Evaluation of drug prescribing patterns and cost analysis of Anti-diabetic therapy in Bargarh district.

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District Name: Bargarh, Odisha Demographics

AREA (IN SQ. KM)	5,837
TOTAL POPULATION	1,481,255
POPULATION DENSITY (PER SQ. KM.)	254
PROPORTION OF RURAL POPULATION TO TOTAL POPULATION	89.87
PROPORTION OF URBAN POPULATION TO TOTAL POPULATION	10.13
SEX RATIO(PER 1000)	977
LITERACY RATE	76%

INTRODUCTION

- Diabetes is a condition which is a metabolic disorder that is characterised along with different co morbidities and requires a lifelong treatment and maintenance of levels of glucose.
- Regardless of the Government attempt to prevent inexcusable price mounting of drugs by incorporating National List of Essential Medicine (NLEM) and by enacting the Drug Price Control Order (DPCO), huge discrepancy in cost of drugs still occur .
- The pattern of prescription still is used as an important tool to understands the trends in the medication prescription and also provides an idea about the drug usage and the rational use of drugs .

OBJECTIVES OF THE STUDY

1. To study the drug prescribing pattern
2. To study the different class of major pharmaceutical drugs prescribe for diabetes and comorbidities .
3. To access the demographic and about the patient.
4. To know usage of the anti-diabetic medications and rational use of it.
5. To know the cost involved in the therapy

Research Questions

- What is Drug prescribing pattern among patients?
- What is the cost involved in the antidiabetic therapy ?
- What are the Present top brands in the market ?

RESEARCH METHODOLOGY

RESEARCH TYPE	Primary and secondary
STUDY DESIGN	Descriptive and Analytical
SAMPLING METHOD	Random sampling
STUDY AREA	Bargarh district , Odisha
SAMPLE SIZE	110
DATA COLLECTION	Quantitative data
RESEARCH INSTRUMENT (TOOLS AND TECHNIQUES)	MS Excel
STUDY DURATION	3 months

Methods and Materials.

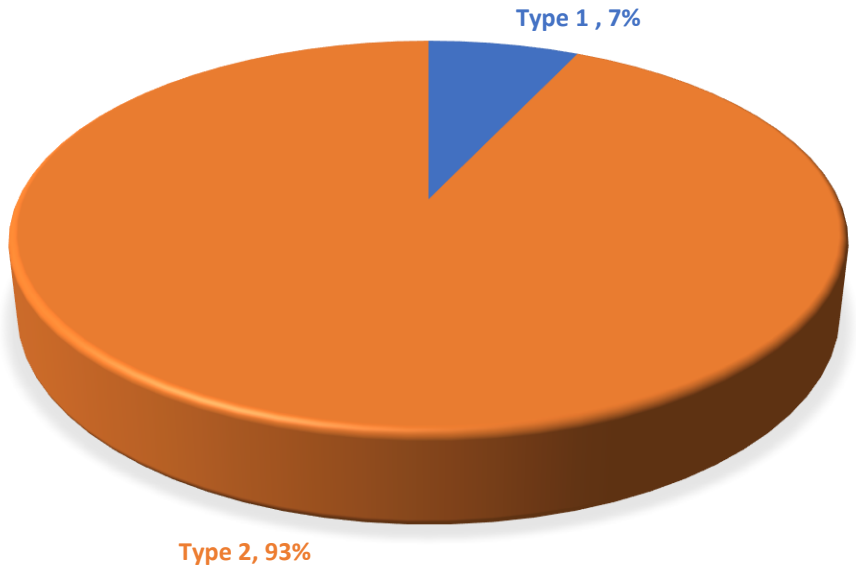
1. This study is conducted by collecting prescription from 110 participants and the sample are selected based on random sampling from different parts of Bargarh district and some of the prescriptions are collected from the different hospitals in the regions.
2. . Permission from the hospital was taken prior to this study.
3. The sample size of the study is 110

Parameters of study.

- Categorisation of type of diabetes.
- Average anti-hypertensive drugs prescribed per prescription.
- Which is the commonest and most frequent anti- hypertensive drugs prescribed.
- Cost involved in the medication.
- Prescription is written in either generic or branded form.
- All other medication which are used for comorbidities along with anti-hypertensive therapy.
- Top brands present in the market

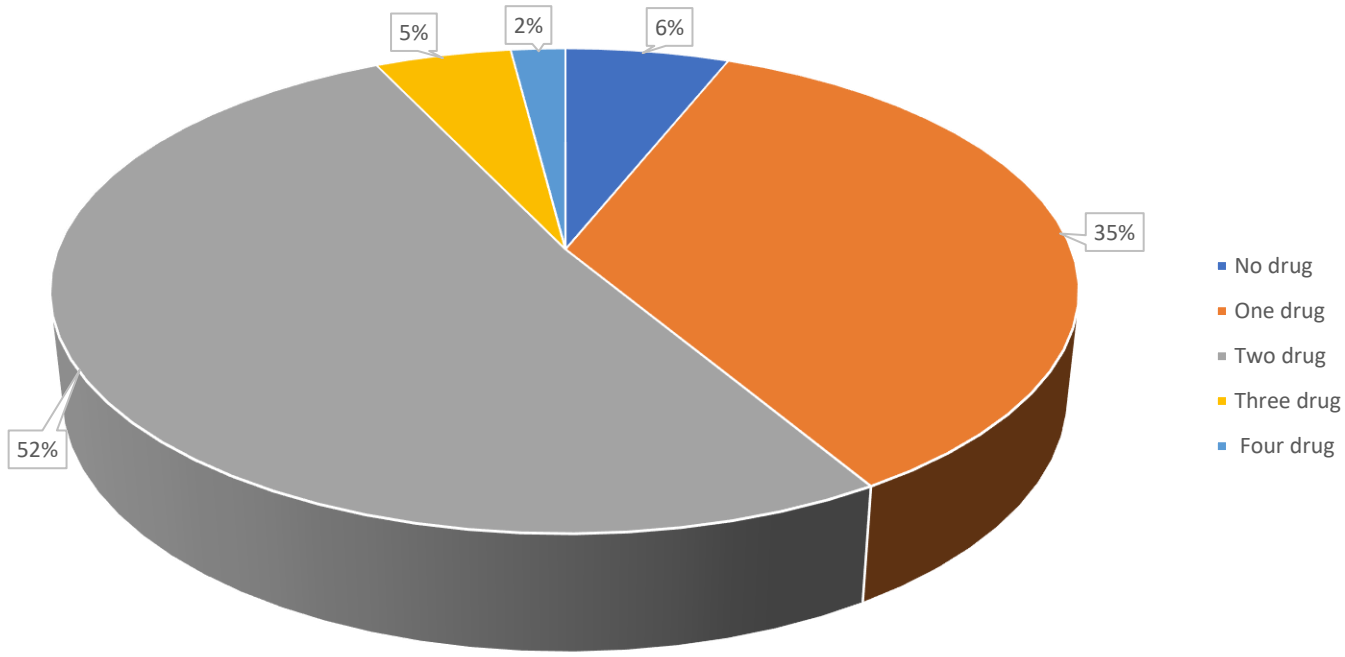
Results and Discussion.

- **Categorisation of diabetes.**



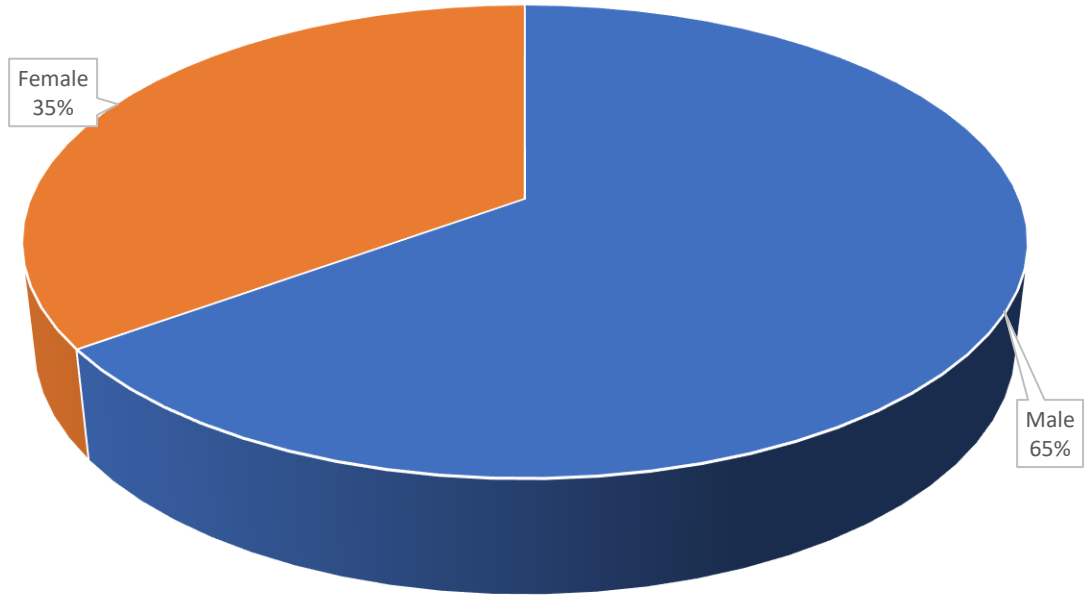
As the graph suggest Type 2 diabetes is the common form of diabetes and accounts for 93 % and there is the less significance of type 2 diabetes which accounts for 7%.

Distribution as per number of anti-diabetics drugs in the prescription



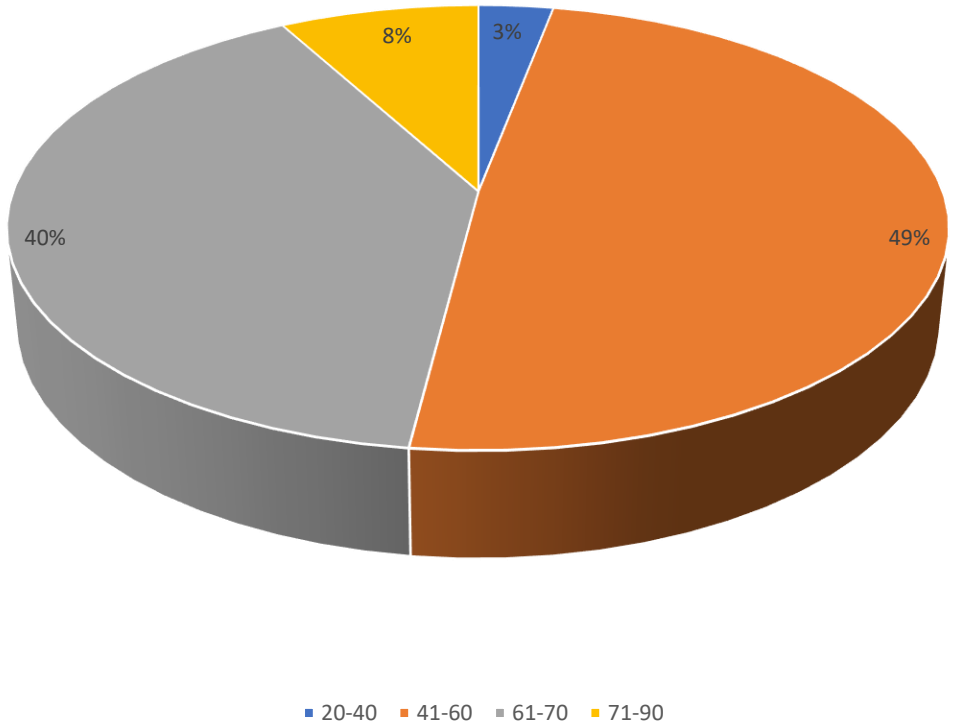
- The usage of one or more anti-diabetic drugs are used .which suggest the usage of combination drugs therapy in comparison to the mono therapy used in diabetes .

Distribution based on Gender.



Among the 110 participants 65% male have diabetic conditions and 35% female ie 38 have diabeteic condition in the study sample.

Distribution based on Age.



Among the majority of paticipants the prevalence of diabetes is more in the age group 41-60 i.e 49% and the least prevalence of diabetes is in the age group 20-40.

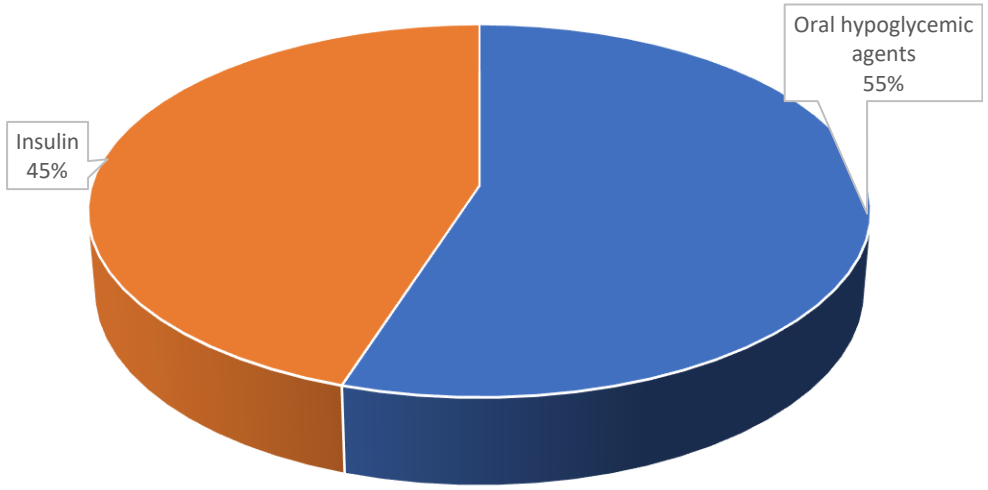
Family history of diabetes patients

Genetic factors play a major role in diabetes so a number of patients who have family history of diabetes is 37% as comparison to person who do not have family history of diabetes i.e 52% and 11 % people don’t know about their family history of diabetes.

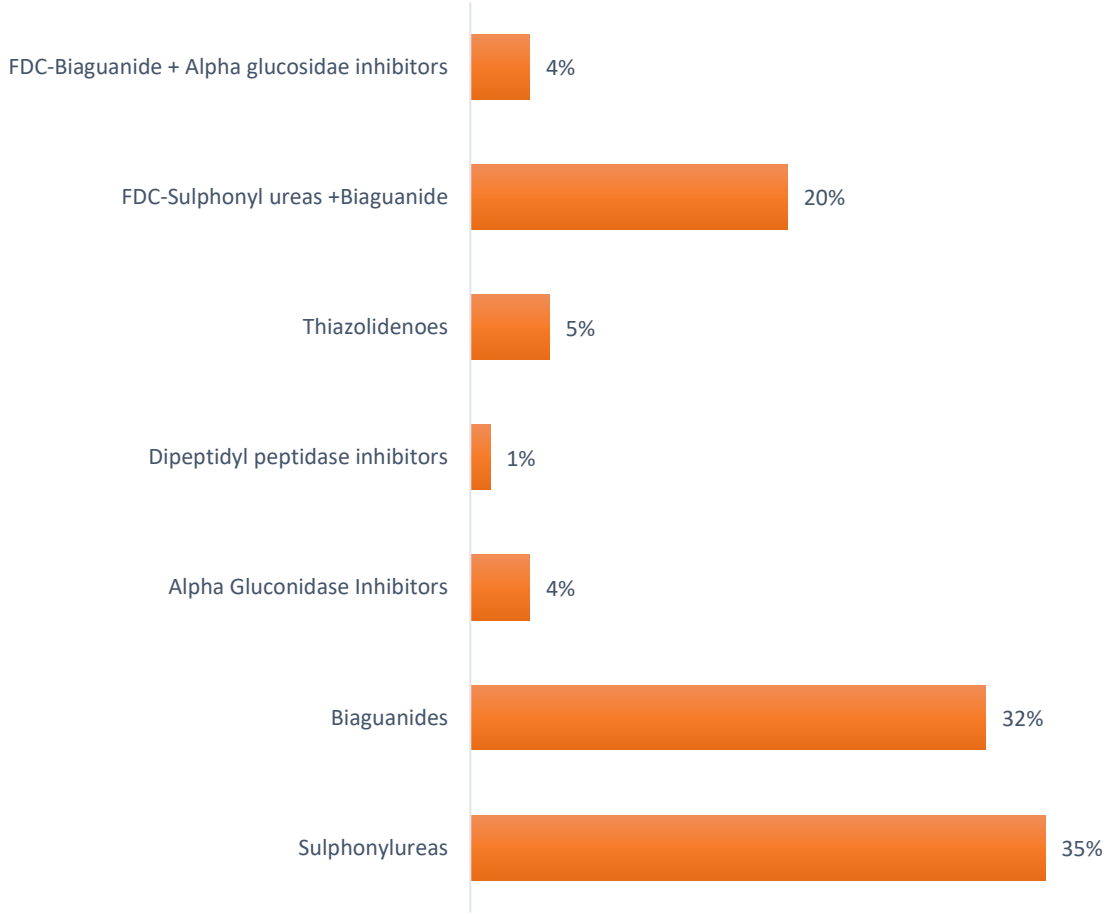
HISTORY OF DM	PARTICIPANTS	PERCENTAGE
Yes	41	37%
No	57	52%
Not significant	12	11%

Prescribing pattern of anti-diabetic therapy

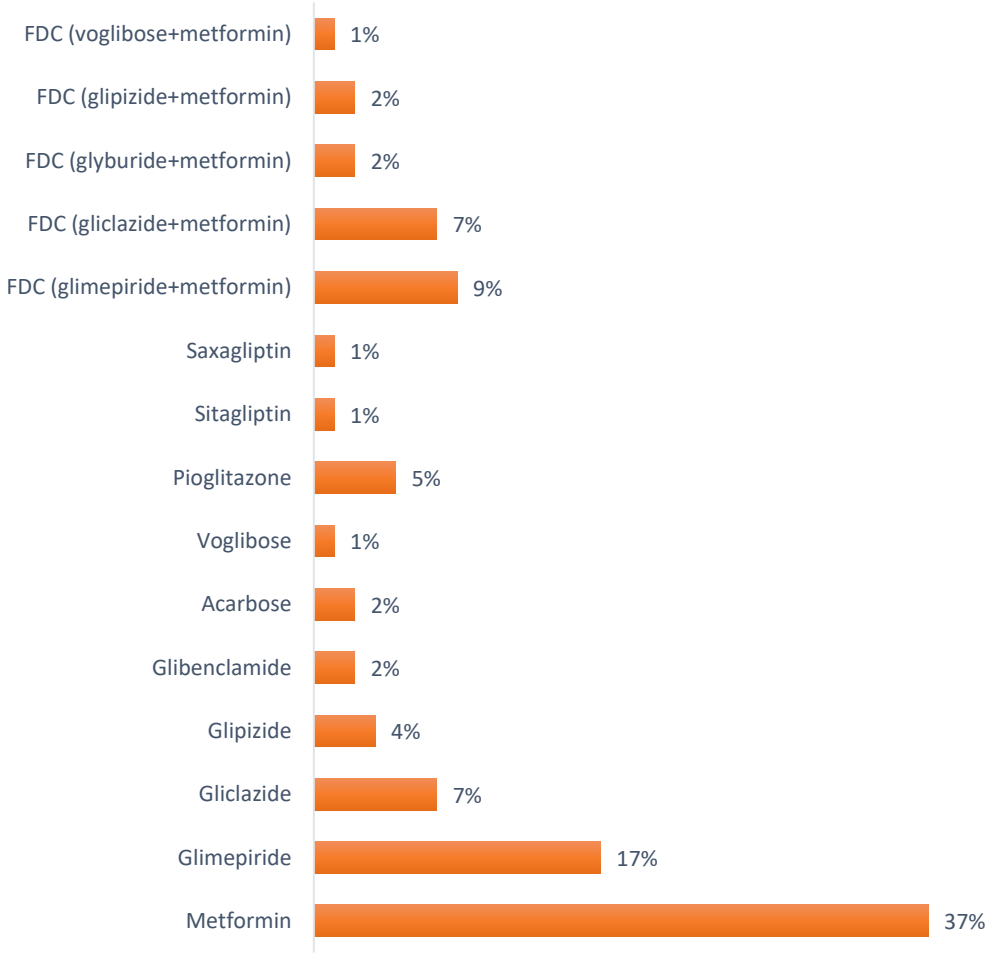
- The number of anti-diabetic drugs which are prescribed per prescription was between 1 to 4 drugs .
- 150 anti-diabetic drugs were prescribed.
- Out of 150 anti-diabetic drug products oral hypoglycaemic drugs 55% is treated with OHA and 45% are treated with insulin.
- Thus OHA is the most prescribed drugs therapy in the study.



- Among the different class of oral hypoglycemic agents Sulphonylureas are most commonly used .
- Sulphonylureas are used in more prevalently i.e 35% followed by biaguanides and then the FDC of sulphonyl ureas and biaguanides i.e 20%.

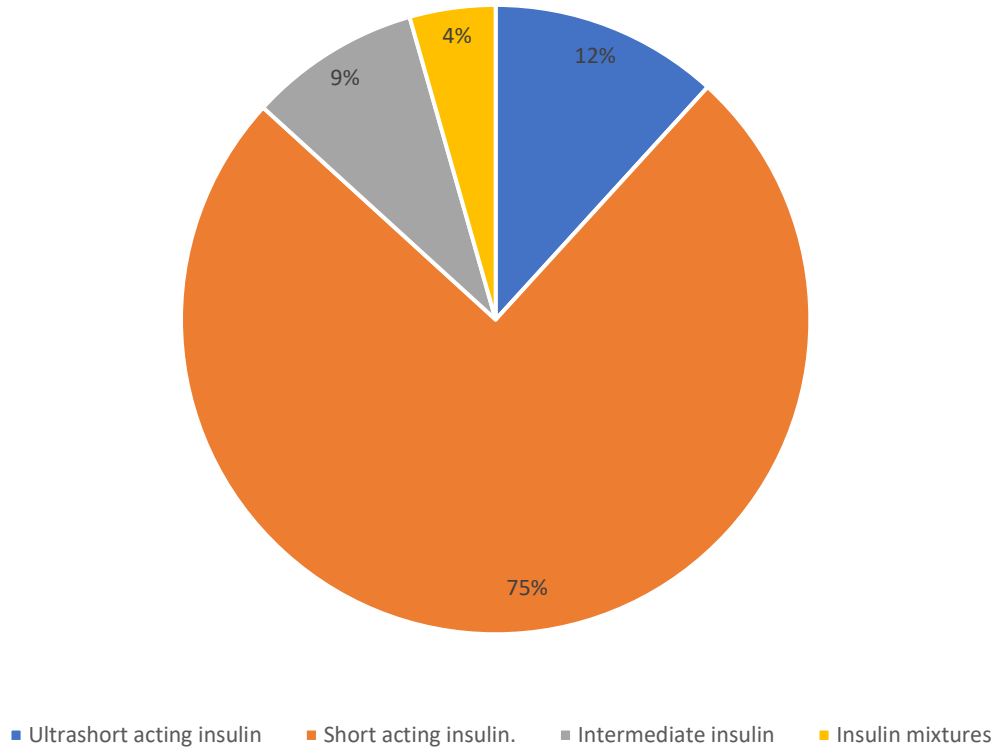


- Metformin is the most commonly prescribed drug molecule in antidiabetic therapy i.e 37%
- After that glimepride is prescribed more frequently and the combination of both two glimperide and metformin is the drug of choice in FDC .



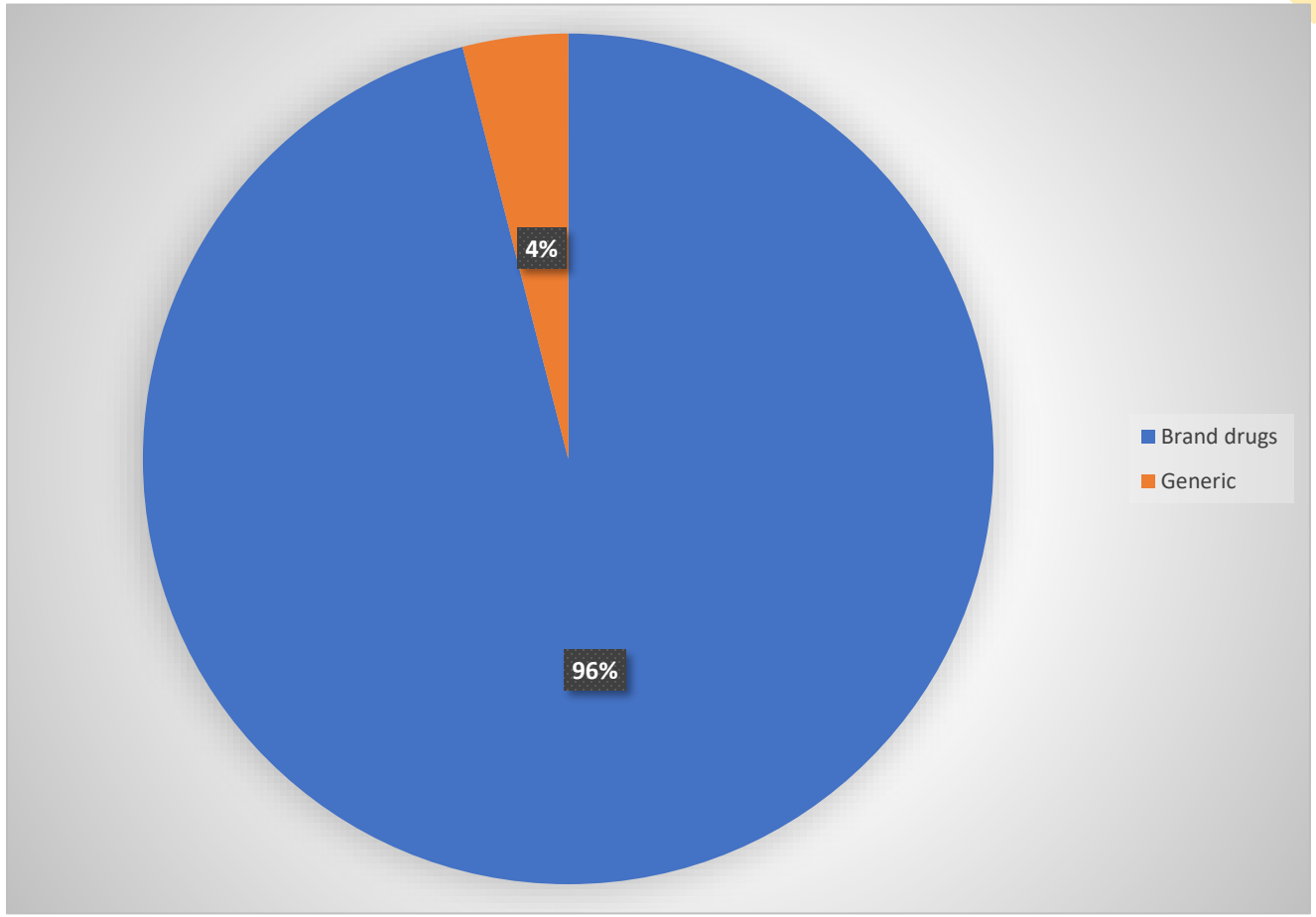
Insulin usage

- Insulin preparation accounted for 45% .
- The most frequently used insulin is short acting insulin .



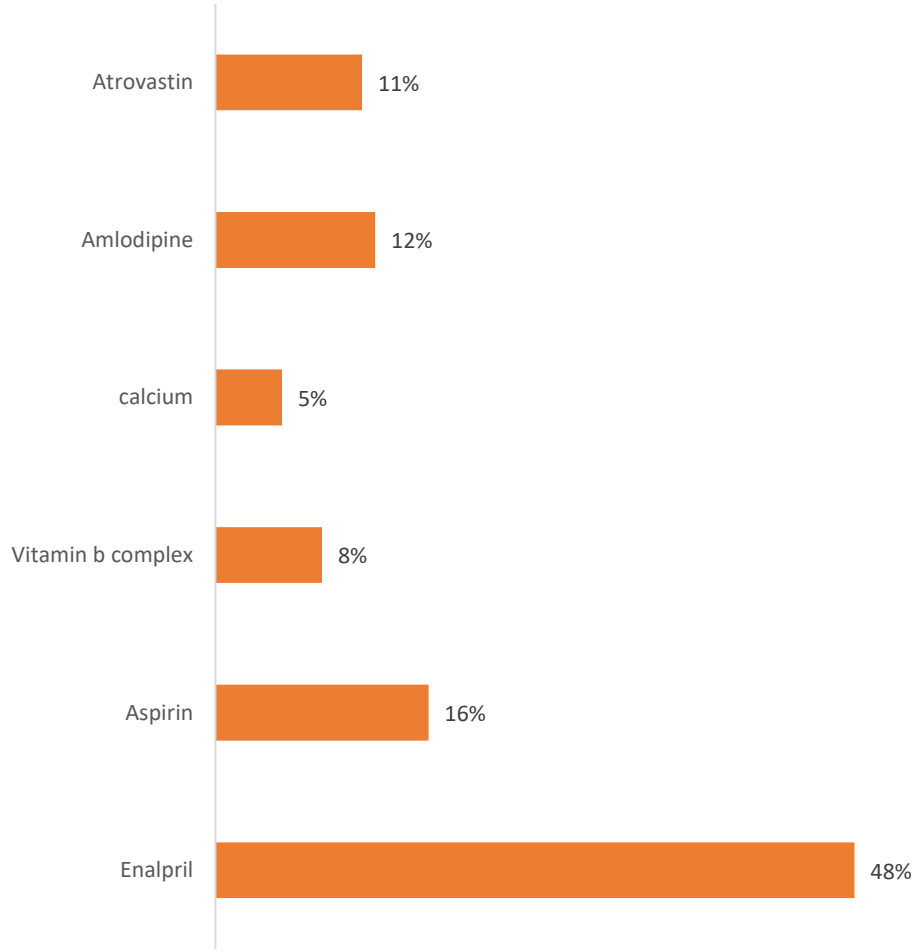
Branded vs Generic drugs.

- The percentage of branded drugs prescribed under this study is around 96% and the generic drugs were only prescribed in 4% Which is very less.



Prescribing pattern of drugs of comorbid conditions

- The commonly prescribed medications for comorbid conditions is Enalpril which have a 48% prescribing pattern followed by aspirin and then amlodipine which is 16% and 12% respectively .



• Health economics of diabetes

- The spending on health in India by the government is less as compare to the different developed countries. In India private health care is predominant and government set up provide around 20%of care in India.

- In India the out of pocket expenditure for diabetes is catastrophic and is accounted by 10% household consumption in 45% Patients and 23% takes loan to meet this out of pocket expenditure.

- The cost of therapy increased due to the different comorbidities and the use of insulin and the private health care As also we can see the increase amount of use of insulin in the Bargarh district of Odisha which accounts for 45% which add a lot of burden in the people’s monetary expenditure.

- There is a significant increase in the price of antidiabetic therapy .

Years	Price Hike(rupees)
Less than 5 years	5.44 to 7.45 per day
Between 5 to 10 years	9.5 to 24 .23per day
Between 10 to 15 years	12.69 to 52.12
More than 15 years	17.50 to 63-78

- The direct expenditure of diabetes medication increased by37% between 1998 and 2005 and the mean duration of diabetes was estimated to be 10.4 years and on comparing the direct population direct cost has increased upto 266%

Discussion

- The results obtained the cases and the number of patients of type 2 diabetes is more in comparison to the type 1 diabetes and the increasing percentage of type 2 diabetes is alarming situation in Bargarh district.
- The percentage of male diabetic condition is more than female diabetic condition i.e 65% and 35% which can be attributed to the lifestyle
- The prevalence of diabetes increase between 41-60 which suggest they develop diabetes in the most productive year due to life style modifications and stress.

- The study suggest the strong domination of OHA over the insulin therapy but as we can see Insulin usage is 45% which is higher in comparison to the previous study in India.
- This suggest a change in drug prescribing pattern and shifting towards the Insulin therapy in comparison to the OHA therapy.
- A large percentage of drugs are prescribed in brand name i.e96% Which suggest the high awareness of brand name within physician and the use of generic drugs are less which add in the increase in cost burden of the patient.
- Dominant use of sulphonylureas and biaguanides as still the class of drug for choice which accounts around 35% and 32% respectively and the combination of both the classes of drugs are still used frequently .
- This suggest that sulphonylurea and biguanides are still the choice of treatment with in the physician.
- Despite of the use of sulphonylureas metformin(biaguanide) is the most common used drugs by the prescriber its precribe frequency is 37% which is higher than the other molecules of the drugs in the study.
- The above suggest the use of enalpril and aspirin followed by atorvastatin and amlodipine, which suggest that most of the patients is on polypharmacy so they should be eduacate well and the interactions between the different class of drugs should be avoided for the rational use of drugs.

Limitation of study

- It is a pilot study which is conducted in the district of Bargarh by taking different prescriptions and interviewing the patients about their diabtes condition.
- It is conducted in a duration of 3 months in 110 diabetic patients.

CONCLUSION

- The present study analyse the drug prescribing pattern in the Bargarh district and the different cost that are involved in the maintance of the diabetes .
- Oral hypoglycemic agents are still dominate but the usage of insulin therapy increased over the period of time which suggest the change in shift in the prescribing pattern .
- It also study the prescription pattern of the patient with or without comorbities in the diabetes condition and the rational usage of the drugs

- The study suggest the use of polypharmacy which is due to the different kind of comorbidities condition in the diabetes.
- To avoid the irrational use of drugs the other drugs usage should be minimised .
- Due to the polypharmacy and the use of branded generics in the prescription it leads to the increase in the cost of prescription and leads to the out of pocket expenditure of the patient which should be avoided to lessen the out of pocket expenditure of medication in the patients.

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THANK YOU