



Daffodil
International
University

**Survey on oral anti-diabetic drugs available in market for
non- complicated patient in Bangladesh**

Submitted To

The Department of Pharmacy,
Faculty of Allied Health Sciences,
Daffodil International University

In fulfillment of the prerequisites for the Bachelor of Pharmacy degree

Submitted By

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APPROVAL

The Faculty of Allied Health Sciences at Daffodil International University has accepted this project, Survey on oral anti-diabetic drugs available in market for non- complicated patient in Bangladesh as a partial fulfillment of the requirements for the degree of Bachelor of Pharmacy. The project's style and contents have also been approved.

BOARD OF EXAMINERS

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Professor and Head

Department of pharmacy

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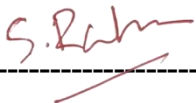
..... Internal examiner 2

..... External examiner

Declaration

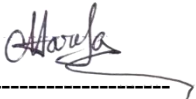
I hereby declare that, this thesis report is done by me under the supervision of **Dr. Mohammed Shafikur Rahman, Associate Professor**, Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, fulfilment of the requirement for the degree of Bachelor of Pharmacy (B. Pharm). I am declaring that this project is my original work. I am also declaring that neither this project nor any part thereof has been submitted elsewhere for the award of Bachelor or any degree.

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I also place on record, my sense of gratitude to one and all, who directly or indirectly, have put their hand in this venture.

Marufa Hossain
Author

DEDICATION

I dedicate this work at first to my Almighty then to my parents and to my teachers

Survey on oral anti-diabetic drugs available in market for non- complicated patient in Bangladesh

Abstract

Background: Based on pricing differences of the same medicine among manufacturers, this study was designed to investigate the current oral anti-diabetic medication regimens for non-complicated diabetic patients in the Mirpur region.

Methods: With the help of many Mirpur medical stores, doctors, and patients, the current study was conducted over the course of 4 months with a random review of roughly 200 prescriptions. A standard questionnaire with numerous questions was developed based on patient data (such as age, gender, medical history, and prescriptions), doctor data (often prescribed drug, combination), and pharmacy data (available alternatives, cost, and most popular brands).

Results: A statistical analysis of patient data suggests that 47.5% of patients are between the ages of 50 and 60 and that 92.5% of patients depend on oral anti-diabetic drugs. Their (54%) most common consequences were hypertension-related. Doctors routinely provide metformin to patients with type II diabetes mellitus, either alone or in fixed-dose combinations with glimepiride or glazipride, according to survey results. The cost of several different types of oral diabetes drugs varies widely, according to cost analysis (75-87%). USV Pvt. Ltd. and Mankind Ltd.'s dominance over other pharmaceutical companies may be seen in the annual revenue of these products in the regional Indian market.

Conclusions: This report will create better awareness among people for the availability of various brands of same anti-diabetic drug and also motivate our physicians to prescribe the economic products.

Key words : Dhaka, Diabetes, oral antidiabetic drugs, Cost.

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CHAPTER 1

INTRODUCTION

Diabetes is increasingly being identified as a potential epidemic in Bangladesh. A study estimates that the number of diabetics would double globally from 171 million in 2000 to 366 million in 2030, with Bangladesh experiencing the highest increase. Predictions indicate that Bangladesh may have 79.4 million diabetics by 2030, ranking it second only to China in terms of the prevalence of the condition. Most of them (almost 90%) have type 2 diabetes¹. Diabetes differs from other chronic and complex diseases in that the body is unable to produce or respond to the hormone insulin, which is produced by the pancreas and controls blood glucose levels². The typical symptoms include polyuria, polydipsia, and increased hunger. If diabetes is not addressed, it can cause several issues. Acute consequences include diabetic ketoacidosis and nonketotic hyperosmolar coma. Some of the severe long-term effects include heart problems, stroke, kidney failure, gastrointestinal ulcers, and visual impairment. The three main types of diabetes are type 1 diabetes mellitus, also known as insulin-dependent diabetes mellitus, type 2 diabetes mellitus, also known as non-insulin-dependent diabetic mellitus, and gestational diabetes. Important elements include eating a balanced diet, exercising frequently, stopping smoking, and keeping a healthy weight. Tobacco cessation, a healthy diet, frequent exercise, and keeping a normal body weight are all crucial elements of prevention and treatment. Long-term problems are more likely with diabetes in all its types. These typically appear ten to twenty years later. When treating type 1 diabetes, synthetic insulin analogs or a mix of intermediate and regular acting insulin are usually employed. When treating type 2 diabetes with insulin, a long-acting formulation is usually used at first while oral medicine is maintained. The three main pharmacological classes that are frequently provided are biguanides (Metformin), sulfonamides (Glipizide, Glyburide), and alpha glucosidase inhibitors (Acarbose, Voglibose, Miglitol).The biggest and fastest-growing diabetes markets in Bangladesh are Type 1 and Type 2, respectively.

The global market for diabetes therapies and diagnostics is now \$48.5 billion. The oral anti-diabetic drug manufacturing financing market is growing at a rate of 14.13 percent in the current diabetes market. The market is expected to grow at an average CAGR of 6.5% between 2016 and 2023. From US\$ 4778.7 million in 2016 to US\$ 7441.6 million in 2023, the diabetes market in India is expected to grow. Along with its safety and effectiveness, the cost of pharmaceuticals is important to both doctors and patients in a developing country like India. In Indian markets, there are hundreds of brands for the same medication in a variety of strengths, which results in a wide price range. The expense of drug therapy is the main obstacle to effective disease treatment and adherence to the recommended medication regimen. There aren't many studies that statistically compare the various oral hypoglycemic drug brands while accounting for all pertinent parties, such as physicians, patients, and medical retailers. Therefore, it was decided to conduct this kind of analytical research that will meet the needs of all parties involved. Researchers conducted this survey due to the high prevalence of the condition in the region, which was revealed by the National Family Health Survey-4 (2015-16) in Mirpur, which revealed that approximately 23.1% of people there have diabetes³.

The objective of this study is to evaluate various available drugs for diabetes, their alternative brands, maximum sold brand and their potential partners.

CHAPTER 2

PURPOSE OF THE STUDY

- A survey on oral anti-diabetic medications supplied in Bangladesh for non-complicated patients was undertaken to identify the various types of OADs that are available, their mechanisms of action, and their efficacy and safety profiles.
- The purpose of the survey is to give a general overview of the various medications that are available and how they are prescribed by medical professionals in Bangladesh. Additionally, the trial will assess how often patients take OADs.
- The ultimate objective of this study is to offer important insights into the OADs available on the market for non-complicated type 2 diabetic patients in Bangladesh and their prescribing patterns, which can be used to enhance patient selection of the most suitable OADs and ultimately improve their health outcomes.
- The study's findings can also be used to guide policymakers and regulatory authorities in making decisions about the availability and accessibility of OADs in the country.

CHAPTER 3

LITERATURE REVIEW

Diabetes is a chronic metabolic illness characterized by high blood sugar levels brought on by either an insufficient quantity of insulin produced by the body or an ineffective use of insulin. According to the International Diabetes Federation's 2019 report, 463 million people will have diabetes globally by the year 2019. In recent years, there has been an increase in interest in the potential application of natural products in the management and treatment of diabetes. Recent studies have looked into the anti-diabetic potential of many natural products, including plants, herbs, and dietary supplements. Here are a few examples of recent studies in this field:

A review study on plant flavonoids like quercetin, kaempferol, and apigenin's potential anti-diabetic effects was released in the Journal of Diabetes Research in 2020. The scientists emphasized how effective these compounds are at improving insulin sensitivity, reducing inflammation, and promoting glucose metabolism.

An investigation into the impact of cinnamon supplementation on type 2 diabetes patients' blood glucose levels was published in the Journal of Medicinal Food in 2021. The outcomes demonstrated that supplementing with cinnamon significantly lowered fasting blood glucose levels.

In a meta-analysis published in the Journal of Ethnopharmacology in 2021, researchers looked at how berberine, a chemical found in plants like goldenseal and barberry, affected type 2 diabetic patients' ability to control their blood sugar levels.

CHAPTER 4

Methodology

The survey on oral anti-diabetic drugs available in Bangladesh for non-complicated patients will be conducted using a cross-sectional study design. For the study, information from patients and medical professionals will be obtained.

Sampling:

Using a realistic sample technique, healthcare professionals will be collected from various hospitals and clinics around Bangladesh. Those who have experience treating patients with type 2 diabetes and have worked in the field for at least two years will be eligible for inclusion. The type 2 diabetes patients who are now using OADs with no issues will also be conveniently sampled at the same healthcare facilities.

Data Collection:

Self-administered questionnaires and a review of medical records will be used to collect data. Healthcare professionals will cover the types of OADs prescribed, the selection criteria for an OAD, and the patterns of prescribing for various patient subgroups.

Data Analysis:

Using descriptive statistics, the data received from patients and healthcare professionals will be evaluated. If necessary, frequency distributions, means, and standard deviations will be used to present the data.

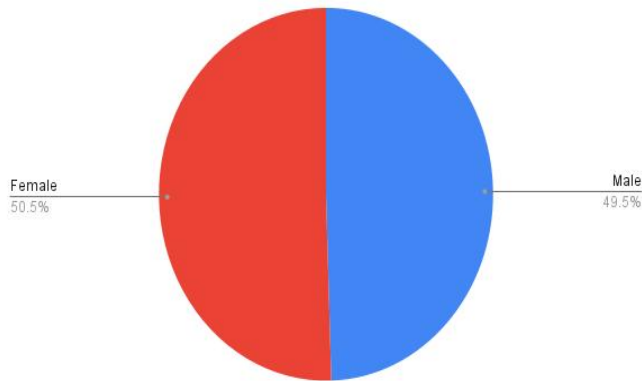
Ethical Considerations:

Before the study begins, the Institutional Review Board (IRB) will issue its ethical approval. The study's participants and all medical professionals will provide their informed permission.

CHAPTER 5

RESULT AND DISCUSSION

Count of Gender

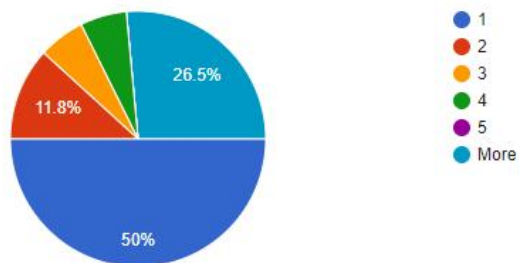


Discussion: Out of 100 respondents 99 responses found. Here from 15-30 years people percentage are shown in the pie chart which include age 77.8% ,Age 31-45 people percentage are 11.1%, Age 46-60 people percentage are 6.1%, and more than 60 Age people percentage are 3.0%,

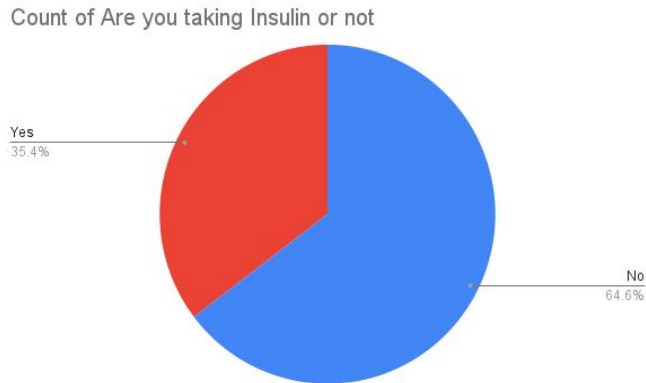
Patients suffering from diabetics (Years)

suffering from diabetics (Years)

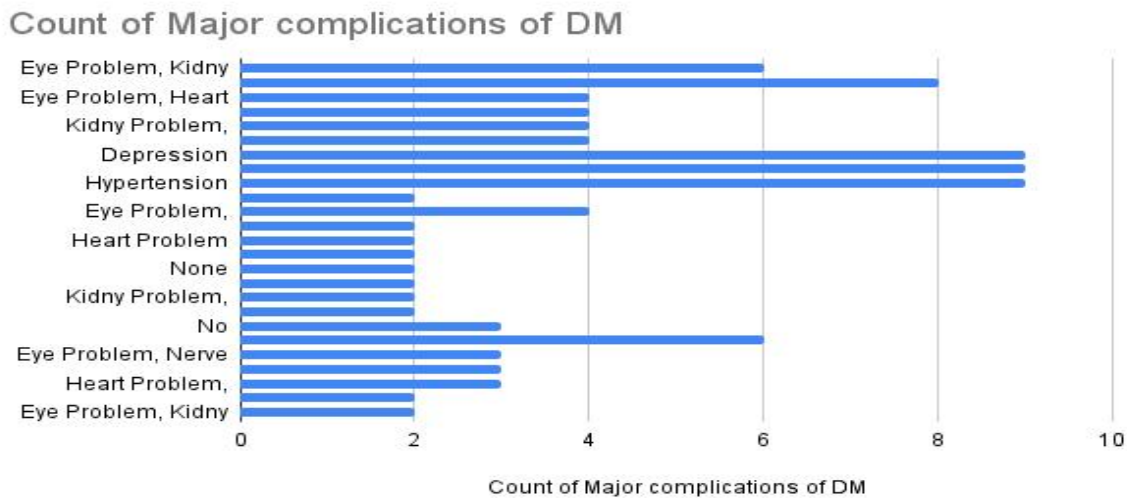
11.1%



Discussion: Out of 100 respondents 50% population are suffering diabetics from 1 years ,11.8% are suffering from 2 years avobe 5 year 26.5 % are suffering in diabetics



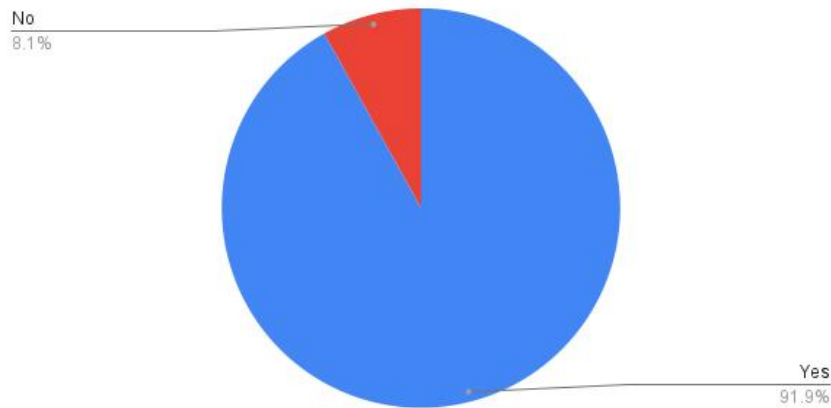
Discussion: Out of 100 respondents Percentage of taking insulin. 35.4% people are taking insulin and 64.6% people not taking insulin



Discussion: Major complications of DM (Diabetics mellitus) in this bar chart we can see that this problem are very common in DM

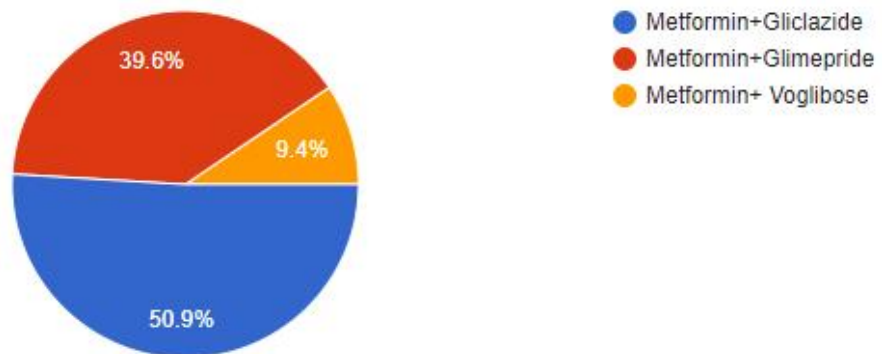
- Eye Problem, Kidny Problem
- Eye Problem, Heart Problem
- Depression
- Hypertension

Count of Do you have knowledge about type 1 and type 2 diabetics



Discussion: Out of 100 respondents Percentage of knowing about type 1 and type 2 diabetics . 91.9% people are know about this and 8.1% people are don't know about this .

Which combination of metformin is available in market



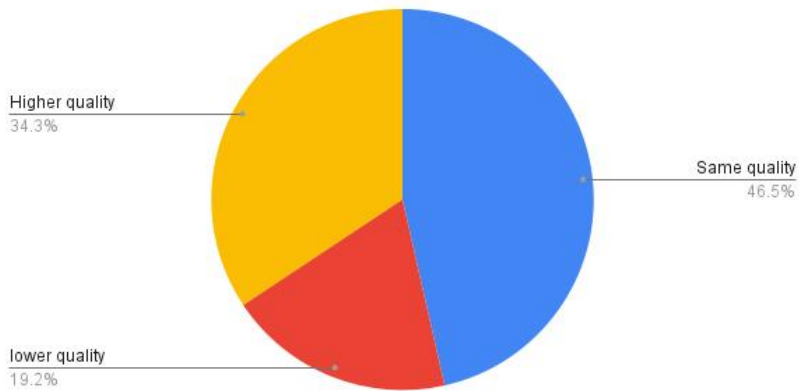
Discussion: Total participated out of 100 people said that combination of metformin is available in market

Metformin+Gliclazide: 50.9 %

Metformin+Glimepride: 39.6%

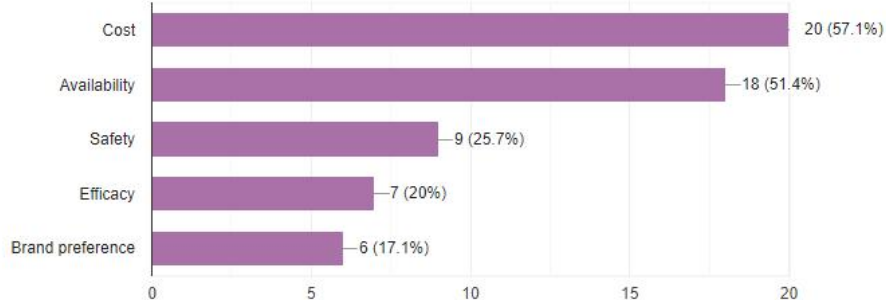
Metformin +voglibose: 9.4%

Count of How do the oral anti-diabetic drugs available in Bangladesh compare with those available in other countries in



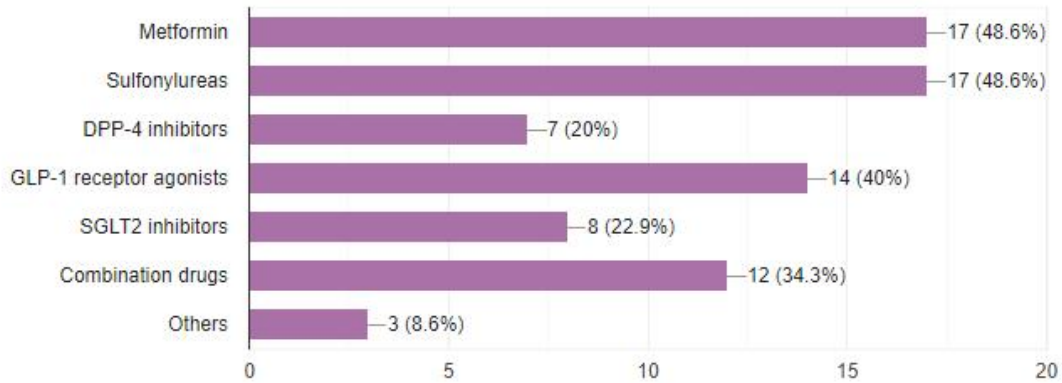
Discussion: Total participated out of 100 people said that oral anti-diabetic drugs available in Bangladesh compare with those available in other countries in terms of efficacy, safety, and cost. Same quality : 46.5% Higher quality: 34.3 % lower quality:19.2%

What factors influence the choice of oral anti-diabetic drugs among patients in Bangladesh



Discussion: Total participated out of 100 people said that oral anti-diabetic drugs available in Bangladesh compare with those available in other countries in terms of efficacy, safety, and cost. people highlight the cost ,availability and safety in order.

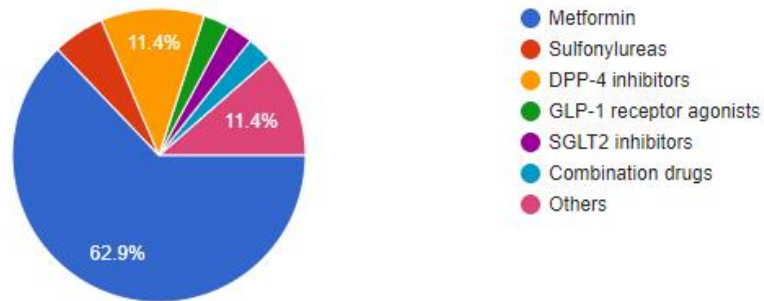
Which oral anti-diabetic drugs are currently available in the market for non-complicated diabetic patients in Bangladesh?



Discussion: Total participated out of 100 people said that oral anti-diabetic drugs are currently available in the market for non-complicated diabetic patients. People highlight the

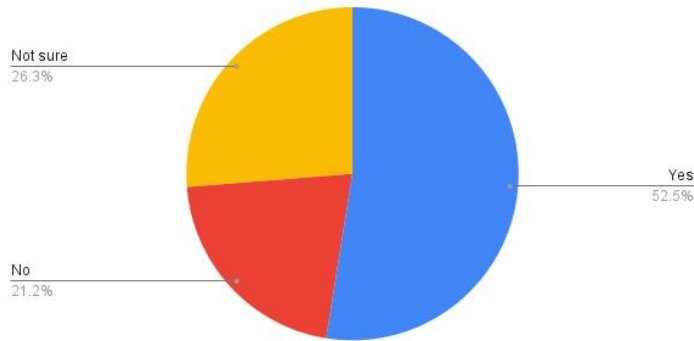
Metformin ,Sulfonylureas, GLP-1 receptor agonists, Combination drugs in order

What is the most commonly prescribed oral anti-diabetic drug in Bangladesh for non-complicated diabetic patients?



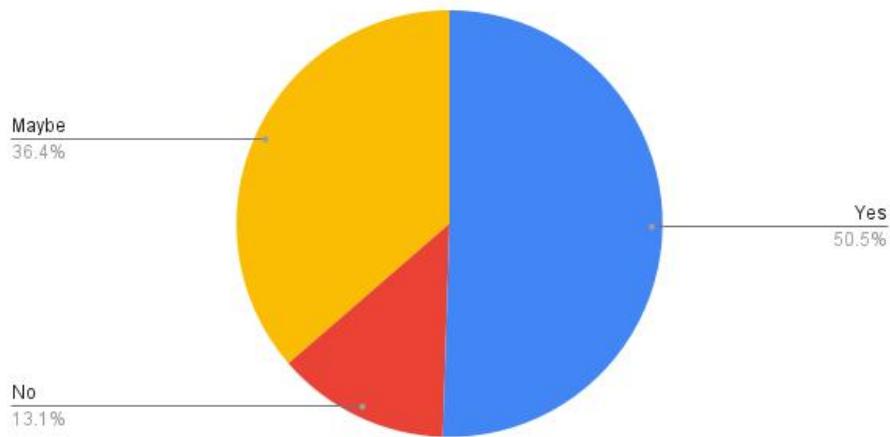
Discussion: Total participated out of 100 people said that most commonly prescribed oral anti-diabetic drug in Bangladesh for non-complicated diabetic patients. People highlight the in order Metformin, DPP-4 inhibitors, SGLT2 inhibitors, GLP-1 receptor agonists, others

Count of Are there any significant differences in the efficacy of oral anti-diabetic drugs for non-complicated diabetic patients in



Discussion: Total participated out of 100 people said significant differences in the efficacy of oral anti-diabetic drugs for non-complicated diabetic patients. 52.5 % yes 21.2 % no and 26.3 % not sure .

Count of Are there any significant differences in the safety profiles of oral anti-diabetic drugs for non-complicated diabetic



Discussion: Total participated out of 100 people said significant differences in the safety profiles of oral anti-diabetic drugs for non-complicated diabetic patients. 50.5 % yes ,13.3 % no and 36.4% not sure .

CHAPTER 6

CONCLUSION

The current study sought potential participants, such as doctors, patients, and medical supply stores, in order to determine the market potential for antidiabetic formulations. Our investigation revealed that there are several brands of the same medication and its combinations that are available on the market in the same strength with notable price differences. It is therefore vital to adjust or implement strict policies to prohibit large pricing variance between different companies in order to lessen the unfair cost on patients and the healthcare system and to diminish even disobedience. Noncompliance can lead to incomplete therapy, which might increase the risk of morbidity or fatality. The study's findings provide patients and prescribers with information on the many brands of readily available diabetes drugs and the variations in their prices. The amount of money that people spend on pharmaceuticals can be reduced by using affordable medications. The Indian pharmaceutical industry, in particular Alembic Pharmaceutical, Blue CrossLab., and Ozone Pharmaceutical Ltd., whose products are the cheapest, will use this report as a foundation to develop marketing strategies to increase the sales of formulations containing Metformin both alone and in combination with Glimiperide.

To reduce the discomfort given to elderly patients—the majority of whom have hypertension—top leading industries that are developing new combinations may utilize this survey report to help them create a combination with antihypertensive medications. There is potential for similar studies to be conducted in the future with larger sample sizes covering all of Bangladesh, which will provide more precise and accurate data relevant to the needs of all stakeholders.

CHAPTER 7

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