

Market Assessment of Antidiabetic Drugs

By

Chiranjib Munshi

*Dissertation submitted for the partial fulfillment of the
MBA Pharmaceutical Management*

Academic year, 2018-2020



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TO WHOM IT MAY CONCERN

This is to certify that Mr. Chiranjib Munshi has successfully completed his dissertation project in our organisation under my personal guidance.

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INTRODUCTION

Diabetes Mellitus is a metabolic disorder in which blood sugar level remain high for a longer period and it is characterized by hyperglycaemia, glycosuria, hyperlipidaemia, negative nitrogen balance and sometimes ketonemia. Lack of insulin affects the metabolism of carbohydrate, protein and fat. Some symptoms are increased thirst, frequent urination, extreme hunger, unexplained weight loss, presence of ketones in the urine (ketones are a by-product of the breakdown of muscle and fat that happens when there's not enough available insulin), fatigue, blurred vision. Two major types of Diabetes Mellitus are –

- **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.
- **Type 2 Diabetes Mellitus** – Noninsulin dependent Diabetes Mellitus. Overeating, obesity, underactivity and ageing are the main risk factors for Type 2 Diabetes Mellitus.

BACKGROUND AND RATIONALE

The market segment of Oral Antidiabetic drug is very competitive and fragmented, and this poses many challenges for the stakeholders, therefore investigations are the need of the hour to derive better understanding and estimation of the market of Oral Antidiabetic. Diabetes is one of the strongest modifiable risk factors for kidney and eye disease. Treatment of Diabetes is constantly evolving in response to new evidence published every now and then and excess of new drugs are being added at a rapid pace. There is a shift observed in the choice of drugs prescribed especially due to their favourable effect on the reducing accompanying concomitant disorders. Older drugs are being replaced by new and more efficacious drugs with less side effects. Therefore, this study focuses on the estimation and growth of Oral antidiabetics in the market along with the analysis of new market entrants in the same category.

LITERATURE REVIEW

1. This audit studies the writing distributed on the qualities and ramifications of pre-diabetes and type 2 diabetes mellitus (T2DM) for the Arab and Bedouin populaces of Israel. T2DM is a worldwide medical issue. The fast ascent in its pervasiveness in the Arab and Bedouin populaces in Israel is answerable for their lower future contrasted with Israeli Jews. The expanded commonness of T2DM relates to expanded paces of corpulence in these populaces. A significant hazard bunch is grown-up Arab ladies matured 55-64 years. In this gathering stoutness arrives at 70%. There are a few hereditary and nourishing clarifications for this expansion. We discovered high hospitalization rates for miniaturized scale and macrovascular difficulties among diabetic patients of Arab and Bedouin inception. Despite the high predominance of diabetes and its negative wellbeing suggestions, there is proof that care and advising identifying with sustenance, physical movement and self-assessment of the feet are unsuitable. Monetary troubles are much of the time referred to as the purpose behind insufficient clinical consideration. Other proposed

reasons remember confidence for conventional treatment and confusions about medications and their reactions. In Israel, the quality pointers program depends on one of the world's driving data frameworks and manages the administration of ceaseless maladies, for example, diabetes. The program's standard information highlighted wellbeing imbalance between minority populaces and everybody in a few zones, including observing and control of diabetes. In view of these information, a pilot intercession program was arranged, focused on minority populaces. This program prompted a decline in disparity and filled in as the reason for a more extensive, progressively complete intercession that has entered the usage stage. Intercessions that were demonstrated to be powerful in other Arabic nations may fill in as models for diabetes the board in the Arab and Bedouin populaces in Israel.¹ 2. Type 2 diabetes mellitus (DM), a ceaseless metabolic illness common in grown-ups, is additionally predominant among kids, teenagers and youthful grown-ups. On understanding the atomic premise of diabetes, a huge affiliation is found between telomere length (TL) and type 2 DM. The point of the investigation was to

audit the accessible proof on impact of physical movement and yoga on DM remembering their impact for TL. The investigation was directed in Bangalore. various databases, for example, Google Scholar, PubMed and Cochrane Review were scanned for important articles utilizing watchwords, for example, 'diabetes', 'type 2 DM', 'physical movement', 'yoga', 'TL' and 'telomerase action'. A wide range of articles were incorporated for the investigation, for example, randomized controlled preliminary, precise surveys, writing audit and pilot study. Non-English articles were prohibited from the investigation. Results: Studies have exhibited the viability of yoga and physical exercise in type 2 DM in different ways, for example, lessening fasting blood glucose and glycosylated haemoglobin; improving lipid profile, circulatory strain and midsection to-hip proportion; diminishing fiery, oxidative and mental pressure markers; and improving the personal satisfaction of patients. In any case, constrained data is accessible on the impact of these intercessions on TL in type 2 DM and instruments included. End: Recent examinations have indicated beneficial outcomes of yoga

and physical movement on TL. Be that as it may, there is a lack of good-quality examinations assessing the impacts of yoga on TL in type 2 DM. Future investigations should be directed with standard treatment conventions, long haul development, proper benchmark groups and enormous example size.²

3. Diabetic nephropathy, chiefly because of type 2 diabetes mellitus (T2DM), is turning into the main source worldwide of end-stage renal sickness (ESRD), while different causes are diminishing. Diabetes is capable in certain nations for the same number of as half of the cases requiring renal substitution treatment (RRT). Ongoing information, accessible from vaults from France and from the UK, show that in France, the quantity of patients with T2DM related ESRD expanded by 21 % during the period 2007-2011, generally clarified by an expansion in the quantity of cases. In the United-Kingdom, inception of RRT in patients with diabetes expanded during the period 1995-2009 from 12.3 to 27.6 patients/106 populace. Late information, in view of an across the country study, give exact assessments of the commonness of ESRD, requirement for RRT, and related

endurance in patients with diabetes. Information were gotten and crossed from three Scottish national databases: Renal Registry, Care Initiative-Diabetes Collaboration, and National Records of death information. Endurance investigations with Cox relapse were acted in a chose companion of 841 patients who had first gotten RRT from 2006 to 2011. On 31st May 2008, 187,285 patients with referred to eGFR status were enrolled as having type 1 diabetes (T1DM - 10 %; n=19 414), or type 2 diabetes (90 %; n=167 871). Patients with ESRD (n=1288) were recognized by a CKD 5 score (Chronic Kidney Disease score), characterized as eGFR under 15 mL/min/1.73m², or on RRT. Predominance of ESRD was 1.63 % in T1DM and 0.58 % in T2DM, with chances proportions for diabetes type 0.97 after alteration for known diabetes span. Essential renal analysis was diabetic nephropathy in 91 % of patients with T1DM, and 58% with T2DM on RRT. Among patients with diabetes and a CKD score of 5, 83% of those with T1DM and 61 % with T2DM got RRT. RTT was less every now and again acted in more established patients with diabetes (just 39% of patients matured 75 years or more

with diabetes and CKD5), clarifying the distinction. Forecast of patients with diabetes at the ESRD stage was poor.⁴

4. The rising commonness of type 2 diabetes (T2DM) and hypertension in more seasoned grown-ups, and the malicious impact of these conditions on cerebrovascular and cerebrum wellbeing, is making a developing disparity between the "ordinary" subjective maturing direction and a "sound" psychological maturing direction. This changing wellbeing socioeconomics make T2DM and hypertension significant subjects of study, and warrant consideration from the point of view of psychological maturing neuroimaging research. Translation of individual or gathering contrasts in blood oxygenation level ward attractive reverberation imaging (BOLD MRI) or positron emanation tomography (PET H₂O¹⁵) flags as intelligent of contrasts in neural enactment basic an intellectual activity of intrigue requires suppositions of flawless vascular wellbeing among the investigation members. Without enough screening, incorporation of people with T2DM or hypertension in "sound" examples may acquaint

undesirable changeability and inclination with cerebrum and additionally intellectual measures and increment potential for blunder. We led a precise audit of the subjective maturing neuroimaging writing to archive the degree to which analysts represent these conditions. Of the 232 examinations chose for survey, not many unequivocally prohibited people with T2DM (9%) or hypertension (13%). An enormous bit had rejection measures that made it hard to decide if T2DM or hypertension were prohibited (44 and 37%), and many didn't specify any determination standards identified with T2DM or hypertension (34 and 22%). Of all the reviewed examinations, just 29% recognized or tended to the potential impact of intrasubject vascular fluctuation on the deliberate BOLD or PET signs. To fortify the thought that people with T2DM and hypertension ought not be disregarded as a potential wellspring of inclination, we likewise give an outline of metabolic and vascular changes related with T2DM and hypertension, as they identify with cerebrovascular and cerebrum health.⁵

STUDY RATIONALE

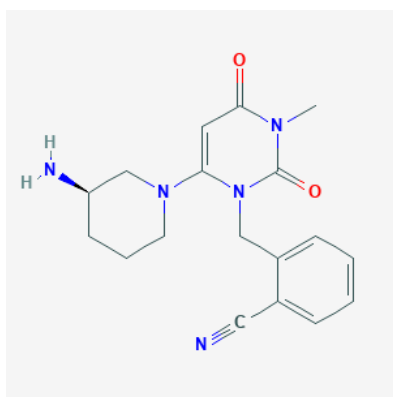
As of 2015, 415 million people had Diabetes with type 2 (90%). This represents 8.3% of adult population with equal rates in both women and men. As of 2014, the trends suggest that it is growing and it doubles the risk of early death from 2012 to 2015, app. 1.5 million to 5.0 million deaths each year resulted for Diabetes. The global economic cost of Diabetes in 2014 was US\$ 612 billion. In India more than 8.7% population between age group 20-70 are affected by Diabetes.

OBJECTIVE OF THE STUDY

1. To know the market of brands of Anti-Diabetic drugs.
2. To study the competitive landscape of Anti-Diabetic drugs.

ETHICAL CONSIDERATION

The research was completed with appropriate research guidelines. Time was given to the respondent of the study so that they can depict their true view on research questions. Consent from the respondents was taken and appropriate permission was also ensured for the usage of their given data. The disclosure of respondent identity was based on their permission where if they are not willing to disclose identity, their identity was exhibited.



are at Stage 3 studies.

Some new Antidiabetics: In DPP4 inhibitor, there is a new molecule, came in market. The name of the molecule is Alogliptin. It is a quinazolinone derivative. Dutogliptin and Linagliptin

RESEARCH METHODOLOGY

Research Design:

- **Study type:** Descriptive study
- **Data source:** Primary research
- **Data collection technique:** Survey
- **Data collection tool:** Questionnaire.

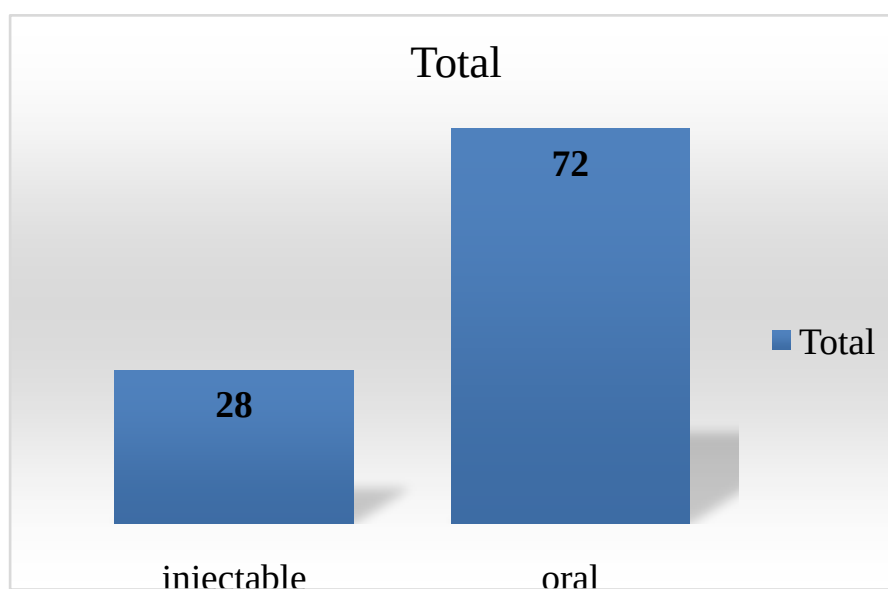
Sample Design:

- **Target population:** Dispensing Pharmacist
- **Sampling method:** Non-probability convenience sampling
- **Sample size:** 100 Dispensing Pharmacist (at 95% Confidence Interval)
- **Study Location:** Malda, West Bengal

Data collection method: I visited Pharmacy shops and met the pharmacists there. I asked them some questions, I have prepared for this survey i.e. the questionnaire. They answered me and noted down the answers in digital form. Based on their answers, I analysed the data and made graphical representation of them. After that I found the conclusion.

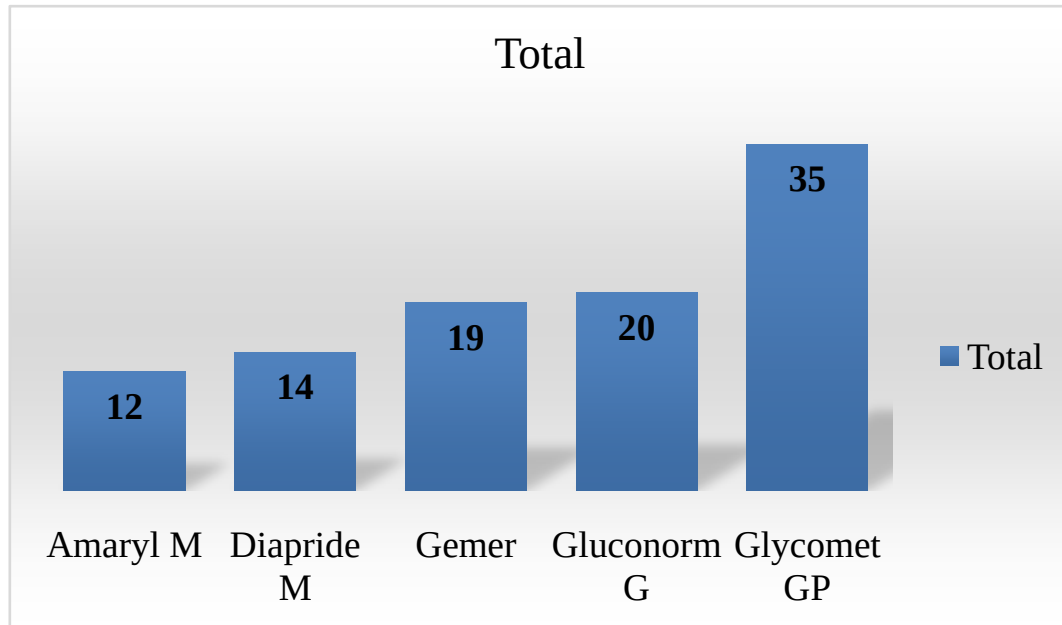
RESULT AND ANALYSIS

1. Type of Anti Diabetic drugs prescription comes more



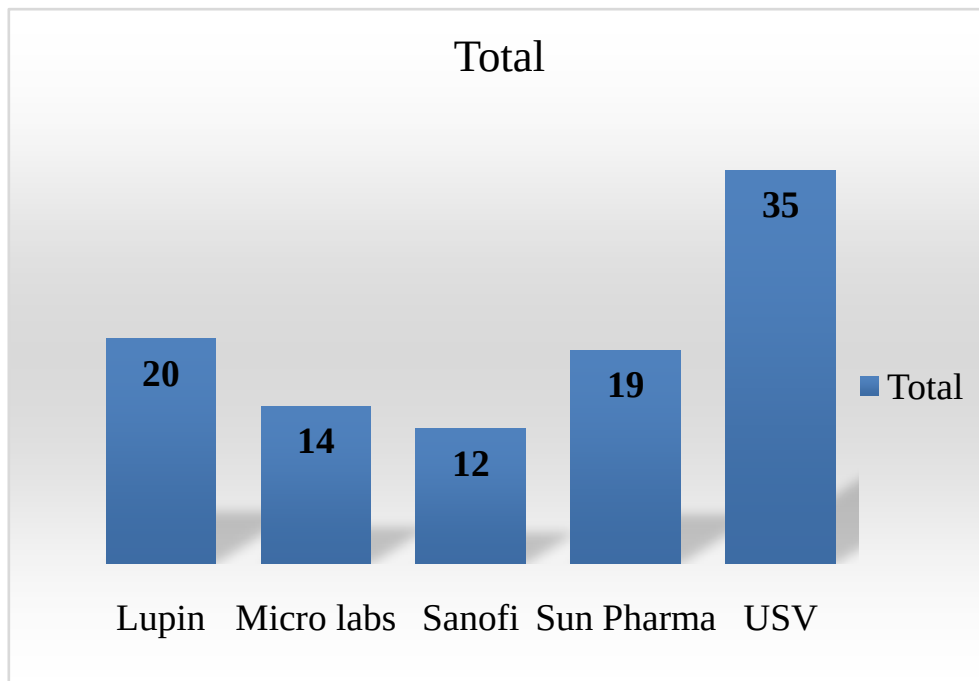
In Malda Area of West Bengal, among my survey report, oral anti diabetic drugs are more prescribed than injectable drugs. 72% oral, whereas 28% injectable drugs are being prescribed.

2. Most prescribed drugs among oral anti diabetic drugs



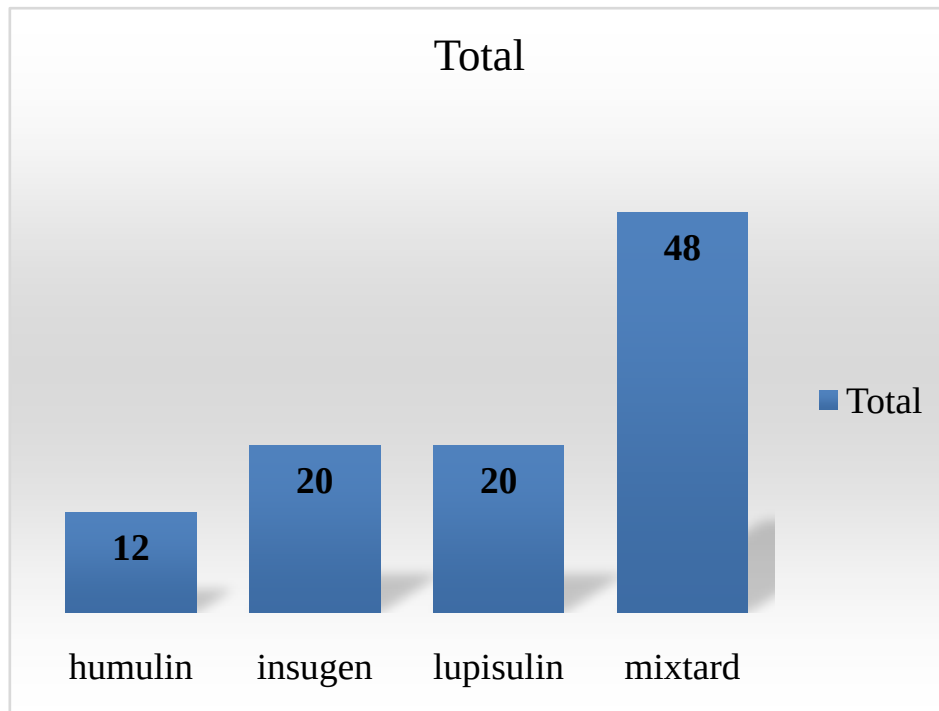
Among the oral anti diabetics, Glycomet GP is mostly prescribed oral anti diabetic drug (about 35%). Gluconorm G is at 2nd position and Gemer is at 3rd position with 19% of prescription.

3. Market leader among oral anti diabetic drug market



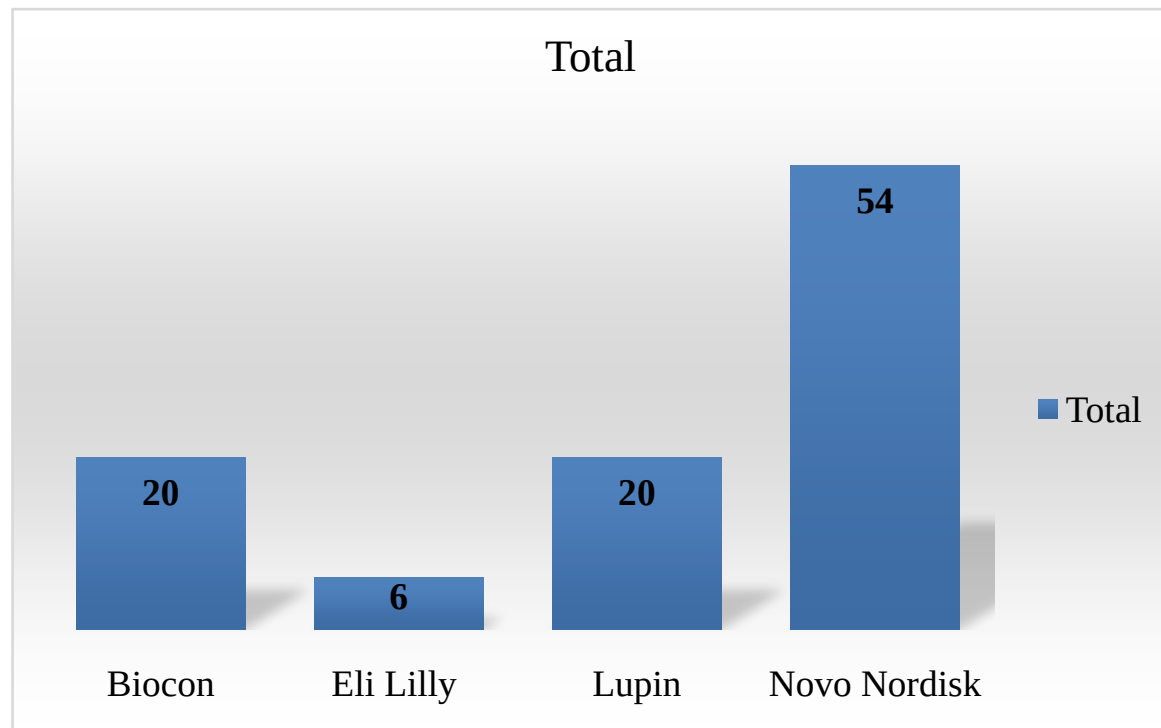
Among oral antidiabetics market, USV is the market leader with 35% of market under its control followed by Lupin with 20% and Sun pharma with 19% of market under their control. Micro labs have 14% and Sanofi has 12% market.

4. Most prescribed drugs among injectable anti diabetic drugs



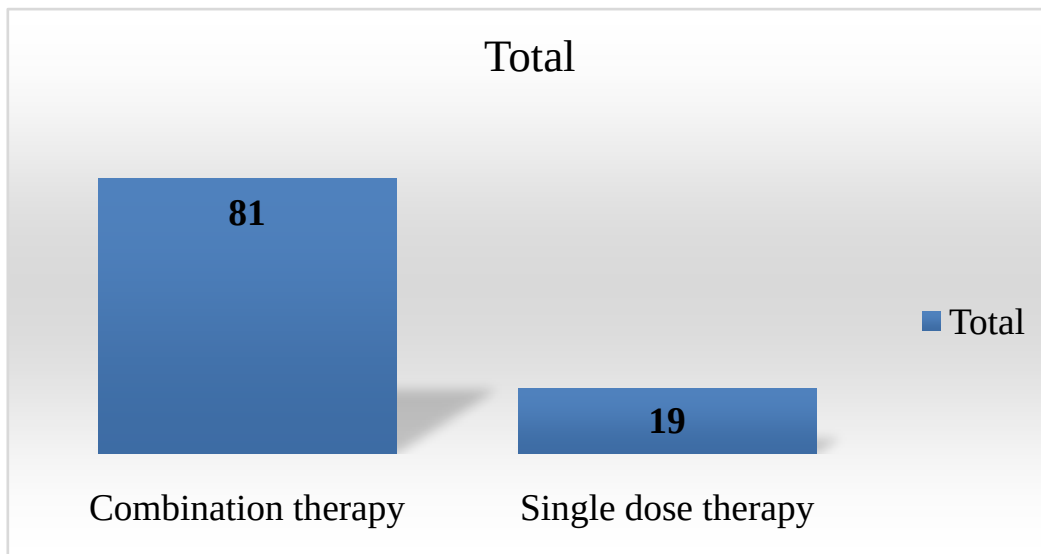
Among injectable antidiabetics, Mixtard is mostly used injectable anti diabetics (48% i.e. almost half of the market). Lupisulin and Insugen are at the same position with 20% of the market each.

5. Market leader among injectable anti diabetic drug market



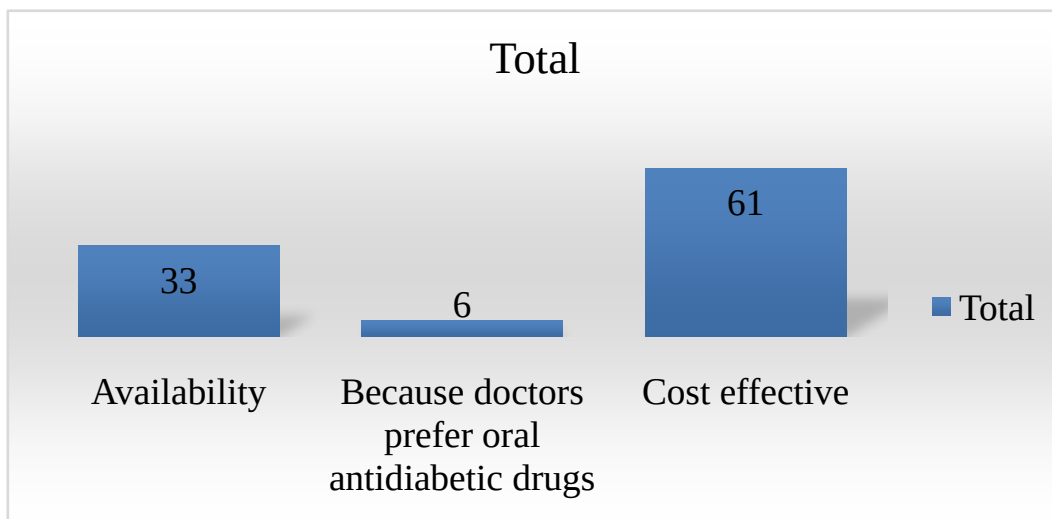
Among the injectable antidiabetics market, Novo Nordisk is the market leader with 54% of the market under their control followed by Biocon (20%) and Lupin (20%).

6. Most preferred therapy by the doctors



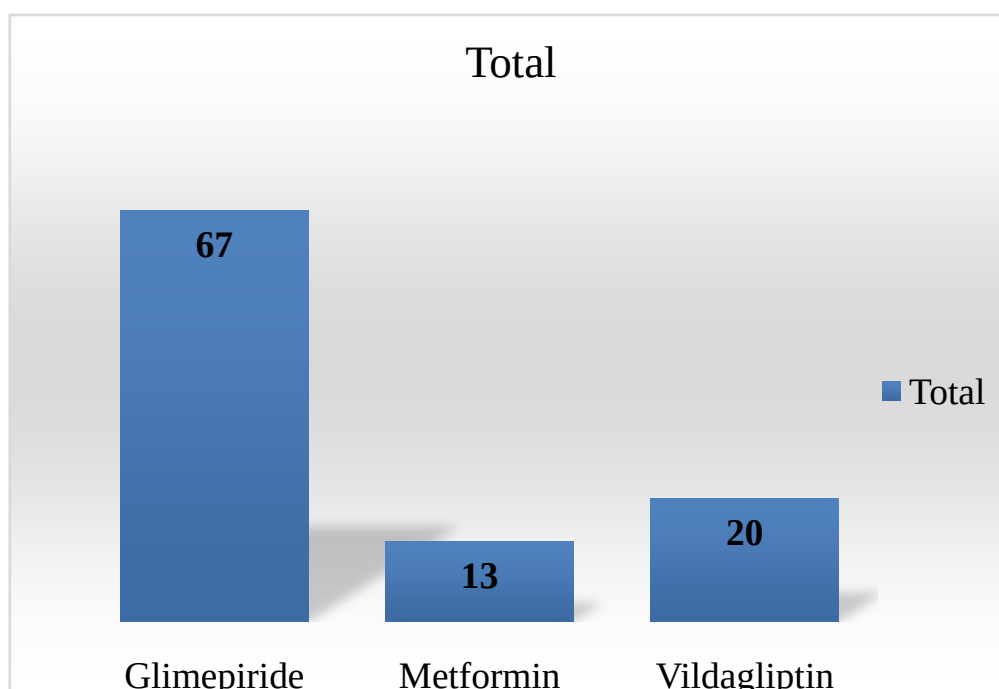
Combination therapy is most preferred by the doctors, around 81% doctors prefer combination therapy, as it is cost effective and people don't miss the doses as well. In some cases, they need to use single dose therapy.

7. Reason for preferring oral anti diabetic drugs



Cost effectivity is the main reason for preferring the oral antidiabetics. Also, oral antidiabetics are easily available in the market.

8. Most prescribed molecule among oral anti diabetic



Among the top molecules, Glimepiride is mostly prescribed molecule (about 67%) followed by Vildagliptin with 20% of prescription. And Metformin is with 13%.

CONCLUSION

From the above discussion it is noticed that oral antidiabetic drugs are preferable than injectable drugs. Novo Nordisk is the market leader among injectable drugs company and USV in case of oral anti diabetic drugs. Glimepiride is mostly prescribed among oral anti diabetic drugs whereas combination therapy is preferable than single dose therapy. Because combination therapy is cost effective.

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