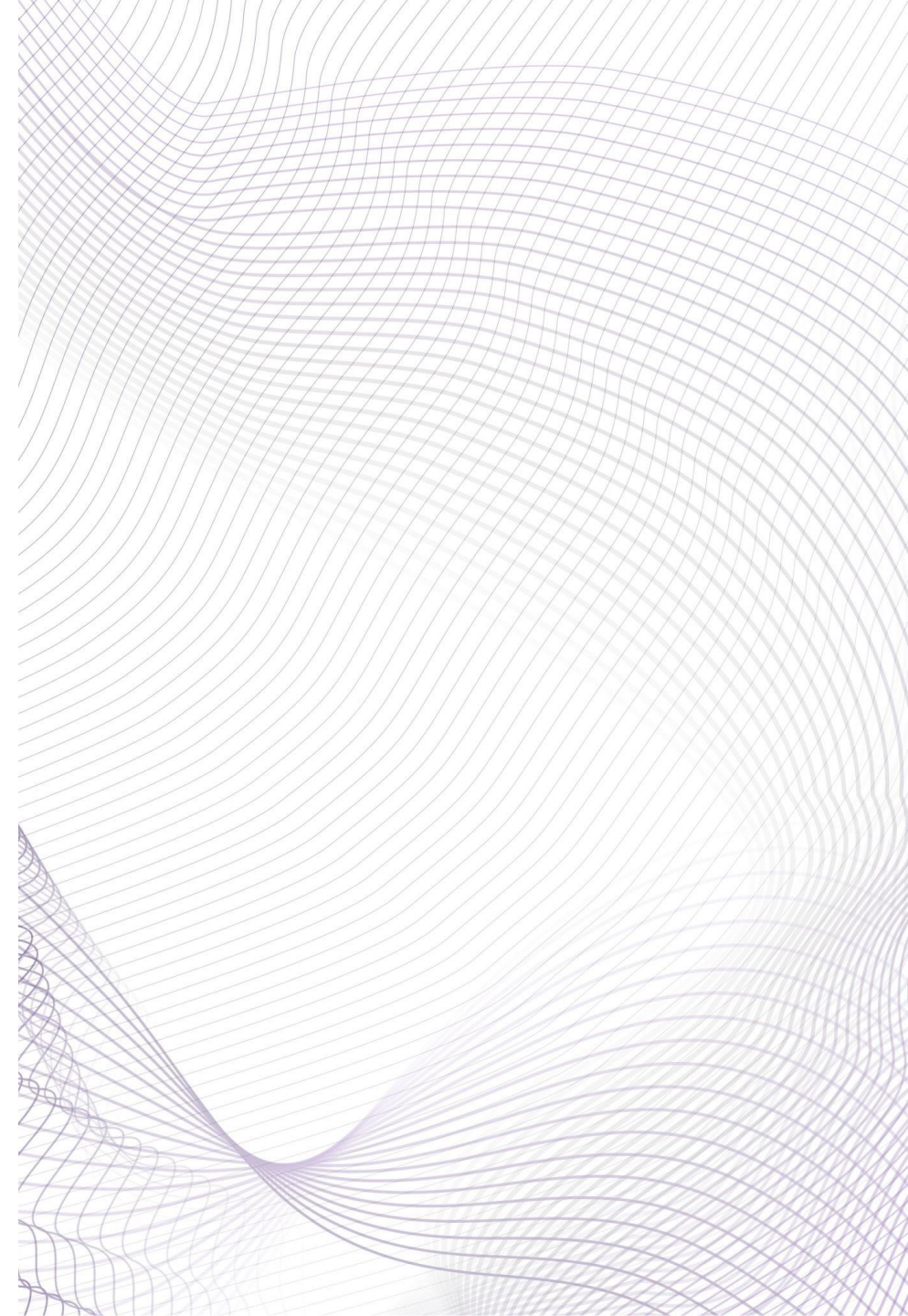


MARKET ASSESSMENT OF ORAL AND INJECTABLE ANTIDIABETIC DRUGS

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1. Introduction



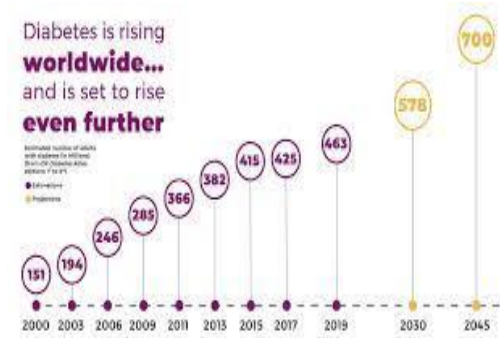
1. INTRODUCTION

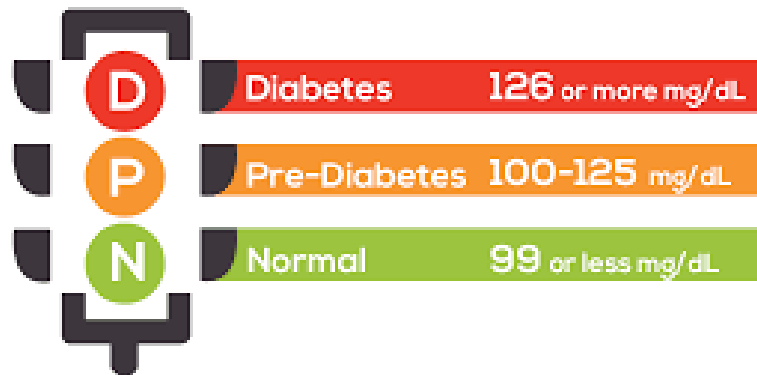
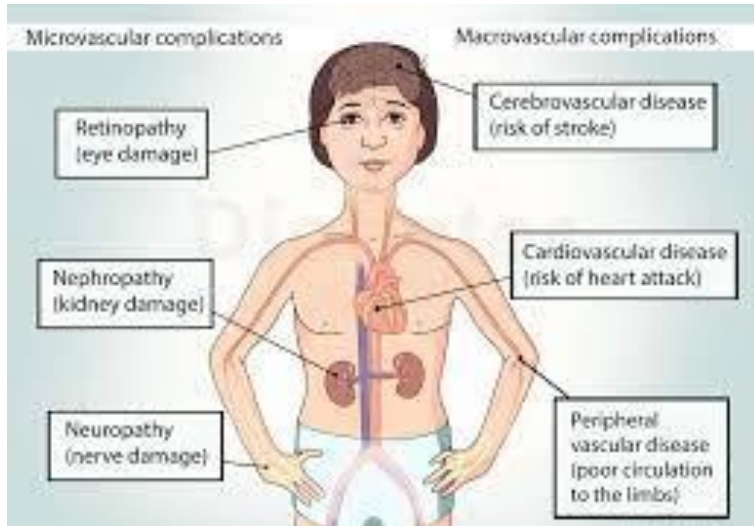
The beginnings: Diabetes mellitus (DM) is perhaps one of the oldest diseases in mankind. It was first mentioned around 300 decades ago in an Egyptian text.

Definition: A diverse collection of metabolic illnesses marked by chronic hyperglycemia caused by insufficient or impaired insulin production, insulin action, or both is known as Diabetes Mellitus (DM).

Diabetes mellitus has reached pandemic proportions.

Except for gestational diabetes, early detection of diabetes and prediabetes is critical using established hemoglobin A1c (HbA1c) criteria.





The most common reasons for T2DM, a disease spectrum originating from tissue insulin resistance and progressing gradually to a state characterized by complete loss of pancreatic secretive activity of beta cells, are found by impaired insulins secretion, tissue action resistance or combination of both.

T2DM contributes significantly to the extremely substantial growth in the rate of non-communicable illnesses affecting industrialized and emerging countries.

Patients are at serious risk for long-term macro- and microvascular issues as a result of the severe metabolic instability associated with this disease, which can lead to recurrent hospitalizations and consequences, including a higher risk of heart disease if not treated properly.

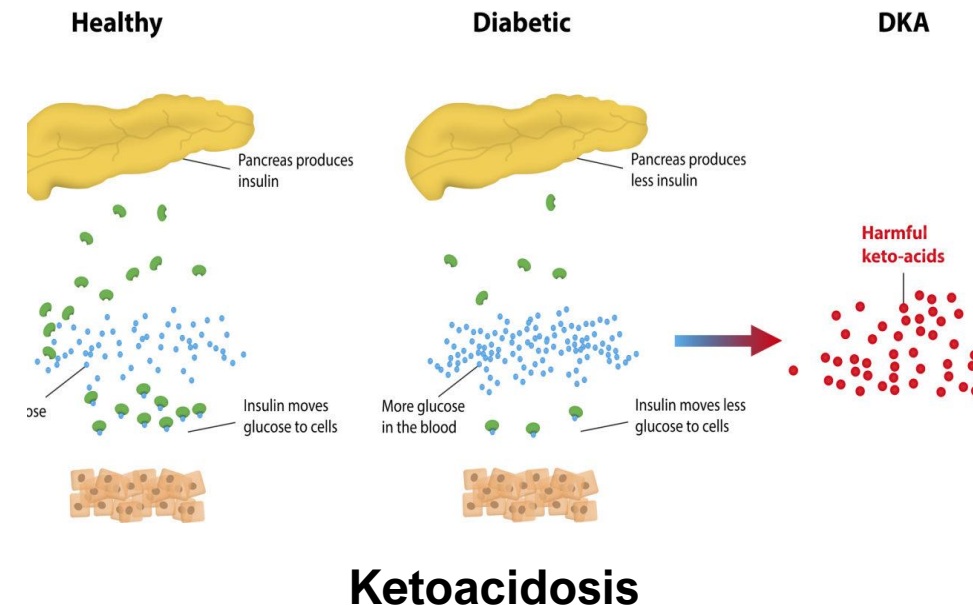
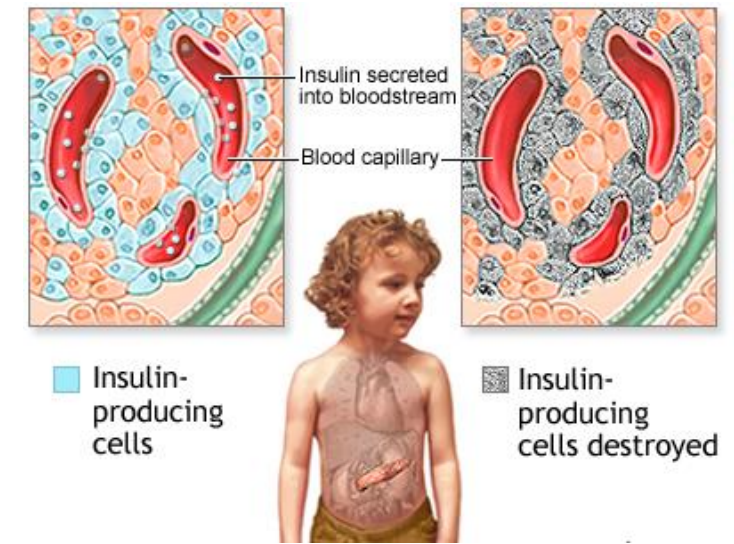
PREDIABETES:

Prediabetes, also known as impaired fasting glucose (IFG), is a state in which the fasting blood sugar level is higher than normal but not high enough to be considered diabetes (110–126 mg/dL). It makes patient susceptible to diabetes, insulin resistance, and at a greater risk of cardiovascular (CV) and neural dysfunctions.

1.1. Classification of Diabetes Mellitus

Type 1 Diabetes Mellitus: Insulin dependent Diabetes Mellitus. It appears when more than 90% of β cells of pancreas are destroyed by an autoimmune process. The onset is acute, and the peak incidence is around 15 years.

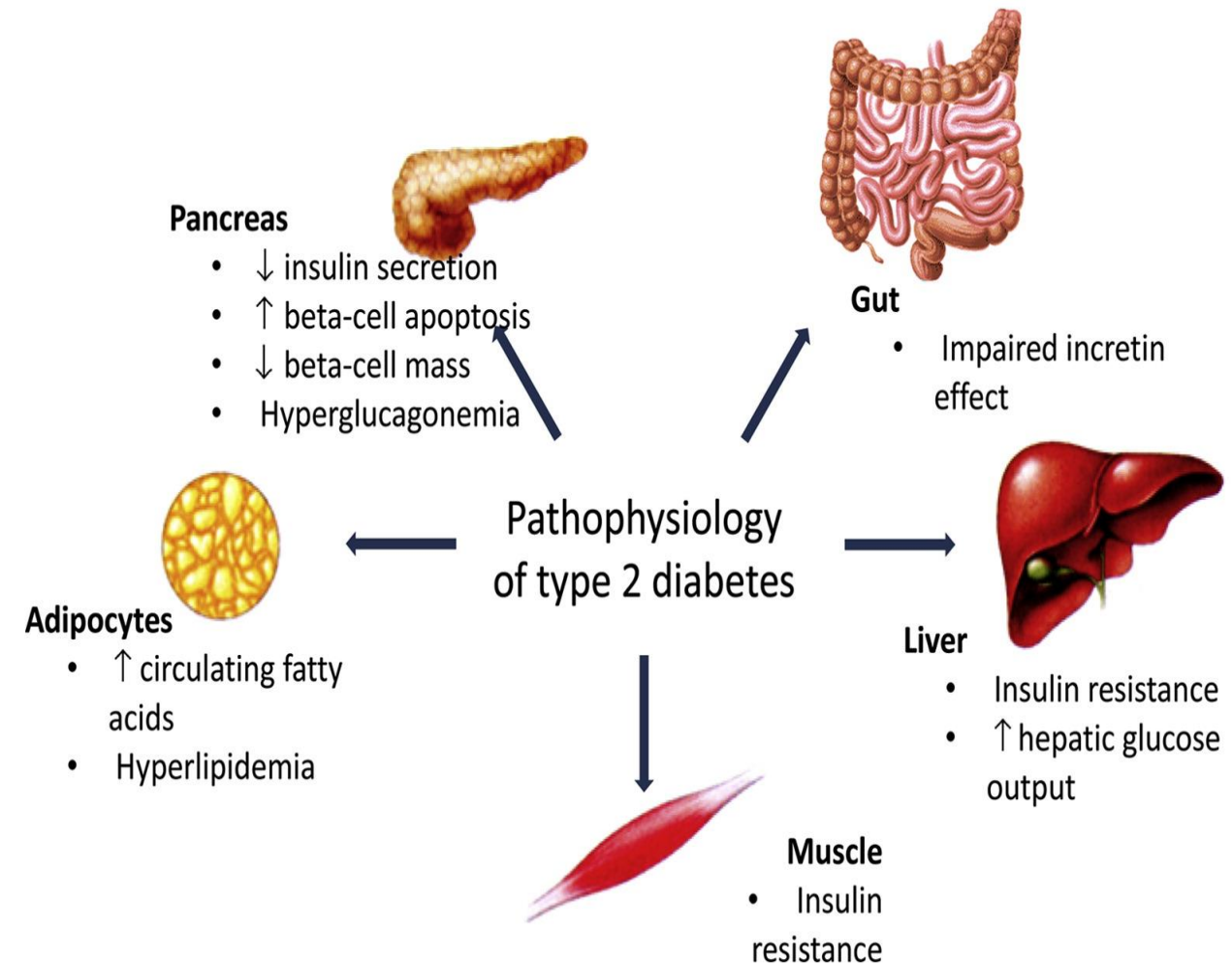
- Immune Mediated- This kind of diabetes is a consequence of the cell-mediated autoimmune destruction of β -cells of the pancreas, which accounts for just 5–10 per cent of diabetes previously referred to as insulin-dependent diabetes, type 1 diabetes and juvenile-onset diabetes. In some persons (primarily newborns and kids) the speed of β -cell breakdown in this form of diabetes is extremely variable and slow in others (mainly adults). In certain individuals especially notably infants and adults, ketoacidosis may be the earliest sign of the condition. Others have moderate fasting hyperglycemia which, if exposed to infection or other triggers, can move swiftly towards serious hyperglycemia
- Idiopathic Diabetes- Type 1 Idiopathic variants DM often majorly come from Africa or Asia. There is an irregular threat of diabetic ketoacidosis (DKA) based on their differing low insulin concentration in the bloodstream.



Type 2 Diabetes Mellitus: Noninsulin dependent Diabetes Mellitus. Overeating, obesity, underactivity and ageing are the main risk factors for Type 2 Diabetes Mellitus. This kind of diabetes, affects 90–95 percent of people with diabetes which is characterized by insulin resistance and relative inadequacy of insulin.

The large percentage of individuals with diabetes of this sort are obese and fat promotes resistance to insulin. Ketoacidosis is unlikely to occur with this kind of mellitus, and if it does occur, it's generally due to the stress of another condition, such as an infection. Because hyperglycemia develops slowly and is frequently not severe enough for the patient to notice any of the typical symptoms of diabetes in its early stages, this kind of diabetes can go undetected for years.

According to a report issued in 2013 by the International Diabetes Federation (IDF), the prevalence of diabetes all over the world in adults (21-80 years old) was 8.3% (382 million people), the large proportion comes under the ages of 40 and 60 years, and the number is expected to rise beyond 590 million by 2030, with a 10 percent global prevalence. The main causes of type 2 diabetes are genetics and lifestyle choices. Variety of lifestyle activities have been linked to the rise of type 2 diabetes such as lack of physical activity, a lack of exercise, smoking tobacco, and excessive alcohol consumption.



1.2.India Diabetes Report (2010-2045)

At a glance	2010	2019	2030	2045
Diabetes estimates (20-79 y)				
People with diabetes, in 1,000s	50,768.30	77,005.60	1,00,956.40	1,34,239.30
Age-adjusted comparative prevalence of diabetes, %	7.8	10.4	11.2	11.5
People with undiagnosed diabetes, in 1,000s	-	43,869.00	-	-
Proportion of people with undiagnosed diabetes, %	-	57	-	-
Mortality attributable to diabetes (20-79 y)				
Deaths attributable to diabetes	10,07,642.00	10,10,262.10	-	-
Proportion of diabetes-related deaths in people under 60 y, %	-	50.5	-	-
Type 1 diabetes estimates in children and adolescents				
New cases of type 1 diabetes (0-14 y), in 1,000s	15.7	15.9	-	-
New cases of type 1 diabetes (0-19 y), in 1,000s	-	19.7	-	-
Type 1 diabetes (0-14 y), in 1,000s	97.6	95.6	-	-
Type 1 diabetes (0-19 y), in 1,000s	-	171.3	-	-

At a glance	2010	2019	2030	2045
Complications of diabetes				
Microvascular	Nephropathy: 5.9%			
	Retinopathy: 0.8%			
	Neuropathy: 10.6%			
Macrovascular	Coronary artery disease: 2.5%			
	Cerebrovascular disease: 0.3%			
	Peripheral artery disease: 0.0%			
	Heart failure: 0.2%			

Source: Federation, I. D. (2019). *IDF Diabetes Atlas* (9th ed.). Brussels, Belgium: International Diabetes Federation.

1.3. Indian Diabetes Market

- In the year 2020, the Indian diabetes market is worth almost USD 1,957 million. Between 2021 and 2026, the market is predicted to increase at a CAGR of 16.5 percent, reaching a valuation of around USD 4,892.7 million.
- The growing knowledge and awareness among customers about the signs of diabetes and its negative health consequences is driving the Indian diabetes market, which has resulted in a significant increase in diagnostic and medication treatment rates.
- Diabetes sector growth in India is also being aided by increased urban growth and developing healthcare infrastructure. Furthermore, the expansion of pharmaceutical contract manufacturing, the emergence of new technologies and low-cost medication manufacture have all helped to expedite the diabetes industry's rise in the country.
- Nevertheless, in the future year, market expansion may be hindered because of expensive R&D costs, technical advances that outdates the existing medications, rigorous pricing policies, price control, Intellectual Property Rights (IPR) protection and quality control regulatory clearances



2. Background and Rationale

2. BACKGROUND AND RATIONALE

- The oral antidiabetic medicine industry segment is extremely competitive and fragmented, causing several problems for consumers; thus, researches are necessary to have a deeper knowledge and assessment of the Oral Antidiabetic market.
- Diabetes is a major established risk factor for renal and eye problems. Diabetes treatment is continuously developing in response to new information published on a regular basis, and an excess of new medicines are being added at a quick rate.
- There has been a shift in the medicines administered, because of their positive impact on lowering underlying comorbid disorders. Outdated medicines are being phased out in favor of newer, more effective treatments with fewer adverse effects.
- As a result, this research focuses on the market estimation and growth of Oral antidiabetics, as well as the assessment of new competitors in the same segment.

The background of the slide is a close-up, slightly blurred image of a document. It features a line graph with a jagged line. A pen is visible in the upper right corner, pointing towards the graph. There are some numbers visible on the graph, such as '2,5' and '2,47'.

3. Research Objective

3. RESEARCH OBJECTIVE

Following are the key objectives of the research:

- To be familiar with the market for anti-diabetic medication brands.
- To examine the Anti-diabetics market's competitive landscape.



4. Research Methodology

4.1. Research Design

Type of Research: Descriptive study

Source of Data: Primary and Secondary Research.

Data collection technique:
Through survey- 80% through online mode of survey, 10% through telephone and rest 10% through physical interaction.

Data collection tool:
Questionnaire tool.

Data Collection Method:

- Primary Data Collection: A pretested structured questionnaire was framed for data collection.
- Secondary Data Collection: Journals, PubMed Articles

Duration of study:

- Three months (March 22 to June 19, 2021)

4.2. Sample Design

Target Population:
Dispensing Pharmacists

Sample Size: 100
Pharmacists

Sampling technique: Non
Probability-Convenience
sampling.

Study Area: Jaipur, Rajasthan

**Data Collection and
Analysis:** The responses
obtained was collected,
filtered, and statistically
analyzed using tools like
Microsoft Excel / R-studio.

Measure of Ethics:
Respondents were assured of
Privacy and Confidentiality.

**Data Analysis and
Interpretation:** With the use
of suitable statistical
techniques, the data was
analyzed and interpreted to
arrive at the results.

5. Ethical Consideration



5. ETHICAL CONSIDERATION

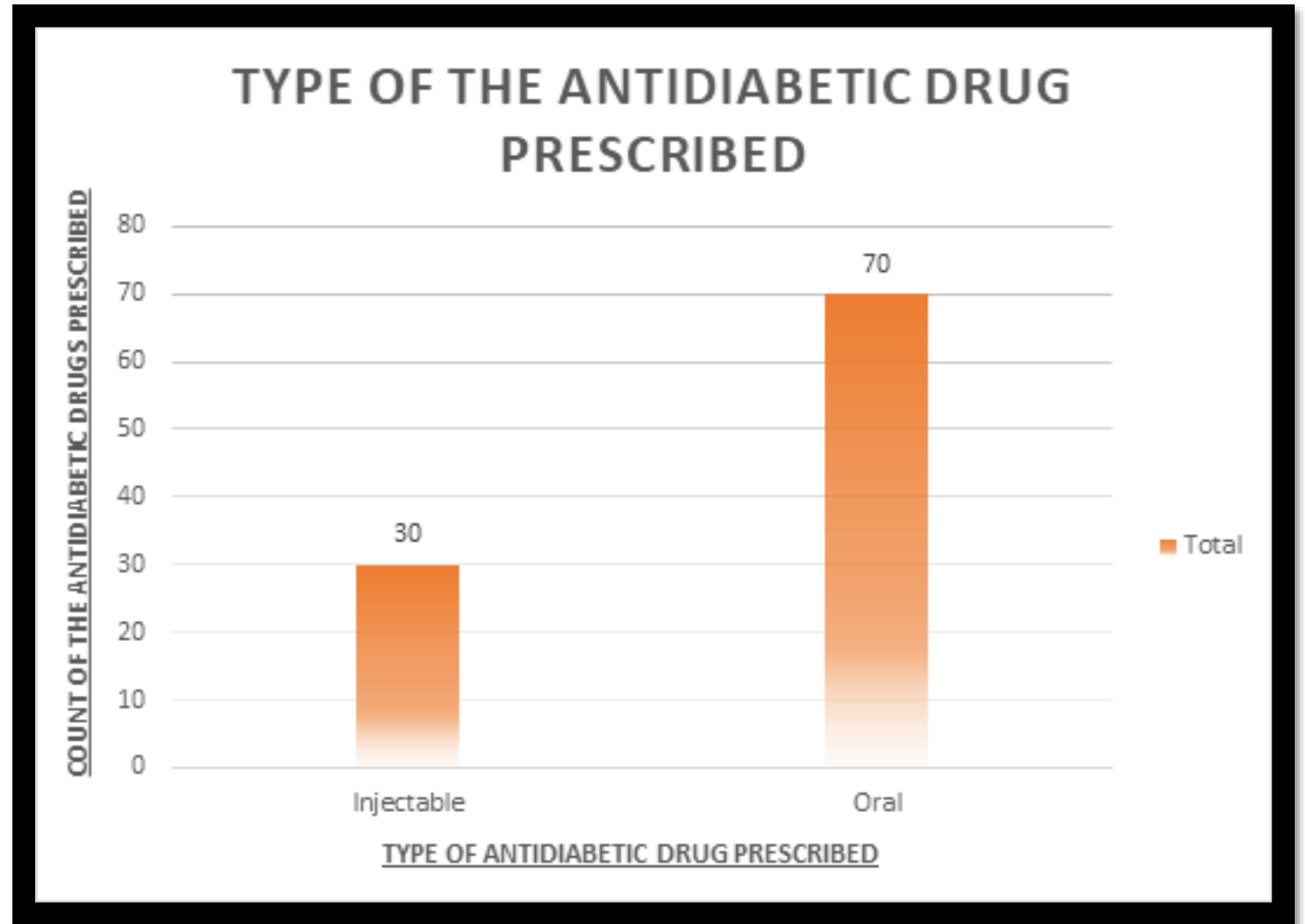
The research study was carried out in accordance with the established research procedures. The study participant was provided time to express their real feelings about the research topics. The participants' consent was obtained, and proper permission was granted for the use of their data. The respondent's identity was revealed with their permission, and if they were unwilling to do so, their identity was kept confidential.



6. Results and Discussions

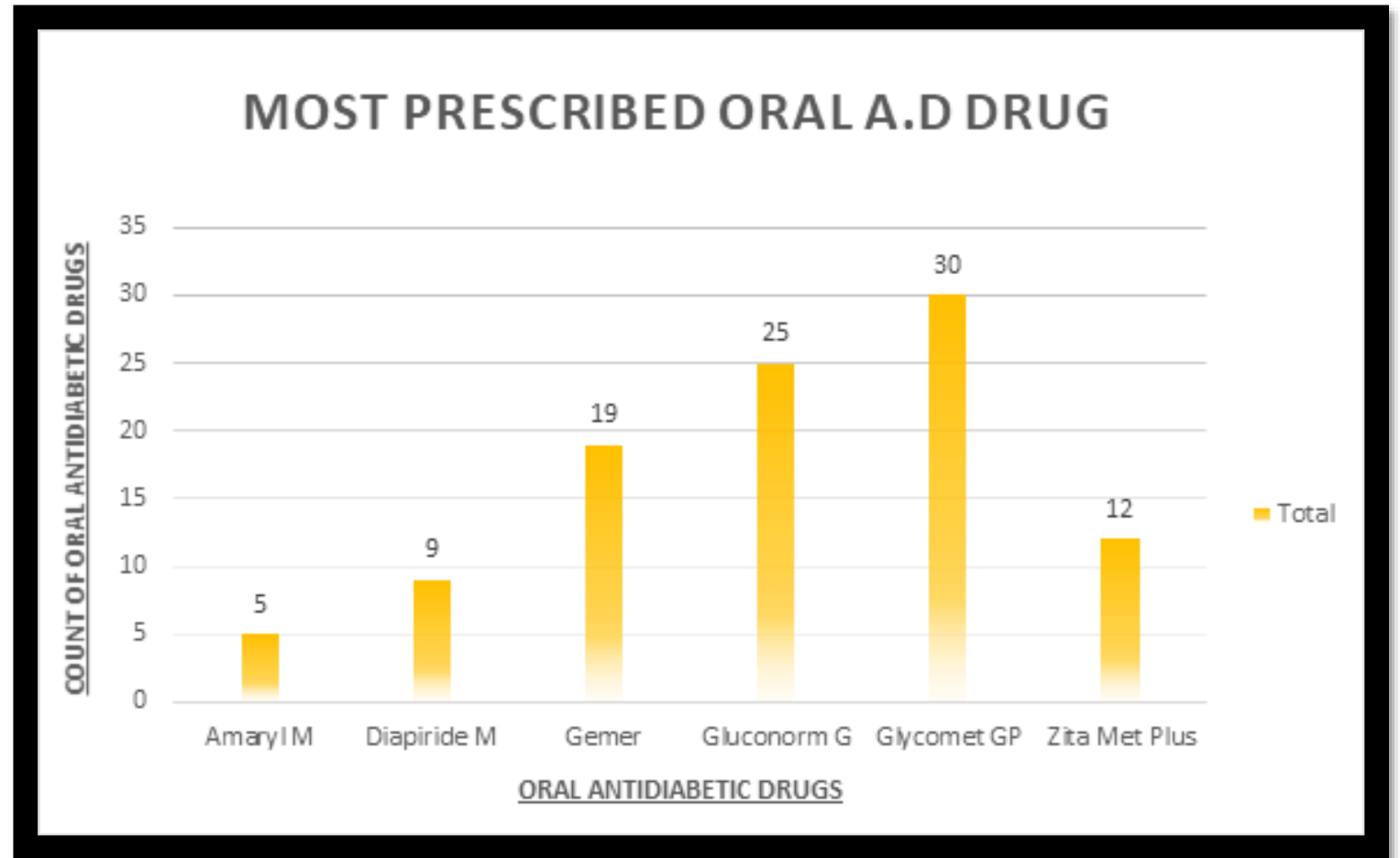
6.1. Type of the antidiabetic prescribed

Interpretation: The above graph depicts the type of the antidiabetic drug mostly prescribed. In Jaipur, according to the survey report 70% Oral Antidiabetic drug whereas 30% injectable antidiabetic drugs are prescribed.



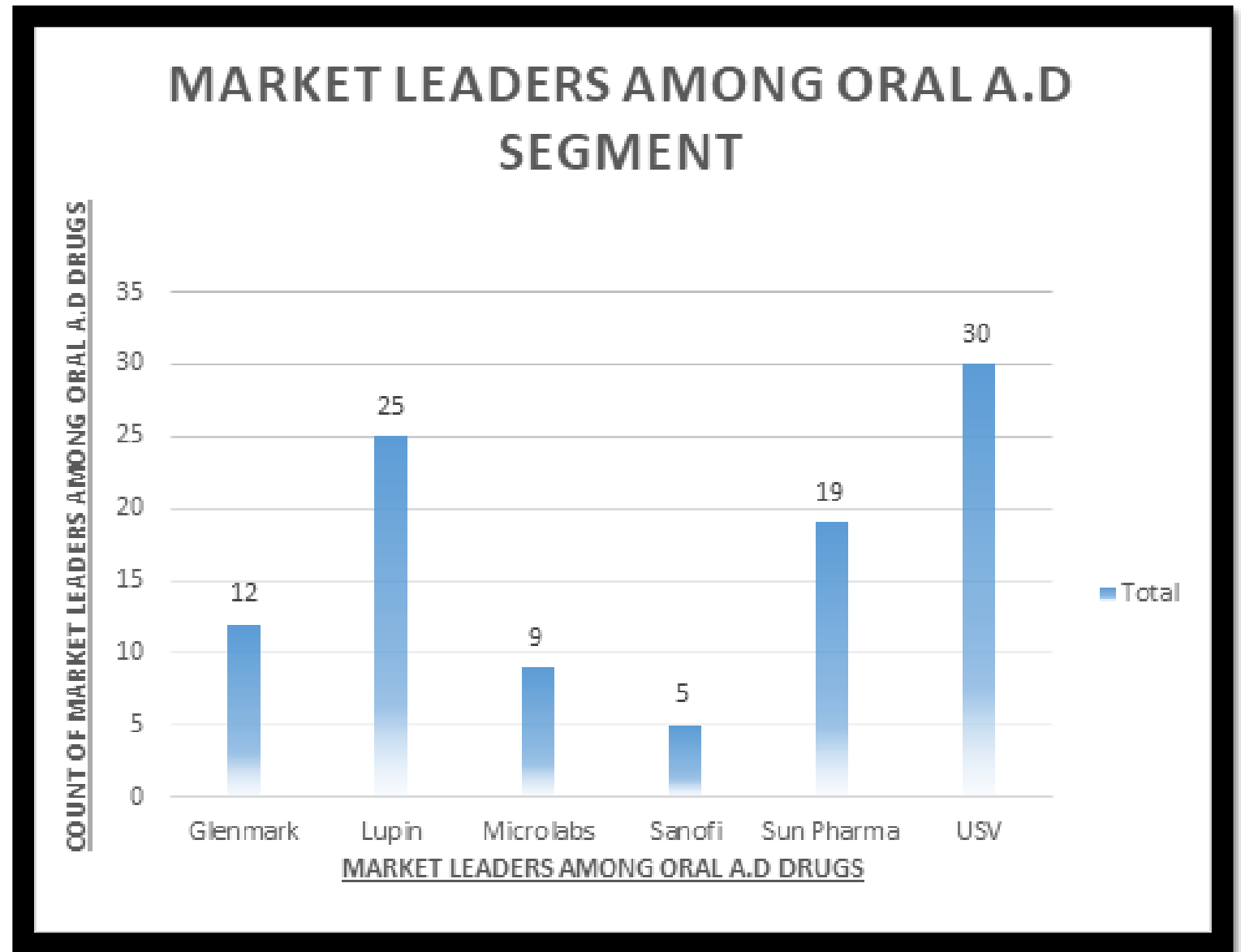
6.2. Most prescribed Oral antidiabetic drug

Interpretation: The graphical analysis depicts the mostly prescribed Oral Antidiabetic drug. Among the oral antidiabetic segment Glycomet GP (30%) is the most commonly prescribed medication followed by Gluconorm G (25%), Gemer (19%), Zita Met Plus (12%), Diapiride M (9%) and Amaryl (5%).



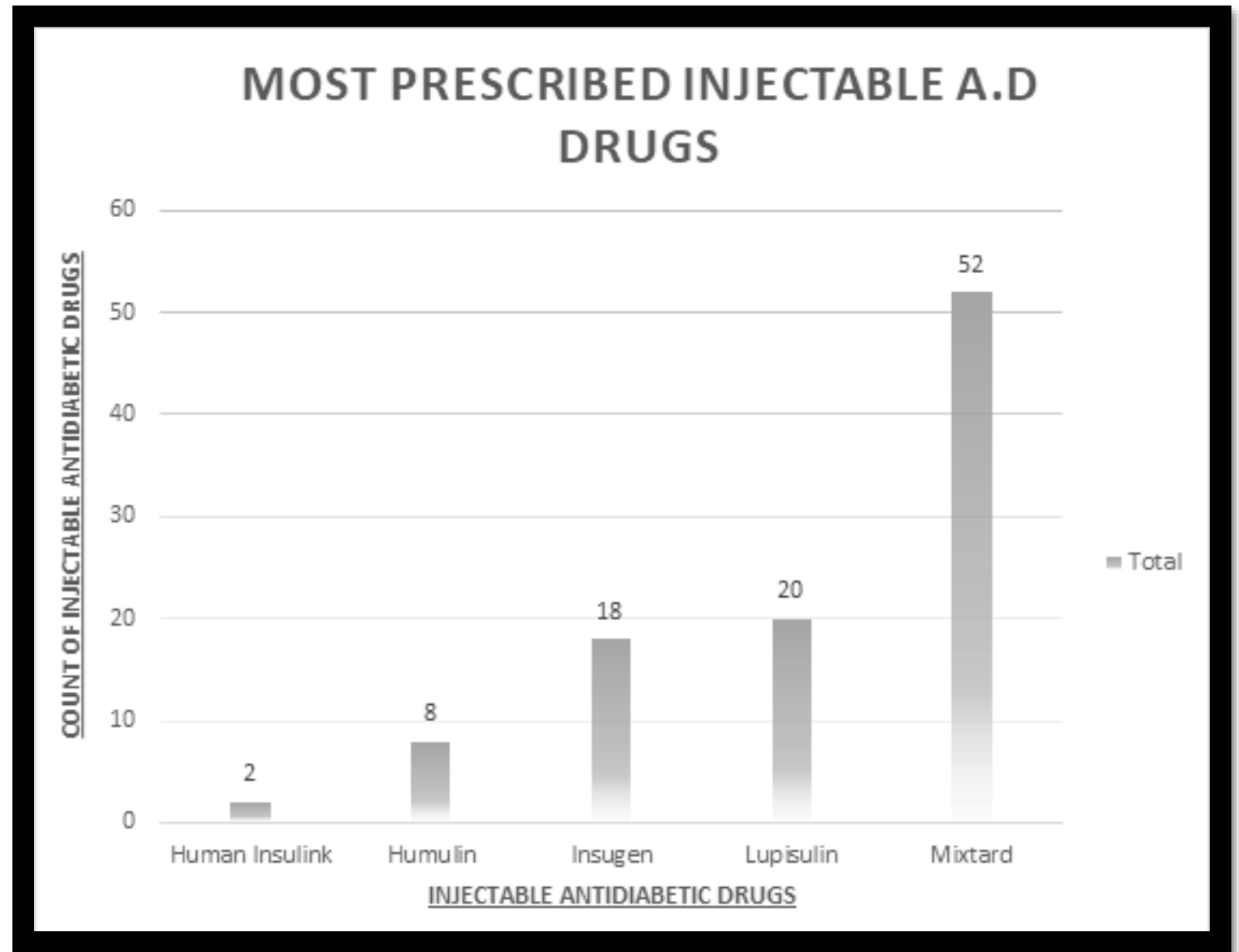
6.3. Market leaders among oral antidiabetic segment

Interpretation: This graphical analysis depicts the market leader in the oral antidiabetic segment. Among the oral antidiabetics market, the leading position is acquired by USV (30%), whereas the 2nd position is bagged by Lupin (25%) followed by Sun Pharma (19%), Glenmark (12%), Microlabs (9%) and Sanofi (5%) at last position.



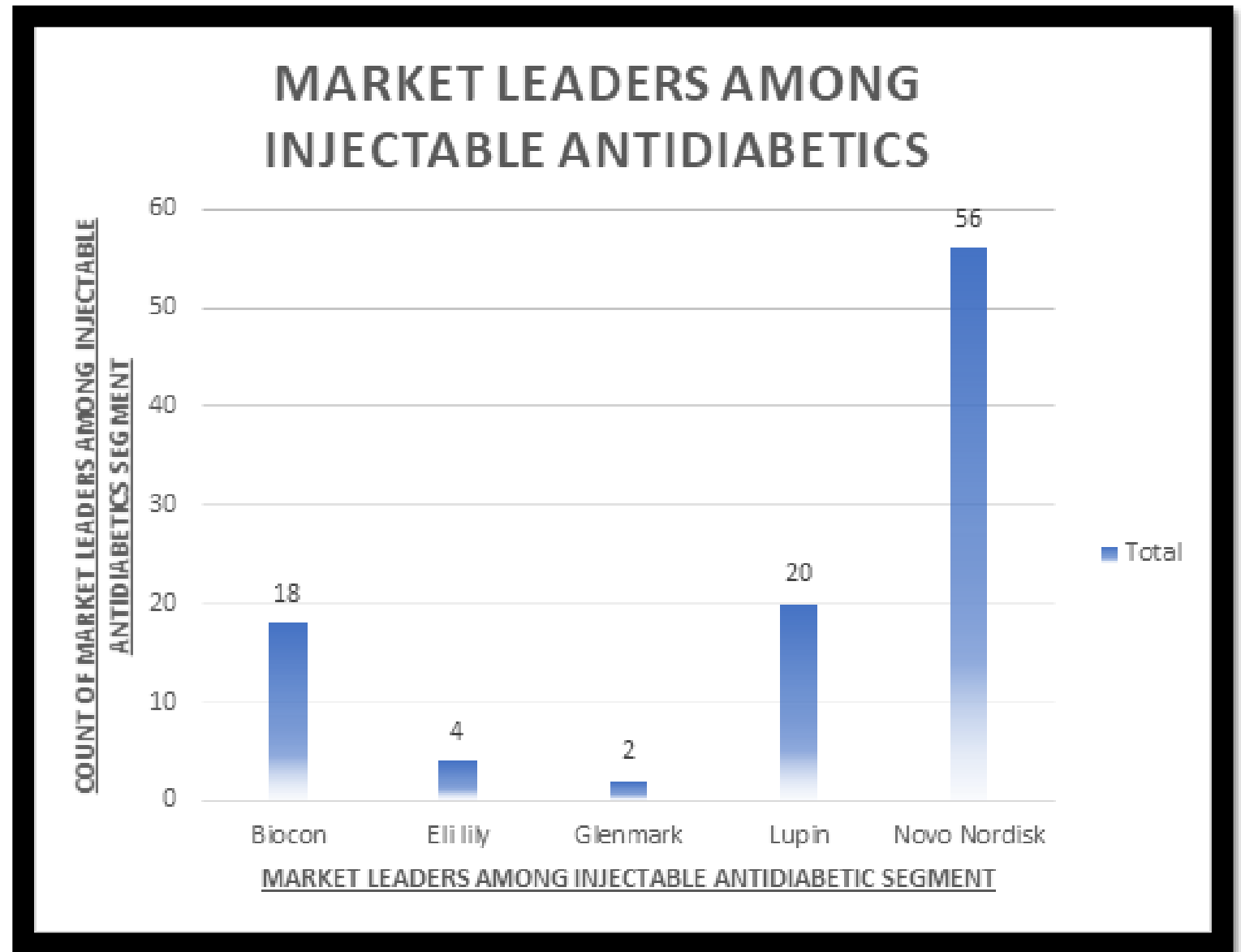
6.4. Most prescribed injectable antidiabetic drugs

Interpretation: This graphical analysis depicts the most commonly prescribed Injectable antidiabetics. Among the injectable antidiabetics Mixtard is the top most prescribed injectable antidiabetic (52%) which contributes more than 50% of the market share. Lupisulin being the second most prescribed injectable antidiabetics (20%), followed by Insugen (18%), Humulin (8%) and Human Insulink (2%).



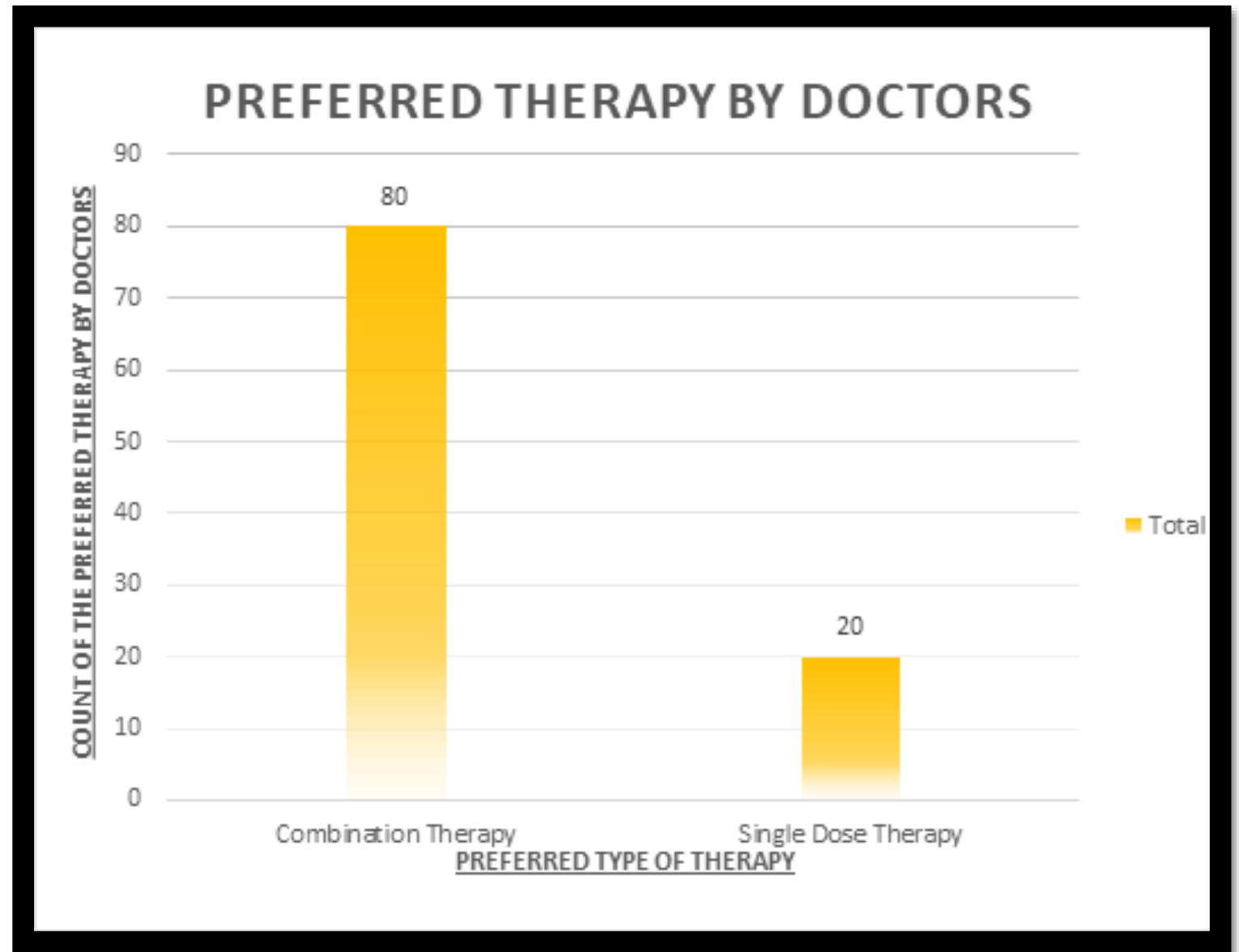
6.5. Market leaders among injectable antidiabetic segment

Interpretation: The graphical analysis depicts the market leader among the Injectable antidiabetics segment. Among the Injectable antidiabetics, the top market leader is Novo Nordisk (56%) whereas the 2nd market leader among these is Lupin (20%) followed by Biocon (18%), Eli lily (4%) and Glenmark (2%).



6.6. Most preferred therapy by Doctors

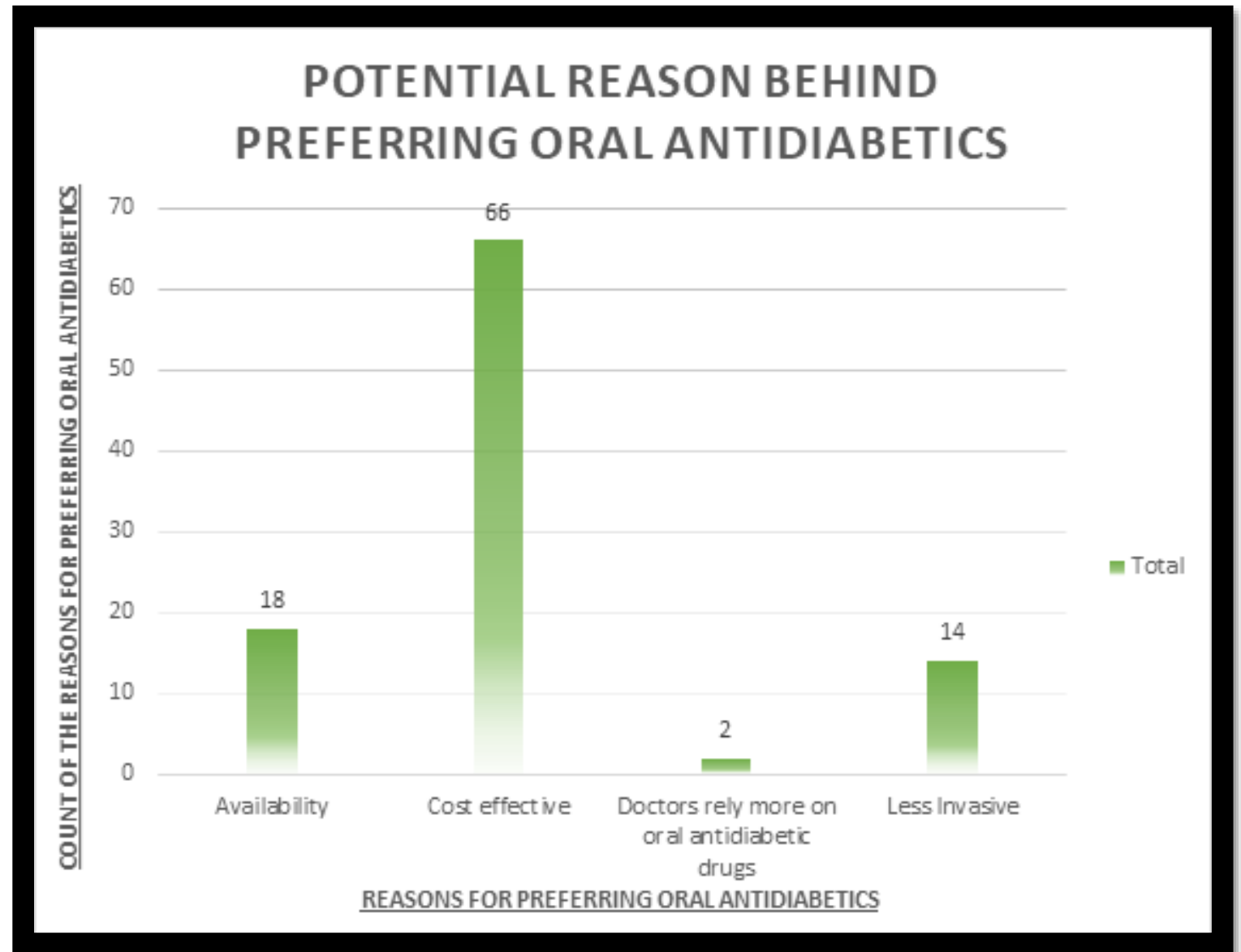
Interpretation: The graphical analysis depicts the preferred type of therapy recommended by the physicians. According to the results, Combination therapy (80%) is the most picked therapy by the physicians and recommended to the patients. The reason being cost effectiveness and also the patients might not miss the dose. Rest (20%) also recommends Single dose therapy.



6.7. Potential reason behind preferring oral antidiabetics

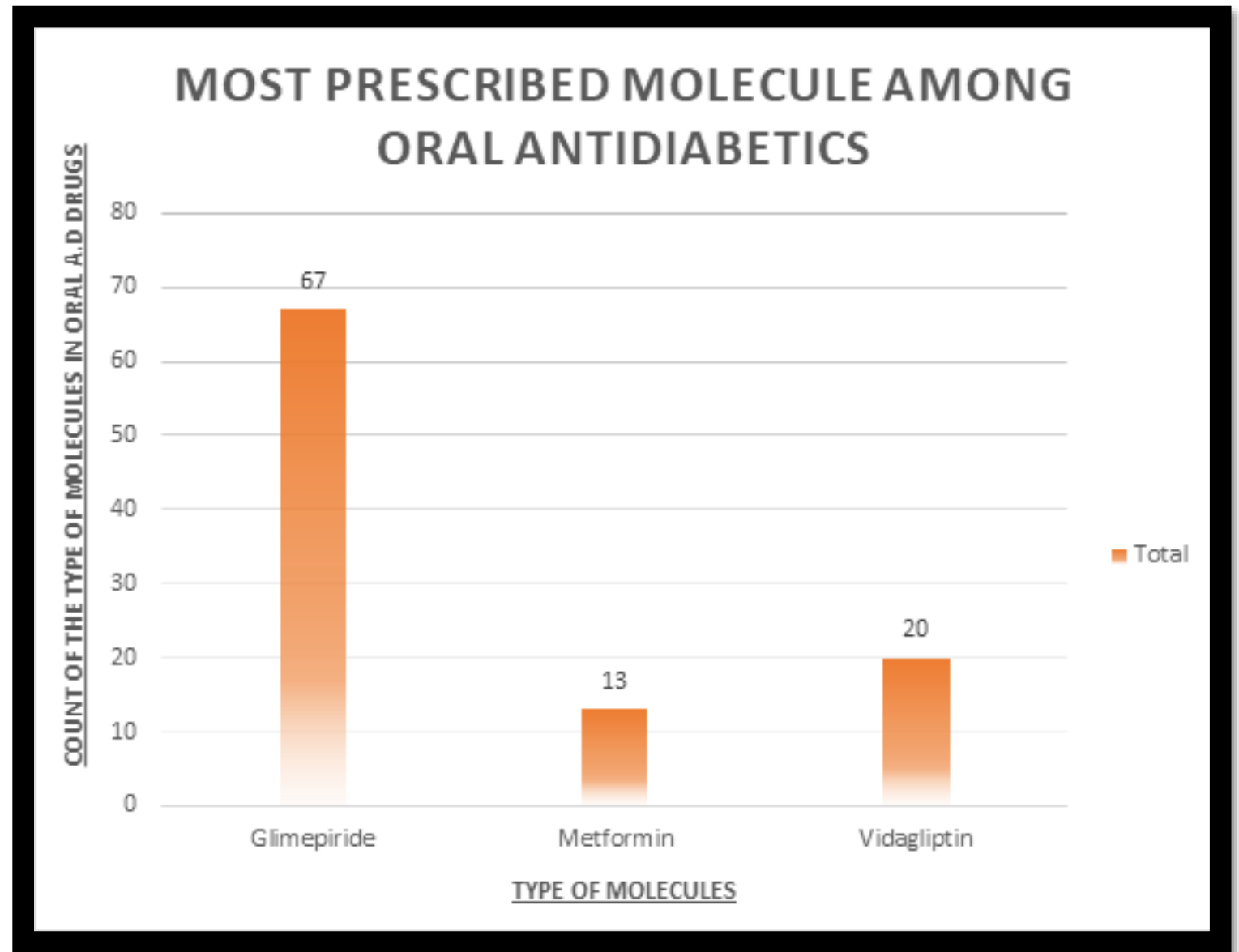
Interpretation: The graphical analysis depicts the potential reason behind preferring the oral antidiabetics over the injectable antidiabetics.

The main reason behind preferring oral antidiabetics over injectable is Cost effectiveness (66%). Moreover the oral antidiabetics are widely spread and available (18%), followed by less invasiveness (14%) and lastly the dependency of physicians over oral antidiabetics (2%).

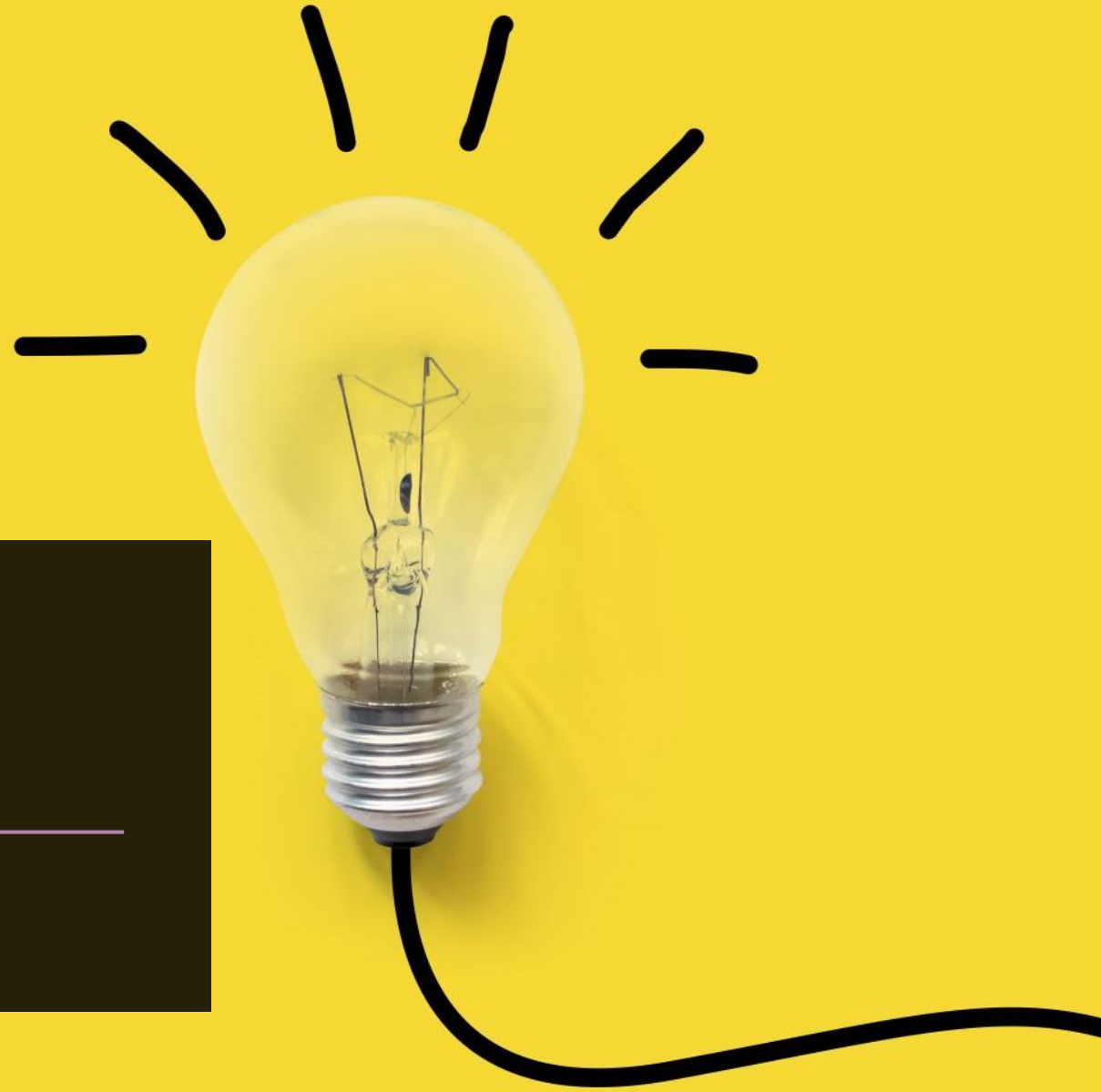


6.8. Most prescribed molecule among oral antidiabetics

Interpretation: The graphical analysis shows the most prescribed molecule among the oral antidiabetics segment. Glimepiride (67%) being the top molecule prescribed among oral antidiabetics followed by Vidagliptin (20%) and Metformin (13%) being the least.



7. Conclusion



7. CONCLUSION

- The survey was conducted in the region of Jaipur during March 2021 to June 2020. The target audience were the dispensing pharmacists from various pharmacies in the desired location where research is to be carried out. The sample size chosen was 100 dispensing pharmacist.
- From the statistical and graphical analysis of data it has been observed that oral antidiabetics are prescribed more as compared to the injectable antidiabetics. Out of 100 people 70% participants recorded that oral antidiabetics are preferred, whereas 30% injectable antidiabetics are prescribed.
- Among the oral antidiabetics Glycomet GP (30%) is the most prescribed drug, followed by Gluconorm G (25%), Gemer, Zita Met Plus, Diapiride and Amaryl. Among the Injectable antidiabetics it has been observed that Mixtard (52%) is at the leading position of prescription followed by Lupisulin (20%), Insugen, Humulin and Human Insulink.
- In the Injectable antidiabetics segment Novo Nordisk (56%) is the market leader, whereas in the case of Oral antidiabetics segment USV (30%) is the market leader. Rest Lupin, Biocon, Eli lily and Glenmark are below Novo Nordisk in the injectable market. Lupin, Sun Pharma, Glenmark, Microlabs and Sanofi are below USV in the oral market.
- Moreover, Physicians recommend Combination therapy (80%) over Single Dose Therapy, due to cost effectiveness and the patients might not miss their dose.
- Oral antidiabetics are preferred more over injectable majorly due to the cost effectiveness (66%), followed by availability and less invasiveness. There are various molecules associated with the antidiabetic drugs in which Glimepiride (67%) being the most prescribed followed by Vidagliptin (20%) and Metformin (13%).

8. Recommendation



8. RECOMMENDATION

It is clear from the preceding explanation that oral antidiabetic medications are more preferred than injectable treatments. In the case of injectable medicines, Novo Nordisk is the dominant player, whereas USV is the industry leader in the case of oral anti-diabetic treatments. Glimepiride is one of the most often recommended oral anti-diabetic medications, though combination therapy is preferred over single-dose therapy. Since combination therapy is less expensive, it's a good idea to try it.



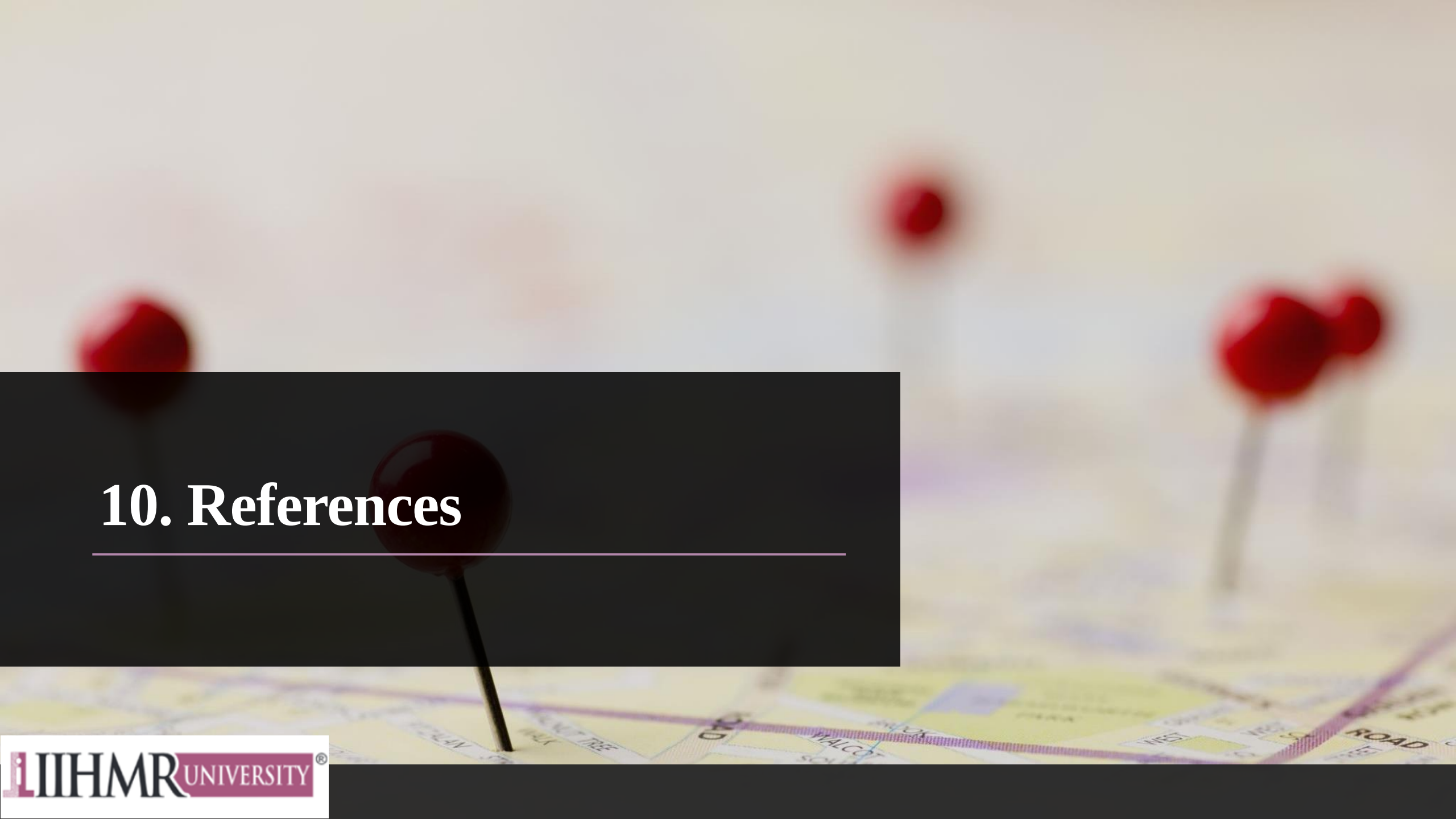
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9. Limitations of the study

9. LIMITATIONS OF THE STUDY

- Due to COVID-19 social distancing posed a few challenges for the effective execution of market research.
- In-person interviews and focus groups are tough to conduct. Virtual substitutes exist, however this raises questions regarding data reliability.
- Screen-to-screen discussions have different effects than face-to-face encounters. Digital sessions also makes the work more difficult. It's not the same reading body language on a screen.
- Connecting with an interviewee or participating in a focus group isn't easy. It's difficult to duplicate the same level of efficiency as compared to the physical interaction with the participants.





10. References

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Thank you
