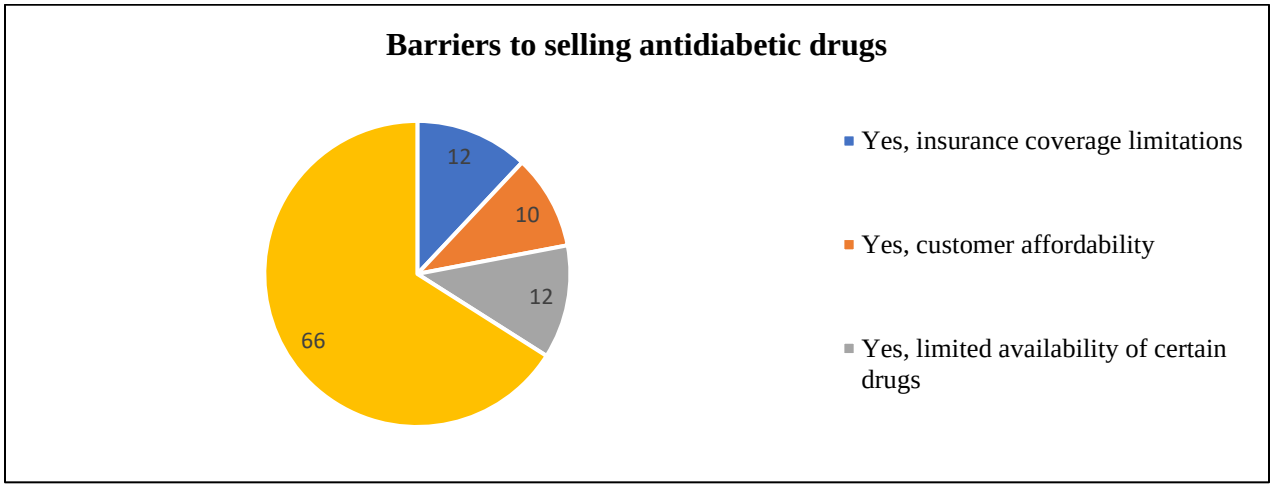
Graph 5.18 Additional services provided to consumers

How do you stay updated on the latest developments and research related to antidiabetic drugs?



Graph 5.19 Resources of information for latest developments

Are there any challenges or barriers to selling antidiabetic drugs in your pharmacy? If so, what are they?



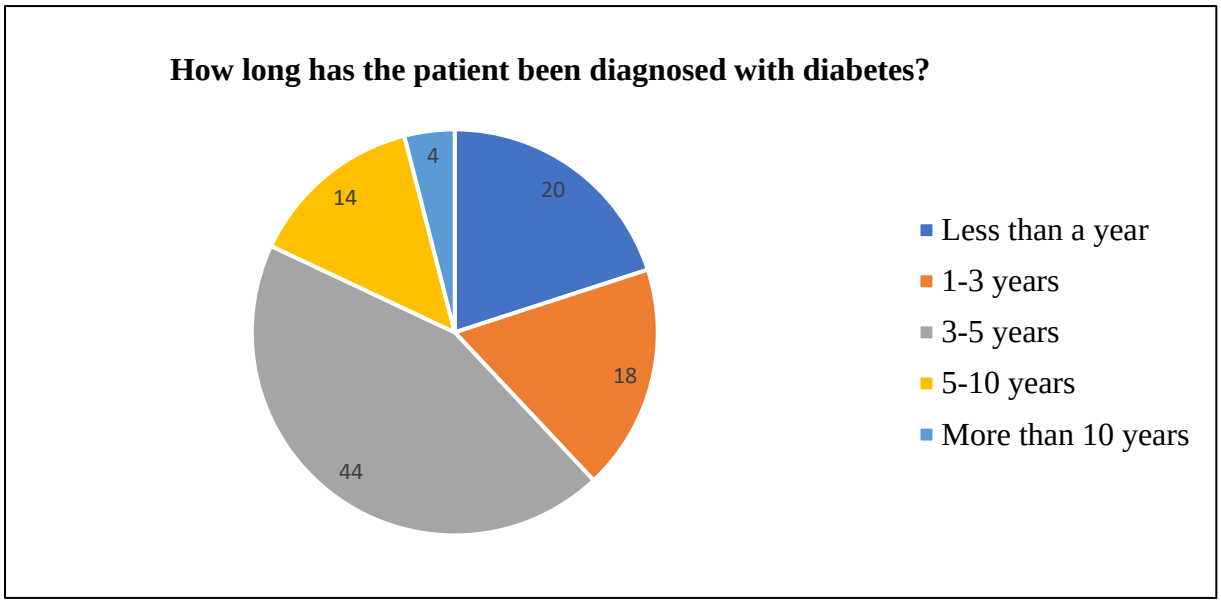
Graph 5.20 Barriers to selling antidiabetic drugs

PHARMACIST'S PERSPECTIVE:

- Owing to various reasons such as deteriorating lifestyles of the people and the therapy being a long-term therapy people frequently visit pharmacy stores to buy antidiabetic medicines.
- Majority of the pharmacists preferred stocking up fast-moving drugs such as Metformin followed by Insulin and Sulfonylureas.
- The demand for antidiabetics has increased over the years and factors such as doctor's prescription, price, availability and brand name recognition affect the prescription behavior of physician's and buying behavior of consumers.
- About 70% of the surveyed pharmacists were of the opinion that people do ask for generic drugs hence it can be concluded that the general public is aware of the generics.
- Most people pay for the therapy from their pockets and are not insured. Hence, the coverage of the insurance is a concern that should be looked into and also educate the general population.
- About 38% pharmacists even provided education in their capacity about the drugs whenever required and about 50% provided discounts on the medications (legally possible) as a part of additional service.
- Few patients with higher socioeconomic status preferred purchasing branded medicines only and are resistant to purchasing generic medicines whereas majority of the patient population.
- Pharmacists would read medical journals or consult with their colleagues to form their perspective on the market trends, newer research and developments and pharmaceutical companies.
- Overall, around 66% pharmacists among the studied population did not face any significant challenges to sell antidiabetic drugs in their area.

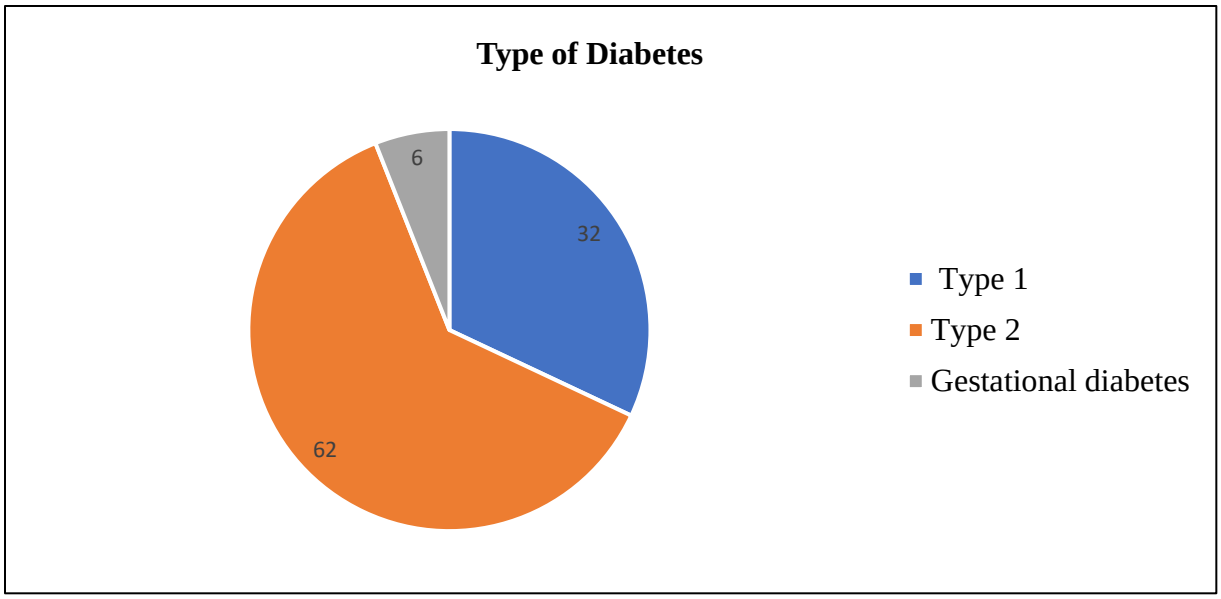
PATIENT'S PERSPECTIVE:

How long have you been diagnosed with diabetes?



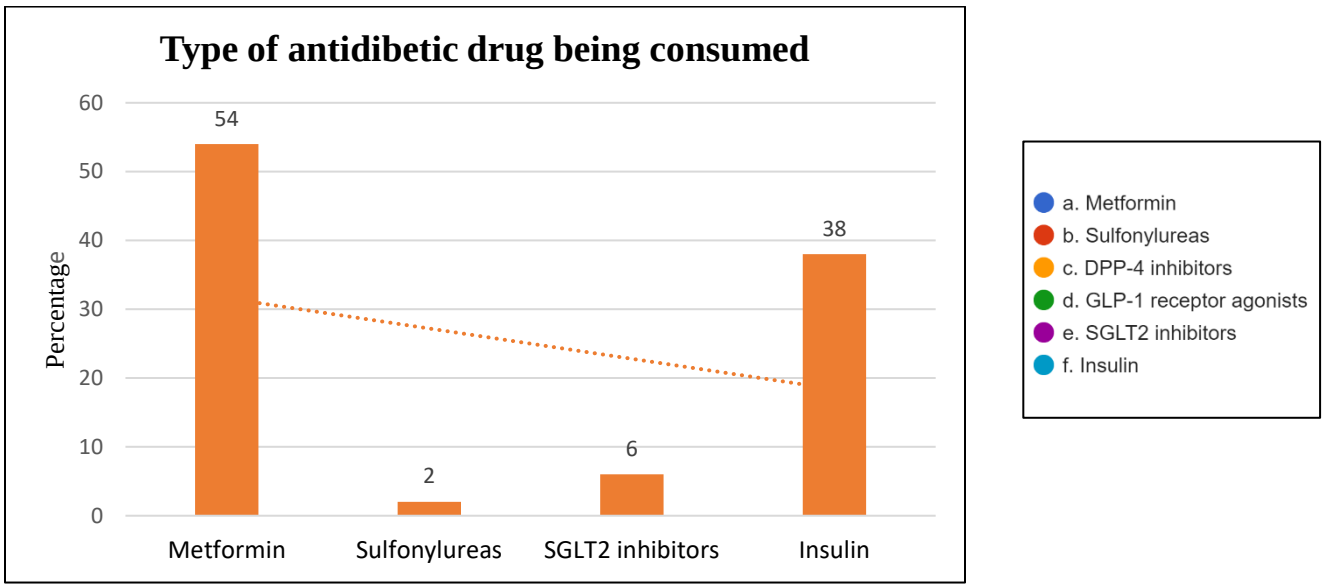
Graph 5.21 How long has the patient been diagnosed with diabetes?

What type of diabetes do you have?



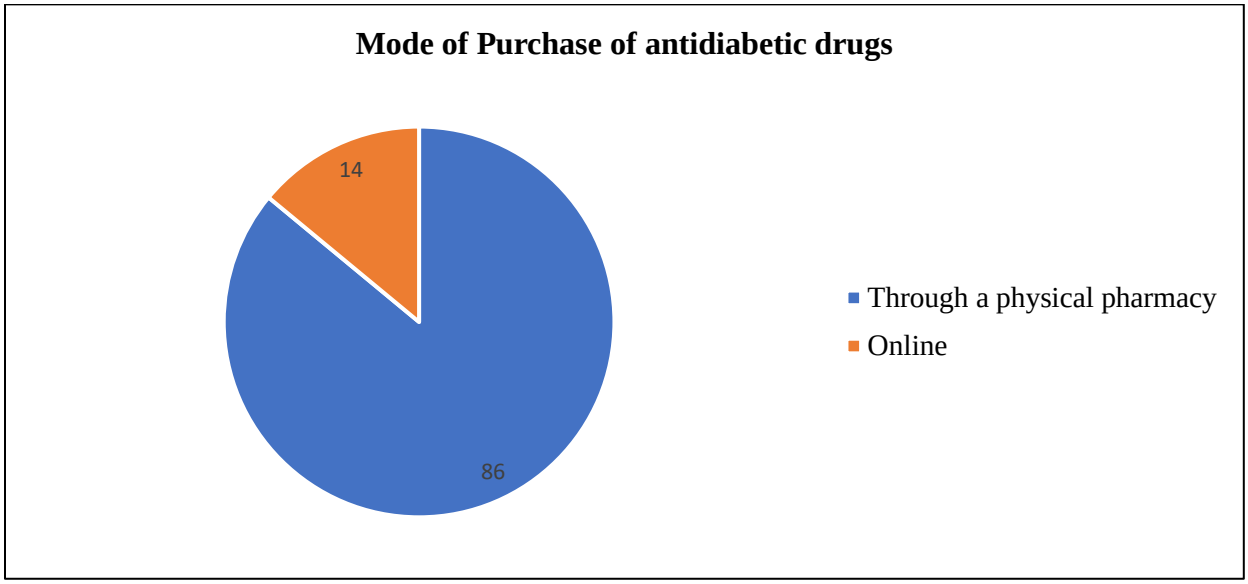
Graph 5.22 Type of Diabetes most prevalent

What type of antidiabetic drugs are you currently taking?



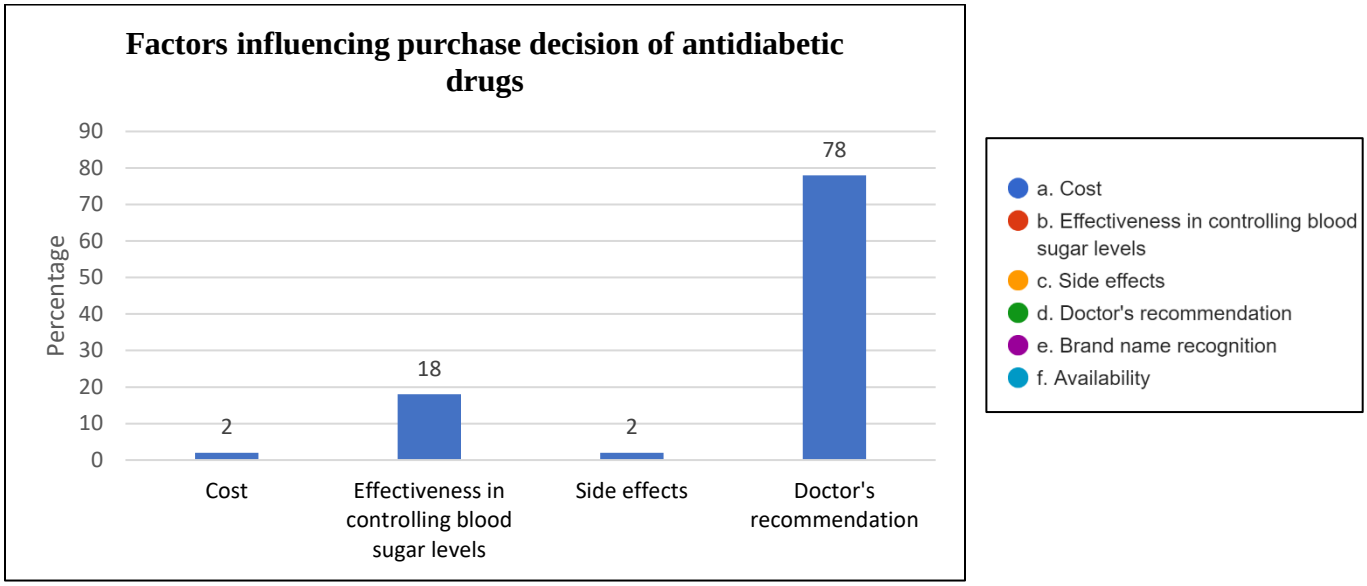
Graph 5.23 Type of antidiabetic drug being consumed.

How do you usually purchase your antidiabetic drugs?



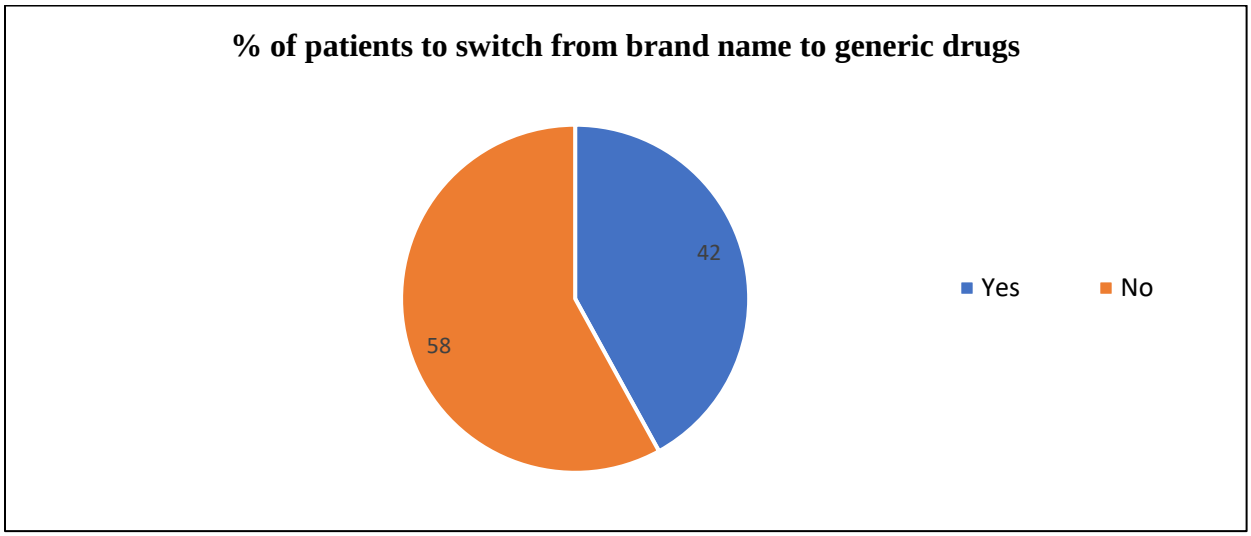
Graph 5.24 Mode of purchase of antidiabetic drugs

What factors influence your decision to purchase a particular antidiabetic drug?



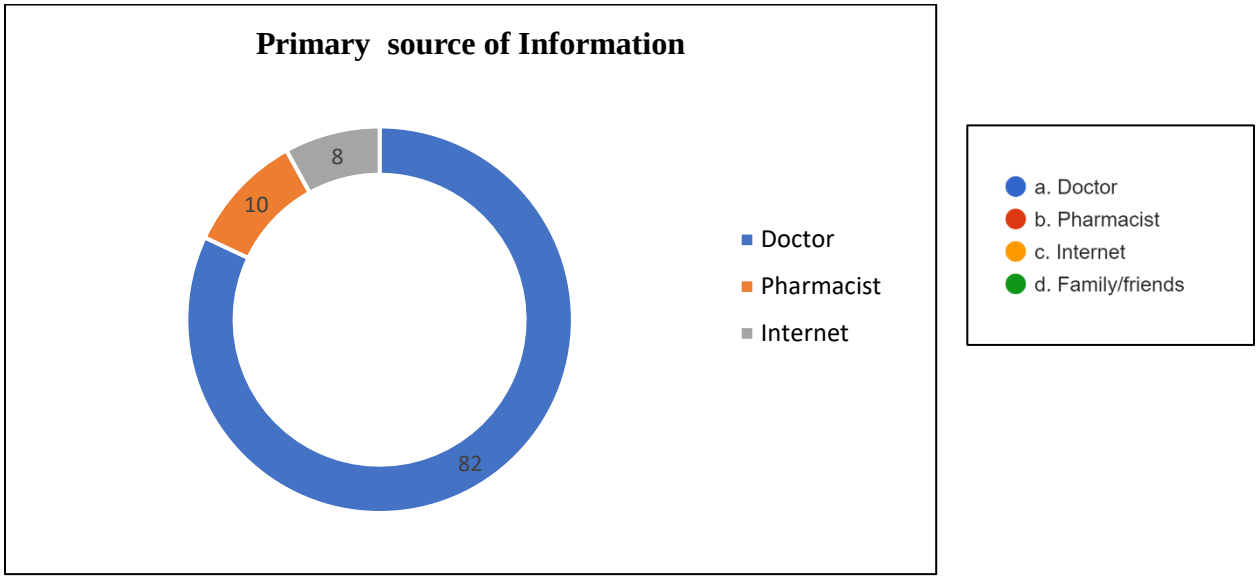
Graph 5.25 Factors influencing purchase decision of antidiabetic drugs.

Have you ever switched from a brand-name antidiabetic drug to a generic version of the same drug?



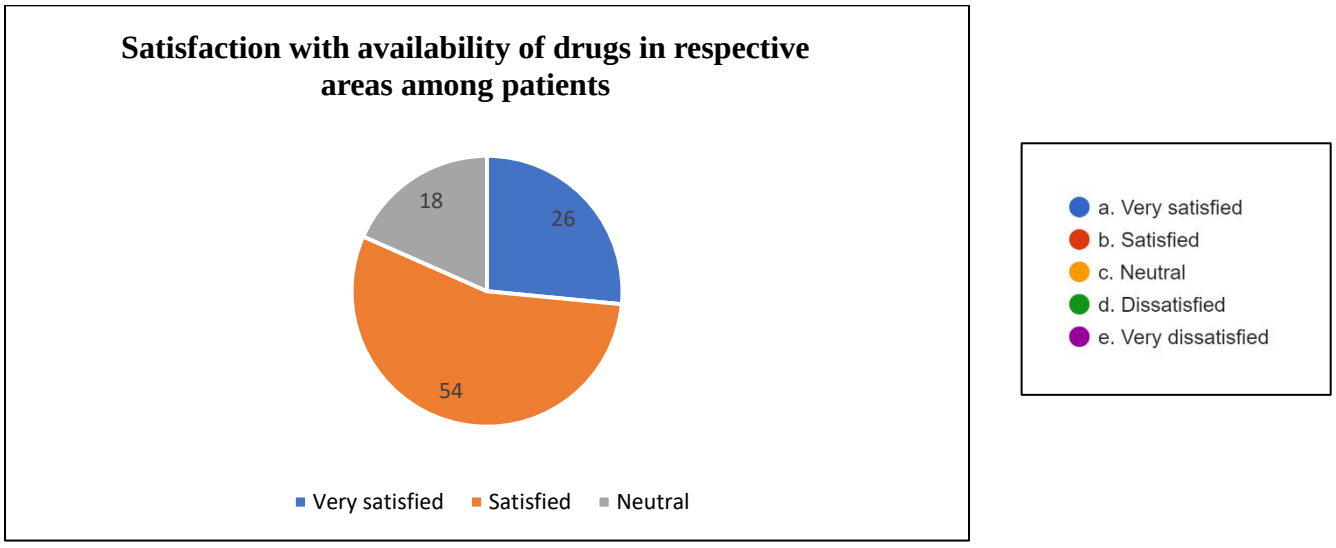
Graph 5.26 Percentage of patients to switch from brand name to generic drugs.

What is the primary source of information for you regarding antidiabetic drugs?



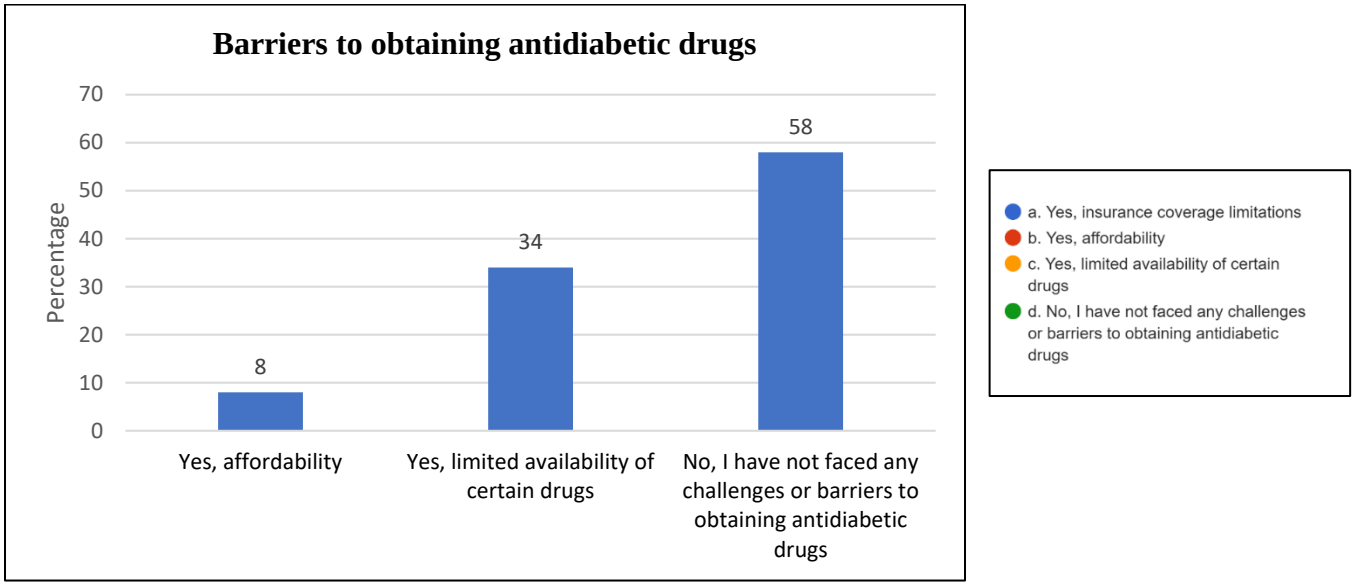
Graph 5.27 Primary source of information

How satisfied are you with the availability of antidiabetic drugs in your area?



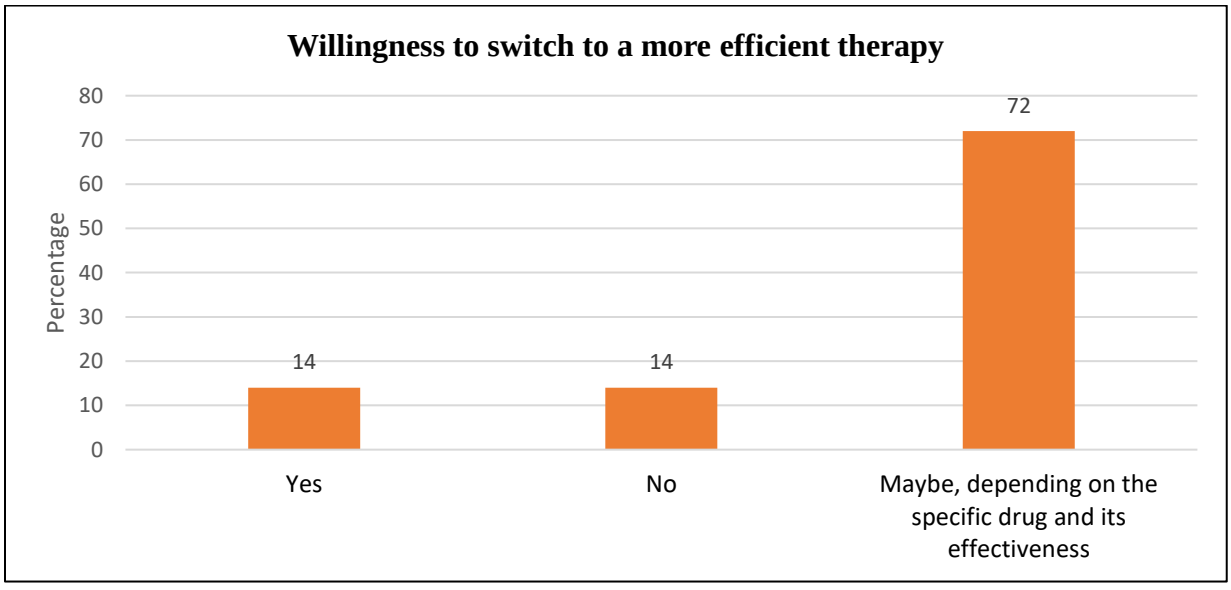
Graph 5.28 Satisfaction with availability of drugs

Have you ever faced any challenges or barriers to obtaining antidiabetic drugs?



Graph 5.29 Barriers to obtaining antidiabetic drugs.

Would you be willing to switch to a different antidiabetic drug if it was more affordable or had fewer side effects?



Graph 5.30 Willingness to switch to a more efficient therapy.

PATIENT'S PERSPECTIVE:

- Around 44% of the patients in the research had diabetes for 3-5 years, followed by less than a year (20%), 1 to 3 years (18%), 5 to 10 years (14%), and >10 years (4%).
- In the selected population, roughly 62% had type 2 diabetes, 32% had type 1 diabetes, and 6% had gestational diabetes.
- Metformin and Insulin are the most prescribed hypoglycemic agents as compared to other class of drugs.
- Most people preferred purchasing drugs from the pharmacy stores (86%) as compared to online pharmacies.
- Factors such as doctor's prescription, efficacy of the therapeutic agents, cost of therapy affected the purchasing behavior of patients.
- About 58% of the sample population had never shifted to generic version of drug from a brand name drug.
- The major primary source of information for patients regarding drugs and therapy was found to be doctors (82%) followed by pharmacists (10%) and Internet (8%).
- The sample population was found to be decently satisfied with the availability of antidiabetic drugs in their region.
- About 58% of the population did not face any barriers or challenges to obtaining antidiabetic drugs.
- Around 72% of the studied population had an open mind about their willingness to switch to a different antidiabetic drug if it was found to more efficacious than the currently available treatments.

CHAPTER 6

DISCUSSION

Diabetes mellitus as defined by **World Health Organization (WHO)** is a long-term metabolic illness characterized by chronic elevations in blood glucose levels, which has major negative consequences on the heart, blood vessels, eyes, kidneys, and nerves. [14].

HbA1c levels as a measure of diabetes diagnostic tests:

In order to utilize HbA1c as a diagnostic test for diabetes, it is essential to implement rigorous quality assurance procedures, standardized assays that correlate with globally recognized reference values, and precise measurement of HbA1c without any interfering circumstances. Diabetes is diagnosed when the HbA1c level is 6.5% or greater. It is crucial to note, however, that a value below 6.5% does not rule out the presence of diabetes as determined by glucose testing. [14].

During the previous eight to twelve weeks, HbA1c measures the average plasma glucose. No preparation, such as fasting, is necessary for it to be conducted at any time of the day. This test is frequently used to evaluate glycemic control in diabetics because of its favorable characteristics [14].

Sr.no.	Class of drug	Mechanism	Efficacy (HbA1c reduction)	Adverse effect
1	Sulfonylureas	Insulin secretagogue	1-2%	Hypoglycemia, weight gain
+2	Meglitinides	Insulin secretagogue	1.5-2%	Hypoglycemia
3	Biguanides	Insulin sensitizer	1-2%	GIT effects, Lactic acidosis(rare)
4	Thiazolidinediones	Insulin sensitizer	0.5-1.5%	Hepatitis, CV risk, bladder cancer, weight gain
5	Alpha-glucosidase inhibitors	Reduces post-prandial risein glucose level in diabetics	0.7-1%	GIT effects
6	Sodium glucose co-transporters 2 (SGLT2) inhibitors	Blocks the reabsorption of glucose from the kidney	0.5-0.7%	Rapid weight loss, dehydration, infections, risk of cancer
7	DPP4 inhibitors	Inhibits the enzymes that breaks down the incretins	0.5-0.7%	Pancreatitis, cancer, acute hepatitis
8	Dual PPAR agonists	Anti- dyslipidemic and Insulin sensitizer	Reductions in LDL, TG and HbA1c	Gastritis, Asthenia, Pyrexia

Fig 3. Actions, efficacy, and safety of the various oral anti diabetic agents [7].

Fixed dose combination therapy:

Sr. no	Drugs
1.	Metformin + Vidagliptin
2.	Metformin + Tenegliptin
3.	Metformin + Glimepride
4.	Metformin + Repaglinide
5.	Metformin + Sulfonylureas

Fig 4: Fixed dose combination therapy drugs [3].

Biguanides are the most often prescribed class of anti-diabetic drugs, with sulfonylureas close behind.

Metformin in conjunction with glimepiride is the most recommended regimen. When it comes to fixed-dose combination therapy, Metformin + Vidagliptin is the most often used treatment option. [3].

MARKET ASSESSMENT

India Anti-Diabetic Drug Market Size

The industry is predicted to increase at a compound annual growth rate (CAGR) of 16% between 2023 and 2028. The market is expected to be worth $8.8 billion by 2028[15].

Eli Lilly, AstraZeneca, Sanofi, and Janssen Pharmaceuticals have key positions as market leaders in the Indian diabetes medicine industry.

PHARMACEUTICAL PROMOTIONAL ACTIVITIES

- Pharmaceutical marketing in certain places comprises the use of numerous tactics, including advertising, to promote and sell pharmaceutical products or treatments.

- Pharmaceutical corporations use pharmaceutical detailing as a marketing tactic to offer doctors product information in order to increase the frequency of prescriptions for their medicines.
- Despite the fact that this legal tactic is controversial, several pharmaceutical businesses invest significant sums of money on it each year.

Metformin and its combinations (Brands having only Metformin)			
S.No.	**Brand**	**Company**	**Strength**
1	Bigesens	Zydus Cadila Healthcare Ltd	500 mg, 1000 mg
2	Cetapin	Sanofi Aventis	500mg
3	Duomet ER	Biochem Pharmaceutical Industrial Ltd	500 mg
4	Emnorm	IPCA Laboratories Ltd	250 mg, 500 mg, 850 mg
5	Exermet	Cipla Limited	500 mg
6	Formet	Alkem Laboratories Ltd	850 mg
7	Formin	Alkem Laboratories Ltd	500 mg
8	Forminal, Forminal SR	Alembic Chemical Works Co Ltd	500 mg, 850 mg, 1000 mg
9	Glumet, Glumet EXT	Cipla Limited	500 mg, 850 mg
10	Glyciphage, Glyciphage SR	Franco Indian Remedies	250 mg, 500 mg
11	Glyrep, Glyrep XL	Emcure Pharmaceuticals Ltd.	500 mg, 1000 mg
12	Insumet, Insumet SR	Cadila Pharmaceuticals Ltd.	500 mg, 850 mg
13	Melmet, Melmet SR	DTF (Micro Labs Ltd)	500 mg
14	Metica	Sarabhai Piramal Pharmaceutical Ltd	500 mg, 850 mg
15	Metlife - 500	Mankind Pharmaceuticals Pvt. Ltd	500 mg
16	Metlong -DS	Panacea Biotec Ltd	500 mg
17	Metsar SR	Unichem Laboratories Ltd.	500 mg
18	Obimet	Abbott India Ltd	500 mg
19	Okamet	Cipla Limited	500 mg
20	Zomet, Zomet SR	Piramal Healthcare	500 mg

Fig 5: Metformin and its combinations (Brands having only Metformin)

Brands having only Metformin and its combination			
Sr. No.	Brand	Combination strength	Company
1	Glimulin-MF	Glimepiride 1 mg, Metformin 500 mg- SR	Glenmark
2	Glimulin-MF Forte	Glimepiride 2 mg, Metformin HCl (SR) 500 mg	Glenmark
3	Glinate-MF	Nateglinide 60 mg, Metformin 500 mg	Glenmark
4	Amaryl-M	Glimepiride 1mg, Metformin XR 500mg	Sanofi Aventis
5	Amaryl-M 2	Glimepiride 2mg, Metformin (XR) 500mg	Sanofi Aventis
6	Amaryl-M Forte	Glimepiride 1mg, Metformin 1000mg	Sanofi Aventis
7	Amaryl-M Forte	Glimepiride 2 mg, Metformin 1000 mg	Sanofi Aventis
8	Diapride-M 1	Glimepiride 1 mg, Metformin 500 mg	Micro Labs Ltd
9	Azukon-M	Gliclazide 80mg, Metformin HCl 500 mg	Torrent
10	Azulix-MF	Glimepiride 1mg, Metformin HCI 500 mg	Torrent
11	Azulix-MF	Glimepiride 2mg, Metformin HCI 500 mg	Torrent
12	Azulix-MF Forte	Glimepiride 1mg, Metformin HCI 1000 mg	Torrent
13	Azulix-MF Forte	Glimepiride 2mg, Metformin HCI 1000 mg	Torrent
14	Betaglim-M1	Glimepiride 1mg, Metformin HCI	Panacea
15	Betaglim-M2	Glimepiride 2mg, Metformin HCI	Panacea
16	Betagrim-M	Glimepiride 1 mg, Metformin 500 mg	Panacea
17	Betagrim-M	Glimepiride 2 mg, Metformin 500 mg	Panacea
18	Daonil-M	Glibenclamide 5mg, Metformin (XR) 500mg	Sanofi Aventis
19	Daorid-M	Glibenclamide 5 mg, metformin 500 mg	Intas
20	Diaglip-M	Glipizide 5mg, Metformin 500 mg	Cipla
21	Diatrol-M	Gliclazide 80mg, Metformin 500 mg	Aurobindo
22	Dibimet Plus	Glipizide 5mg, Metformin HCI 500 mg	Novartis
23	Geminor-M	Glimepiride 1 mg, Metformin 500 mg	Macleods
24	Glimy-M	Glimepiride 2 mg, Metformin HCl 500 mg	Dr. Reddy's
25	Janumet	Metformin HCl 500 mg, Sitagliptin 50 mg	Merck
26	Glucobay M25	Acarbose 25 mg, Metformin HCl 500 mg	Bayer
27	Glucobay M50	Acarbose 50 mg, Metformin HCl 500 mg	Bayer
28	Galvumet	Vildagliptin 50 mg, Metformin HCl 1000 mg	Novartis
29	Vogli M 0.2	Voglibose 0.2 mg, Metformin HCl 500 mg	Medley Pharm.
30	Vogli GM 2	Voglibose 0.3 mg, Metformin HCl 500 mg, Glimep	Medley Pharm

Fig 6: Metformin and its combinations (Brands having only Metformin and its combination) [11]

DRUG PRICING

- The term "generic drugs" refers to medications that have the same amount of the active ingredients (components that can treat the ailment the medication is prescribed for) as the name-brand medication. Generic medications therefore treat illnesses in the same way on the human body.
- The FDA requires drug producers to give proof demonstrating how generic drugs may be used as effective alternatives for brand-name pharmaceuticals while providing equivalent therapeutic benefits. Pharmaceutical firms must guarantee that the generic medication is comparable to the brand-name counterpart in the areas mentioned when filing an abbreviated new drug application (ANDA).
- Because there is no need to recreate costly clinical trials undertaken for new drugs, and there is no need for expensive advertising, marketing, and promotional efforts, generic producers may provide their products at cheaper rates.

DRUG	PERCENTAGE	BRAND MRP (Rs)	BPPI (Rs)
Glibenclamide	63%	8	5
Gliclazide	35%	62	22
Glimepiride	31%	16	5
Pioglitazone	16%	76	12
Biphasic Isophane Insulin	57%	157	90
Insulin Glargine	55%	565	310
Glimepiride + Metformin Sr	50%	48	24
Acarbose	90%	69	62
Gliclazide Sr	66%	61	40
Voglibose + Metformin	30%	47	14
Insulin Injection (Human Recombinant)	45%	157	71
Tenegliptin	72%	69	50
Metformin SR + Glimepiride Tablet	51%	65	33
Metformin SR Tablets	64%	28	18
Glibenclamide + Metformin HCl	69%	16	11
Voglibose Tablets	55%	20	11
Glipizide + Metformin	67%	12	8
Hydrochloride			
Metformin Hydrochloride Tablets Prolong	75%	8	6
Gliclazide + Metformin	23%	153	35
Hydrochloride			
Metformin (SR) + Pioglitazone	89%	28	25

Fig 7: Price comparison between brand name and generic antidiabetic drugs [8]

CONSUMER BUYING BEHAVIOR:

The phrase "consumer behavior" refers to the actions that people engage in to find, select, analyze, and purchase items and services that they feel will meet their wants and aspirations [11].

Cultural, social, personal, psychological factors affect a person’s purchasing behavior.

It was also found that the awareness about the therapeutic efficacy of the drugs, shift in mindsets of people towards generic and branded drugs also plays an important role in consumer behavior [11].

From the study conducted among a sample population of 50 patients diagnosed with diabetes, it can be concluded that providing counselling regarding therapeutic drugs should be taken care of by pharmacist and doctors.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

CONCLUSION:

The study paper "Consumer Behavior and Market Investigation of Antidiabetic Drugs in an Urban City of India" offers insightful information about consumer behavior and market dynamics pertaining to antidiabetic pharmaceuticals in the chosen urban metropolis. The results advance knowledge of the variables affecting consumer preferences, decision-making processes, and purchase behavior for antidiabetic drugs. The report also provides insight into the market trends, competitive environment, and business models used by pharmaceutical firms doing business in metropolitan areas.

- Consumers' decisions on which drugs to choose are significantly influenced by things like product efficacy, brand reputation, pricing, side effects, and doctor's recommendations. When creating marketing plans and product offers, pharmaceutical businesses should take these considerations into account.
- The study highlights the significance of information accessibility, and pharmacy accessibility as influencing variables in consumer behavior. Improving these elements can lead to improved customer experiences and increased treatment adherence.
- Consumer preferences were found to be impacted differently by demographic parameters as age, income, and education level.
- The study also highlights the fierce competition faced by pharmaceutical firms in big cities, where brand positioning and promotional efforts are crucial for market penetration. To achieve a competitive edge, businesses should invest in successful marketing initiatives, establish their brands, and distinguish their goods.

RECOMMENDATIONS:

Pharmaceutical Companies:

- Invest in R&D to increase product efficacy, reduce adverse effects, and boost overall treatment results.
- Create a strong brand reputation through building trust with customers and healthcare professionals and via successful branding and marketing initiatives.

Healthcare Providers:

- Enhance patient education and communication regarding diabetes medications, addressing issues and highlighting the significance of treatment adherence.
- To track the success of your treatment and deal with any problems, encourage frequent follow-ups and patient participation.

Policymakers:

- Promote public-private partnerships to enhance diabetes management, including initiatives to raise awareness and promote access to affordable, effective treatment.
- Initiate research and development projects to meet the unique healthcare issues and demands of the urban population.

REFERENCES AND BIBLIOGRAPHY

1. Agarwal, A., Jadhav, P., & Deshmukh, Y. (2014). Prescribing pattern and efficacy of anti-diabetic drugs in maintaining optimal glycemic levels in diabetic patients. *Journal of Basic and Clinical Pharmacy*, *5*(3), 79. https://doi.org/10.4103/0976-0105.139731
2. International Diabetes Federation. (2020, March 26). *What is diabetes*. Idf.org. https://www.idf.org/aboutdiabetes/what-is-diabetes.html
3. Ipseeta Ray, M. (2017). Assessment of Prescription Pattern of Antidiabetic Drugs in the Outpatient Department of a Tertiary Care Hospital. *International Journal of Clinical Endocrinology and Metabolism*, 001–007. https://doi.org/10.17352/ijcem.000021
4. Patel, Bela & Oza, Bhavit & Patel, Kamlesh & Malhotra, Supriya & Patel, Varsha. (2013). Pattern of antidiabetic drugs use in type-2 diabetic patients in a medicine outpatient clinic of a tertiary care teaching hospital. International Journal of Basic & Clinical Pharmacology. 2. 485. 10.5455/2319-2003.ijbcp20130826.
5. Rastogi, V., Kumar, B., Kumar, D., Kumar, A., Porwal, M., Yadav, P., & Prasad, N. (2016). PHYSICIAN AND PHARMACIST OPINION ON DIABETES MELLITUS AND THE MOST COMMONLY PRESCRIBED ANTI-DIABETIC DRUG IN VARIOUS DISTRICTS OF U.P. (WEST), INDIA. *Journal of Drug Delivery and Therapeutics*, *6*(3), 93–99. https://doi.org/10.22270/jddt.v6i3.1197
6. Front. Pharmacol., 19 January 2022
   Sec. Experimental Pharmacology and Drug Discovery
   Volume 12 - 2021 | https://doi.org/10.3389/fphar.2021.807548
7. Osadebe, Patience & Odoh, Uchenna & Uzor, Philip. (2015). Oral Anti-Diabetic Agents-Review and Updates. British Journal of Medicine and Medical Research. 5. 134-159. 10.9734/BJMMR/2015/8764.

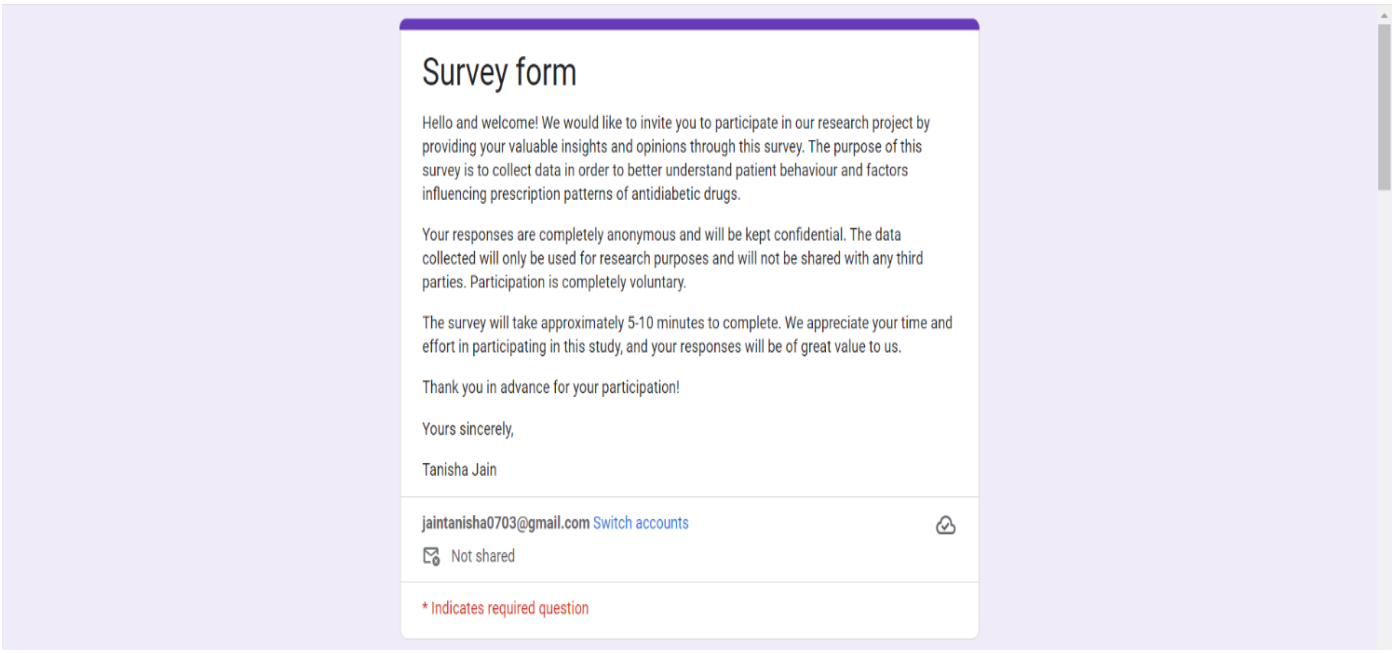
8. Yuvanesh, P., & Geetha, D. P. (2021). Cost comparison between Branded medicines and Jan Aushadhi medicines. *Annals of the Romanian Society for Cell Biology*, 18352–18359. https://www.annalsofrscb.ro/index.php/journal/article/view/8074
9. DiStefano, J. K., & Watanabe, R. M. (2010). Pharmacogenetics of Anti-Diabetes Drugs. *Pharmaceuticals*, *3*(8), 2610–2646. https://doi.org/10.3390/ph3082610
10. Ghosh, A., Gupta, R., & Misra, A. (2020). Telemedicine for Diabetes Care in India during COVID19 Pandemic and National Lockdown Period: Guidelines for Physicians. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*. https://doi.org/10.1016/j.dsx.2020.04.001
11. Pujari, Neelkanth & Sachan, Anupam & Kumari, Puja & Dubey, Priyanka. (2017). Study of Consumer's Pharmaceutical Buying Behavior Towards Prescription and Non-Prescription Drugs. Journal of Pharma Science.
12. Tanabe, M., Motonaga, R., Terawaki, Y., Nomiyama, T., & Yanase, T. (2016). Prescription of oral hypoglycemic agents for patients with type 2 diabetes mellitus: A retrospective cohort study using a Japanese hospital database. *Journal of Diabetes Investigation*, *8*(2), 227–234. https://doi.org/10.1111/jdi.12567
13. Wenping, Zhang & Takeda, Atushi & Kaito, Mizuno & Masayuki, Kanehara & Takagi, Ken & Ishiyama, Ryohei & Urata, Shigeru & Nishimura, Ko. (2018). Acupuncture with Planning Treatment According to Diagnosis: A Trial Study of Protocol and its Effects for Stiff Shoulder. Clinical Investigation. 07. 10.4172/Clinical-Investigation.1000124.
14. World Health Organization. (2011). *Glycated haemoglobin (HbA1c) for the diagnosis of diabetes*. Nih.gov; World Health Organization. https://www.ncbi.nlm.nih.gov/books/NBK304271/

15. *Indian Diabetes Market Research Report 2023-2028*. (n.d.). Www.imarcgroup.com. Retrieved May 27, 2023, from https://www.imarcgroup.com/india-diabetes#:~:text=The%20Indian%20diabetes%20market%20size
16. *India Oral Anti-Diabetic Drug Market Size & Share Analysis - Industry Research Report - Growth Trends*. (n.d.). Www.mordorintelligence.com. Retrieved May 27, 2023, from https://www.mordorintelligence.com/industry-reports/india-oral-anti-diabetic-drug-market.
17. Sankar P, Sasidharan S, Sankar B. Consumer behavior towards antidiabetic drugs in South India. Int J Basic Clin Pharmacol. 2017;6(6):1469-1474.
18. Mishra D, Aluri S. Consumers' behavior towards oral antidiabetic drugs in Bhubaneswar, Odisha: A cross-sectional study. Indian J Pharmacol. 2019;51(3):152-159.
19. Bharadwaj VK, Singla N, Ravi RK, Gupta V. Indian antidiabetic drug market: An update. J Clin Diagn Res. 2018;12(12):FC01-FC05.
20. Das S, Nayak R, Biswas S, Datta P, Mukherjee A. Influence of socio-demographic factors on treatment adherence and treatment outcome in type-2 diabetes mellitus: An Indian perspective. J Young Pharm. 2020;12(2):119-123.
21. Vashistha V, Mishra D, Singh R. Gender differences in medication preferences and adherence among patients with type 2 diabetes mellitus in Northern India. Int J Med Public Health. 2018;8(3):104-108.
22. Manos D, Manos A, Geropanta E, Manos N. Strategic marketing of pharmaceuticals: An analysis of the market’s status quo. Int J Econ Sci Appl Res. 2020;13(2):47-60.

23. Joshi, V., & Patel, P. (2018). Influence of demographic factors on consumer behaviour towards antidiabetic drugs in urban areas of India. Journal of Drug Delivery and Therapeutics, 8(5), 229-232.

ANNEXURES

QUESTIONAIRRE FOR PHYSICIANS:



Survey form

Hello and welcome! We would like to invite you to participate in our research project by providing your valuable insights and opinions through this survey. The purpose of this survey is to collect data in order to better understand patient behaviour and factors influencing prescription patterns of antidiabetic drugs.

Your responses are completely anonymous and will be kept confidential. The data collected will only be used for research purposes and will not be shared with any third parties. Participation is completely voluntary.

The survey will take approximately 5-10 minutes to complete. We appreciate your time and effort in participating in this study, and your responses will be of great value to us.

Thank you in advance for your participation!

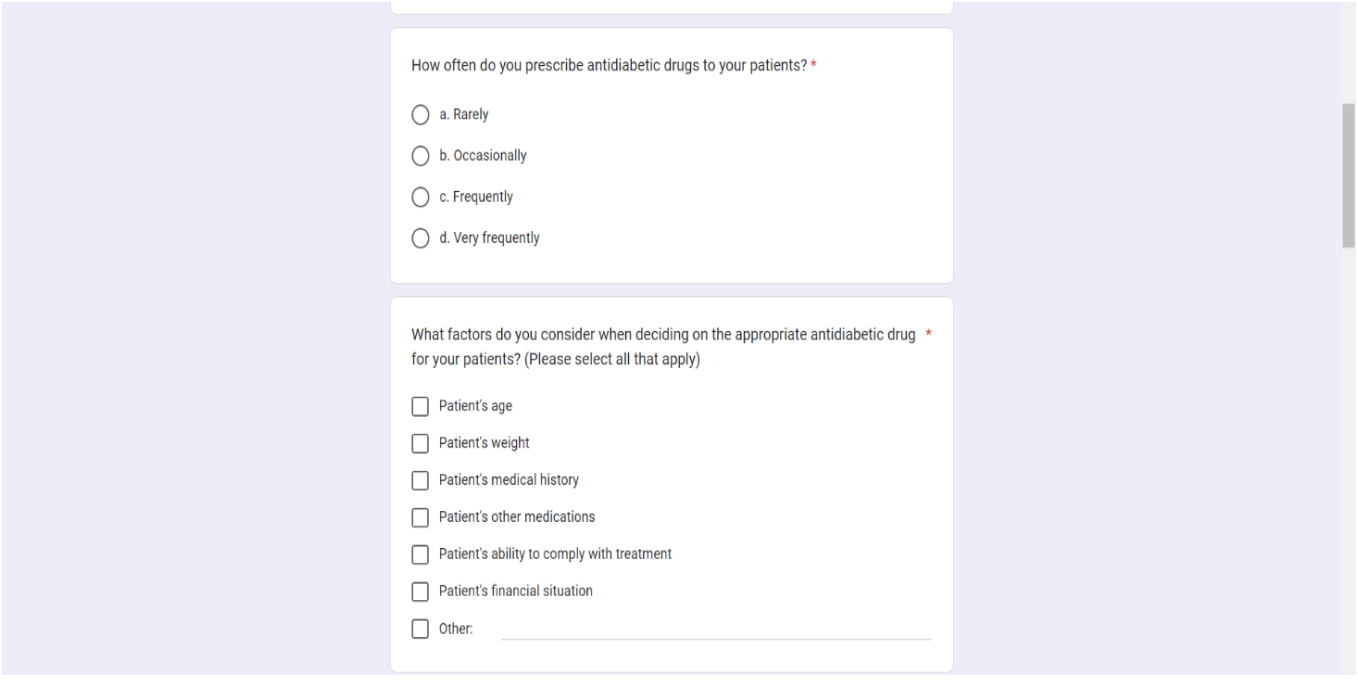
Yours sincerely,

Tanisha Jain

jaintanisha0703@gmail.com Switch accounts

Not shared

* Indicates required question



How often do you prescribe antidiabetic drugs to your patients? *

- a. Rarely
- b. Occasionally
- c. Frequently
- d. Very frequently

What factors do you consider when deciding on the appropriate antidiabetic drug for your patients? (Please select all that apply) *

- Patient's age
- Patient's weight
- Patient's medical history
- Patient's other medications
- Patient's ability to comply with treatment
- Patient's financial situation
- Other:

What is the most commonly prescribed antidiabetic drug among your patients? *

- ◯ Metformin
- ◯ Sulfonylureas
- ◯ DPP-4 inhibitors
- ◯ GLP-1 receptor agonists
- ◯ SGLT2 inhibitors
- ◯ Insulin
- ◯ Other: _____

How often do you prescribe brand-name antidiabetic drugs versus generic versions? *

- ◯ Always brand-name
- ◯ Mostly brand-name
- ◯ About equally brand-name and generic
- ◯ Mostly generic
- ◯ Always generic

What is your opinion on the efficacy of generic antidiabetic drugs compared to brand-name drugs? *

- ◯ Much less effective
- ◯ Slightly less effective
- ◯ No difference in effectiveness
- ◯ Slightly more effective
- ◯ Much more effective

Have you encountered any issues with patient compliance with their antidiabetic drug treatment? If so, what strategies have you used to address these issues? *

- ◯ Yes, and I have addressed them through patient education
- ◯ Yes, and I have prescribed different medications
- ◯ Yes, and I have referred patients to a specialist
- ◯ No, I have not encountered any issues with patient compliance

How do you inform your patients about the potential side effects and risks of antidiabetic drugs? *

- ◯ I provide them with written information
- ◯ I explain verbally
- ◯ I use visual aids (e.g., diagrams, videos)
- ◯ Other (please specify)

Have you noticed any trends or changes in the demand for antidiabetic drugs among your patients in the past few years? *

- ◯ Yes, the demand has increased
- ◯ Yes, the demand has decreased
- ◯ No, there has been no significant change in demand

Are there any challenges or barriers to prescribing antidiabetic drugs in your practice? If so, what are they? *

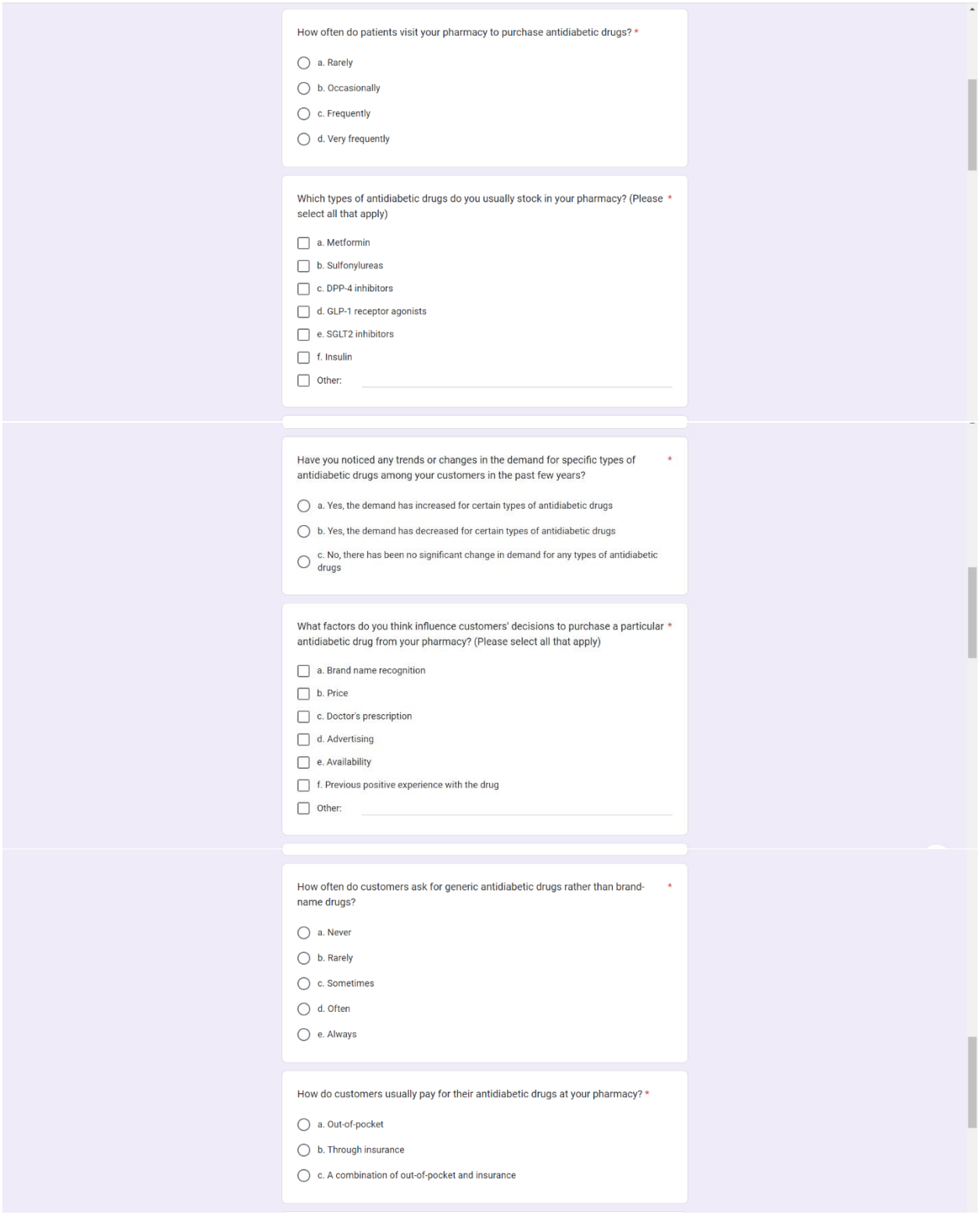
- ◯ Yes, insurance coverage limitations
- ◯ Yes, patient affordability
- ◯ Yes, lack of patient education
- ◯ No, there are no significant barriers or challenges

How do you stay updated on the latest developments and research related to antidiabetic drugs? *

- ◯ Attend conferences and seminars
- ◯ Read medical journals and publications
- ◯ Consult with colleagues
- ◯ Other: _____

Submit Clear form

QUESTIONAIRRE FOR PHARMACISTS:



How often do patients visit your pharmacy to purchase antidiabetic drugs? *

- a. Rarely
- b. Occasionally
- c. Frequently
- d. Very frequently

Which types of antidiabetic drugs do you usually stock in your pharmacy? (Please select all that apply) *

- a. Metformin
- b. Sulfonylureas
- c. DPP-4 inhibitors
- d. GLP-1 receptor agonists
- e. SGLT2 inhibitors
- f. Insulin
- Other:

Have you noticed any trends or changes in the demand for specific types of antidiabetic drugs among your customers in the past few years? *

- a. Yes, the demand has increased for certain types of antidiabetic drugs
- b. Yes, the demand has decreased for certain types of antidiabetic drugs
- c. No, there has been no significant change in demand for any types of antidiabetic drugs

What factors do you think influence customers' decisions to purchase a particular antidiabetic drug from your pharmacy? (Please select all that apply) *

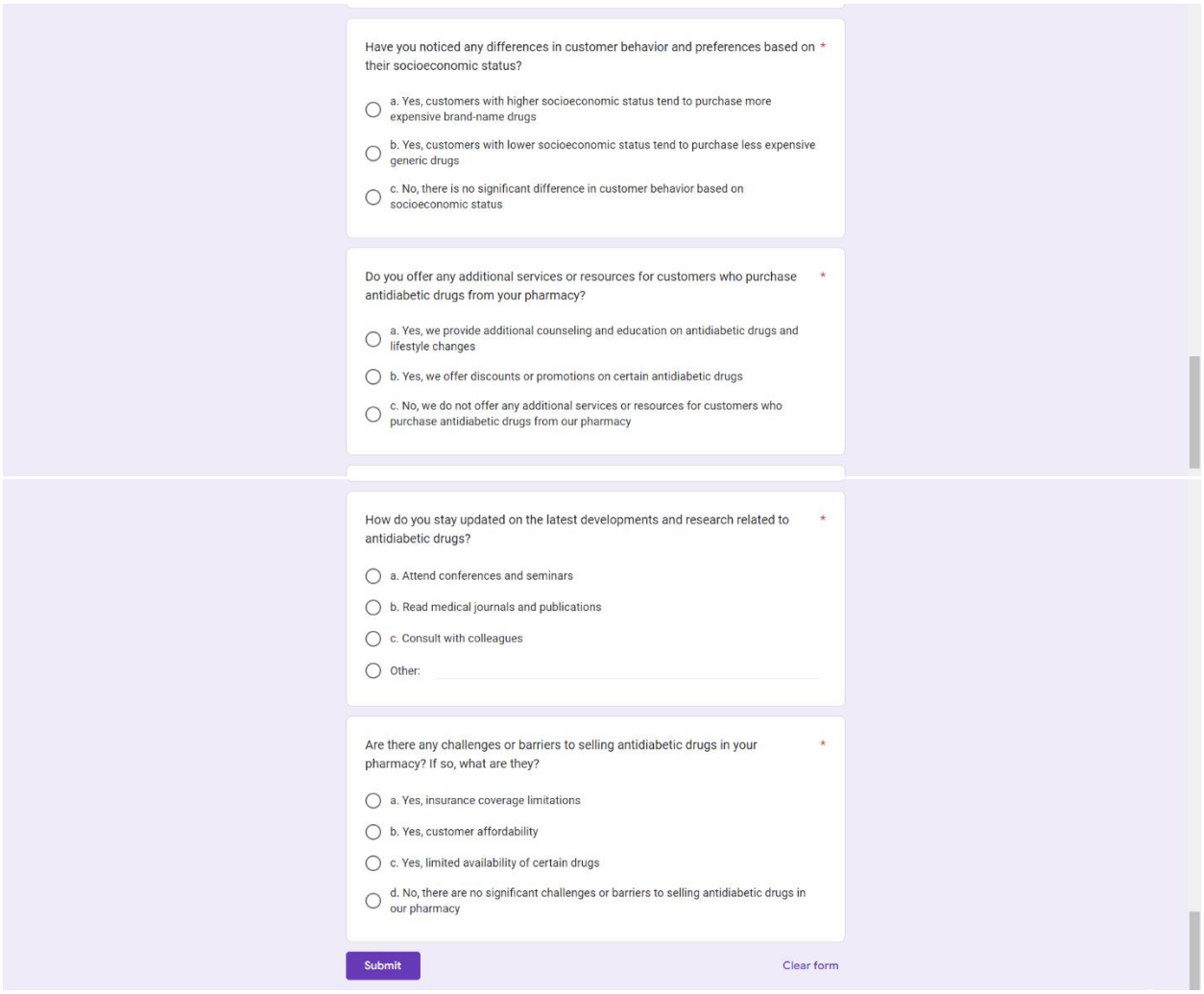
- a. Brand name recognition
- b. Price
- c. Doctor's prescription
- d. Advertising
- e. Availability
- f. Previous positive experience with the drug
- Other:

How often do customers ask for generic antidiabetic drugs rather than brand-name drugs? *

- a. Never
- b. Rarely
- c. Sometimes
- d. Often
- e. Always

How do customers usually pay for their antidiabetic drugs at your pharmacy? *

- a. Out-of-pocket
- b. Through insurance
- c. A combination of out-of-pocket and insurance


Have you noticed any differences in customer behavior and preferences based on their socioeconomic status? *

- a. Yes, customers with higher socioeconomic status tend to purchase more expensive brand-name drugs
- b. Yes, customers with lower socioeconomic status tend to purchase less expensive generic drugs
- c. No, there is no significant difference in customer behavior based on socioeconomic status

Do you offer any additional services or resources for customers who purchase antidiabetic drugs from your pharmacy? *

- a. Yes, we provide additional counseling and education on antidiabetic drugs and lifestyle changes
- b. Yes, we offer discounts or promotions on certain antidiabetic drugs
- c. No, we do not offer any additional services or resources for customers who purchase antidiabetic drugs from our pharmacy

How do you stay updated on the latest developments and research related to antidiabetic drugs? *

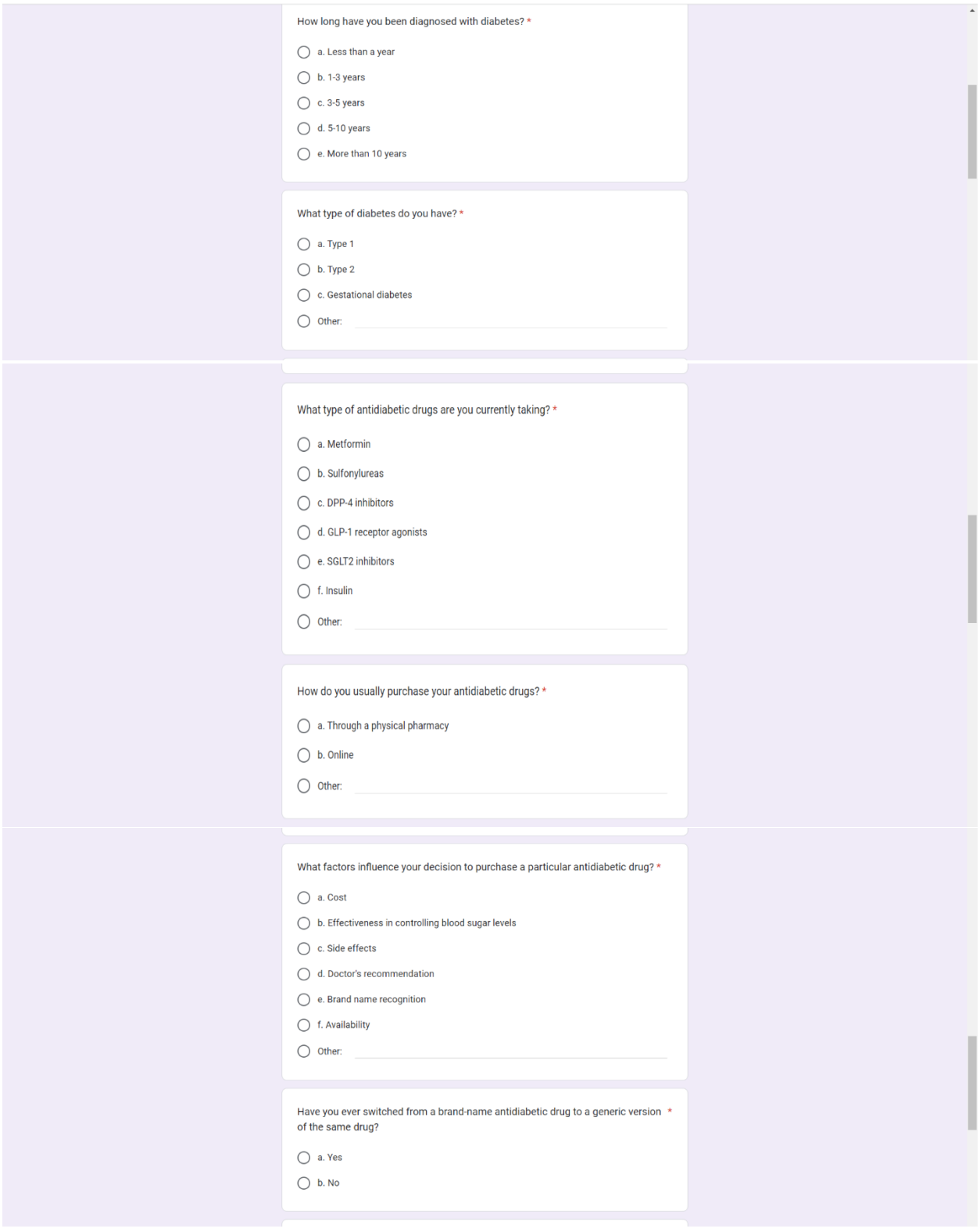
- a. Attend conferences and seminars
- b. Read medical journals and publications
- c. Consult with colleagues
- Other:

Are there any challenges or barriers to selling antidiabetic drugs in your pharmacy? If so, what are they? *

- a. Yes, insurance coverage limitations
- b. Yes, customer affordability
- c. Yes, limited availability of certain drugs
- d. No, there are no significant challenges or barriers to selling antidiabetic drugs in our pharmacy

Submit Clear form

QUESTIONAIRRE FOR PATIENTS:



How long have you been diagnosed with diabetes? *

- a. Less than a year
- b. 1-3 years
- c. 3-5 years
- d. 5-10 years
- e. More than 10 years

What type of diabetes do you have? *

- a. Type 1
- b. Type 2
- c. Gestational diabetes
- Other:

What type of antidiabetic drugs are you currently taking? *

- a. Metformin
- b. Sulfonylureas
- c. DPP-4 inhibitors
- d. GLP-1 receptor agonists
- e. SGLT2 inhibitors
- f. Insulin
- Other:

How do you usually purchase your antidiabetic drugs? *

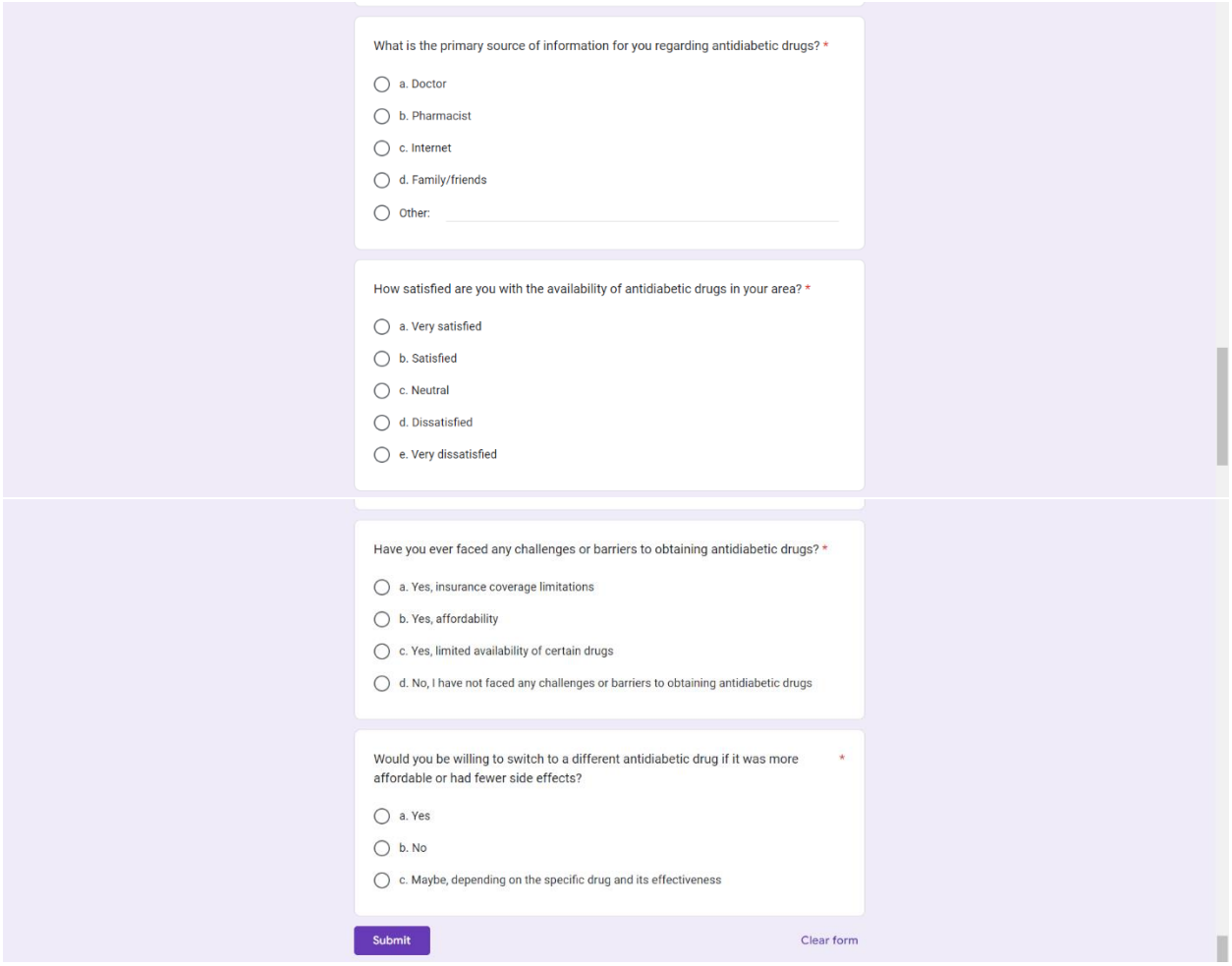
- a. Through a physical pharmacy
- b. Online
- Other:

What factors influence your decision to purchase a particular antidiabetic drug? *

- a. Cost
- b. Effectiveness in controlling blood sugar levels
- c. Side effects
- d. Doctor's recommendation
- e. Brand name recognition
- f. Availability
- Other:

Have you ever switched from a brand-name antidiabetic drug to a generic version of the same drug? *

- a. Yes
- b. No


What is the primary source of information for you regarding antidiabetic drugs? *
a. Doctor
b. Pharmacist
c. Internet
d. Family/friends
Other:
How satisfied are you with the availability of antidiabetic drugs in your area? *
a. Very satisfied
b. Satisfied
c. Neutral
d. Dissatisfied
e. Very dissatisfied
Have you ever faced any challenges or barriers to obtaining antidiabetic drugs? *
a. Yes, insurance coverage limitations
b. Yes, affordability
c. Yes, limited availability of certain drugs
d. No, I have not faced any challenges or barriers to obtaining antidiabetic drugs
Would you be willing to switch to a different antidiabetic drug if it was more affordable or had fewer side effects? *
a. Yes
b. No
c. Maybe, depending on the specific drug and its effectiveness
Submit
Clear form