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Pharmacoeconomic Evaluation of Anti Diabetic Drugs in A Government Hospitals Versus Private Hospitals

Dr. Kampa Nagalakshmi[1], Sk. Karishma[2], D. Chandrika[3], K. Mincy[4]

[1,2,3,4]Assistant Professor and Students Department of Pharmacy Practice MAM College of Pharmacy

1. Abstract

Pharmacoeconomic evaluation plays a vital role in optimizing healthcare resource utilization, particularly in the management of chronic diseases such as diabetes mellitus. This study aimed to compare the cost-effectiveness of antidiabetic drug therapy provided in government hospitals versus private hospitals and to assess the economic burden on patients. The primary objective of the study is to identify prescription pattern by using WHO core investigators. A comparative pharmacoeconomic evaluation was conducted using cost-minimization and cost-effectiveness approaches. Data were collected from patient records in selected government and private hospitals, including direct medical costs such as medication costs, laboratory investigations, consultation fees, and hospitalization charges.

The study highlights that government hospitals offer a more cost-effective approach for the management of diabetes mellitus, particularly for patients from low and middle socioeconomic backgrounds. Pharmacoeconomic evaluation of antidiabetic therapy can support policymakers and healthcare providers in decision-making to improve affordability, access, and rational use of medicines. Enhancing the availability of economic burden of diabetes and improve overall healthcare outcomes

Keywords: Pharmacoeconomic Evaluation, Antidiabetic dugs, Government and Private Hospital, Cost-effectiveness.

2. INTRODUCTION

Diabetes mellitus is one of the oldest diseases known to man, which was the first reported in Egyptian literature about 3000 years ago. Diabetes Mellitus is a chronic disorder defined as metabolic cum vascular syndrome of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate fat and protein metabolism resulting from defects in insulin secretion, insulin action or both leading to changes in both small blood vessels (microangiopathy) and large blood vessels (macroangiopathy)

This causes the patients to have abnormally high amounts of sugar in their urine and blood. The two types of DM observed are Type 1(insulin dependent) and Type 2 (noninsulin dependent). Insulin is vital to patients with type 1 DM. Type 2 DM is first treated with weight reduction, plans a diabetic diet and exercise. When these measures fail, oral medications are used.

Pharmacoeconomic evaluation of antidiabetic drugs help in comparing treatment cost with clinical outcomes and identifying cost-effective therapeutic options. Such evaluations are particularly important in chronic diseases like diabetes,where long-term treatment significantly impacts patients and healthcare systems.

3. AIM AND OBJECTIVES:

3.1 AIM OF THE STUDY:

Pharmacoeconomic Evaluation of Anti-Diabetic Drugs in Government Hospitals Versus Private Hospitals

3.2 NEED OF THE STUDY:

Studying Pharmacoeconomic Evaluation of Anti-Diabetic Drugs in Government Hospitals Versus Private Hospitals is crucial for several reasons:

- Rising Burden of Diabetes: The prevalence of diabetes is increasing rapidly in India, resulting in long-term healthcare cost due to continuous medication use, monitoring,and management of complications. This growing burden necessitates an evaluation of cost- effective treatment options.
- Economic Burden on Patients: Antidiabetic drugs contribute significantly to out- of-pocket expenditure, especially in private hospitals. A pharmacoeconomic comparison helps assess affordability and financial strain on patients receiving treatment in government versus private healthcare settings.
- Resources Utilization and Cost-Effectiveness: Government hospitals often operate with limited resources, while private hospitals may utilize more expensive treatment modalities.

Pharmacoeconomic evaluation helps determine whether higher costs in private hospitals translate into better therapeutic outcomes compared to government hospitals.

3.3 OBJECTIVES OF THE STUDY:

- To analyze the direct medical costs associated with antidiabetic drugs in government and private hospitals.
- To compare the prescribing patterns of antidiabetic medications in government and private hospitals.
- To evaluate cost-effectiveness of antidiabetic drugs used in government hospitals versus private hospitals.
- To assess the affordability of antidiabetic treatment among patients attending government and private hospitals.

4. METHODOLOGY:

Study design: Cross-sectional study was conducted among patients with chronic diseases in Narasaraopet. They were randomly approached by sending them the electronic questionnaire.

Study site: Government Hospital, Narasaraopet & Vivekananda Super Specialty Hospital, Narasaraopet.

Study period: 6 MONTHS.**Inclusion criteria:**

The selection criteria included adults (men and non-pregnant women) above 18 years of age with chronic disease who are taking medication both prescribed and over the counter attending primary care service in Narasaraopet.

Exclusion criteria:

- Inability to provide informed consent
- Pregnant women.
- Concomitant serious medication or surgical condition requiring Hospital.

Statistics:

The responses from the patients will be analyzed using by the statistical data will be analyzed using SPSS software.

5. RESULTS

ANALYSIS OF PATIENT CLINICAL AND ECONOMIC PROFILE

5.1. Introduction

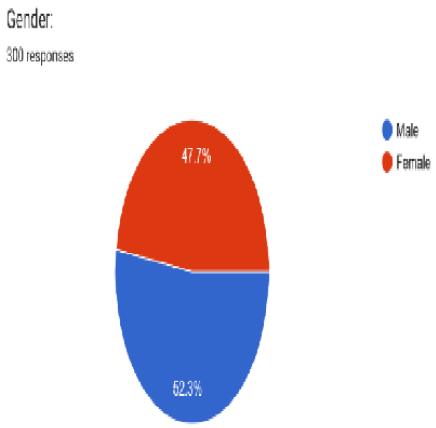
This analysis represents data collected from approximately 300 respondents regarding demographic details, clinical profile of diabetes, treatment patterns, and economic burden.

5.2. Demographic Profile

Gender Distribution (300 responses)

Both male and female participants were included

Demographics	**Number(%) N=300**
Male	52.3%
Female	47.7%
Total	100%



Socioeconomic Status(297responses)

- Categories:

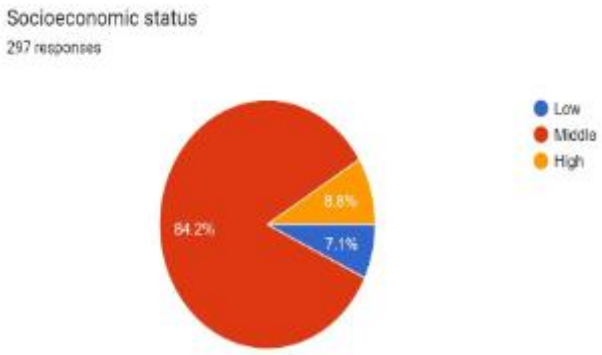
o Low

O Middle

o High

- Majority likely belong to middle and high socioeconomic groups, indicating a broader population representation

Socioeconomic Status	**Percentage(%)**	**Number of cases**
Low	7.1%	21
Middle	84.2%	250
High	8.8%	26
Total	100%	297

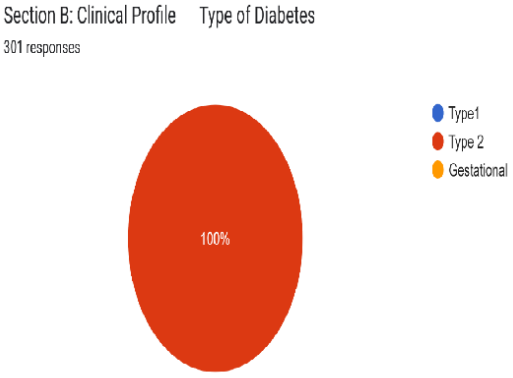


5.3 Clinical Profile

Type of Diabetes (301 responses)

- Type 2 Diabetes is the most predominant
- Few cases of:
- Type 1 Diabetes
- Gestational Diabetes

This indicates a higher prevalence of Type 2 Diabetes, consistent with general population trends.



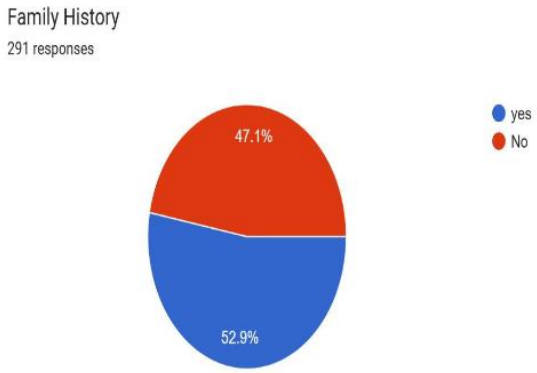
Family History (291 responses)

Categories:

- Yes
- No

A significant number reported positive family history, suggesting genetic predisposition.

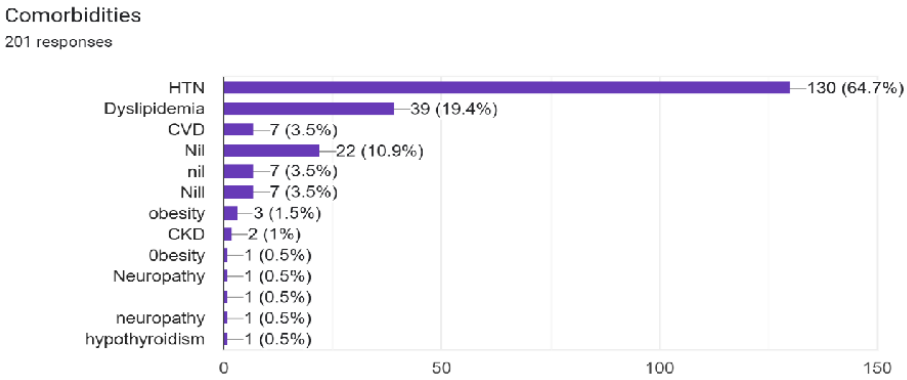
Family History	Percentage (%)	Number of cases
Yes	52.9%	154
No	47.1%	137
TOTAL	100%	291



Comorbidities (201 responses)

Condition	Percentage
Hypertension (HTN)	64.7%
Dyslipidemia	19.4%
Cardiovascular Disease (CVD)	3.5%
Obesity	~1–1.5%
CKD	1%
Neuropathy	0.5%
Hypothyroidism	0.5%
Nil	~10.9%

Hypertension is the most common comorbidity, indicating strong association with diabetes.

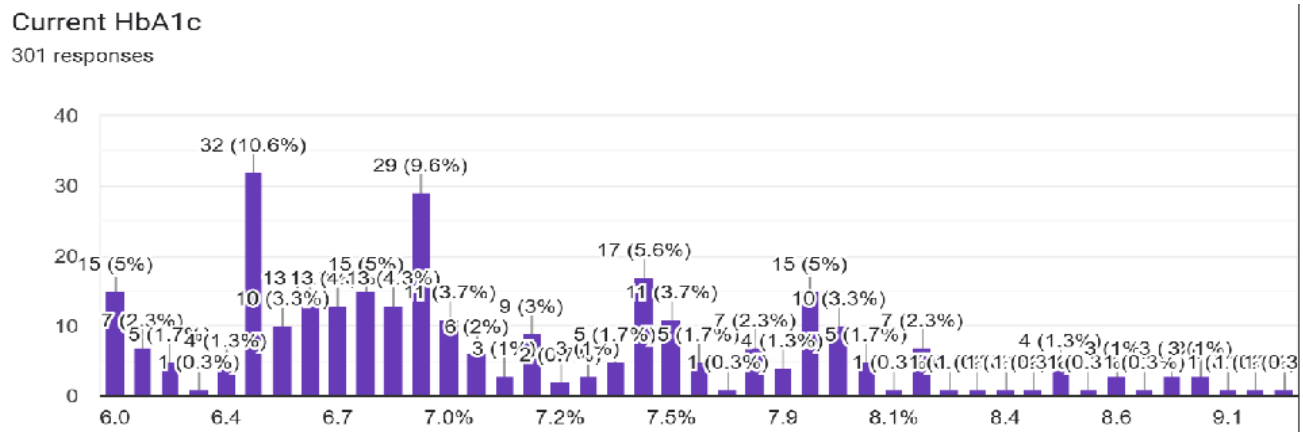


HbA1c Levels (301 responses)

- Range observed: 6.0% – 9.1%
- Majority fall between:
- 7% – 8.5%

Indicates:

- Many patients have poor glycaemic control
- Only a smaller group achieves target HbA1c (<7%)

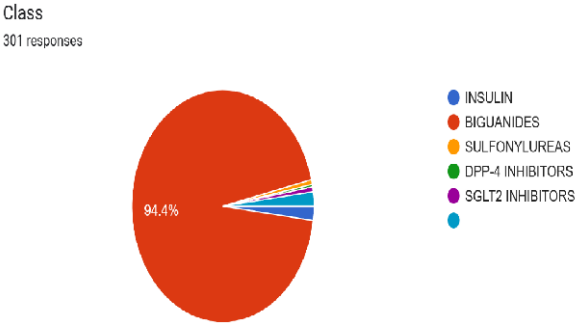


5 4. Treatment Pattern

Drug Classes Used

- Insulin
- Biguanides (e.g., Metformin)
- Sulfonylureas
- DPP-4 inhibitors
- SGLT2 inhibitors

Combination therapy is commonly used.

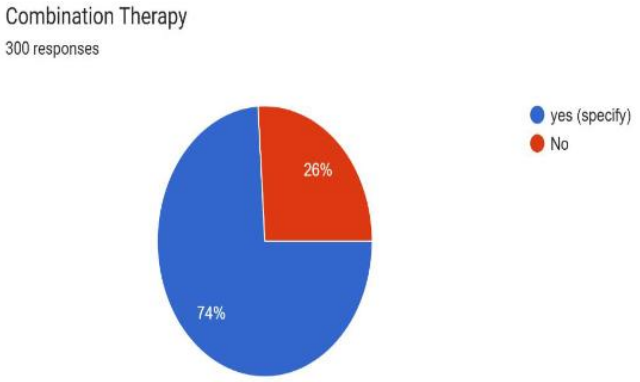


Combination Therapy (300 responses)

- Yes (majority)
- No

Reflects multi-drug approach for better glycaemic control

Combination therapy	Percentage(%)	Number of cases
YES	74%	222
NO	26%	78
TOTAL	100%	300

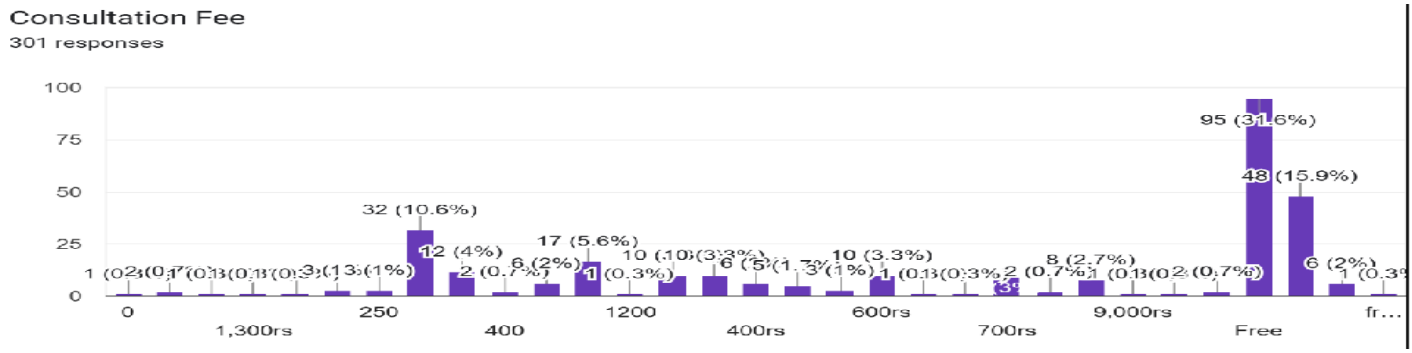


5.5. Economic Burden

Consultation Fee (301 responses)

- Wide variation:
  - Free services
  - ₹250 – ₹1300

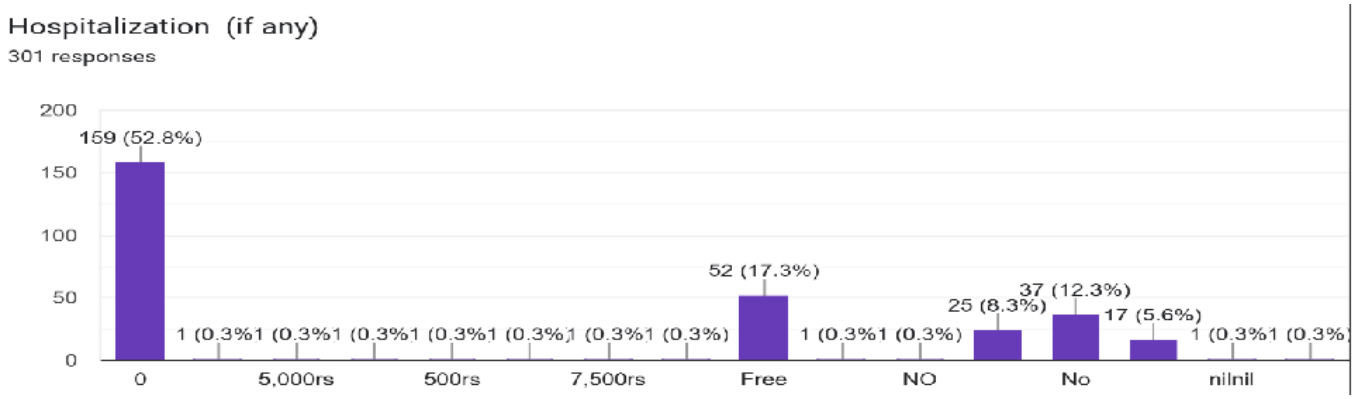
Shows economic diversity and access variation



Hospitalization Cost (301 responses)

Cost Category	Percentage
₹0 / Nil	52.8%
₹5000	17.3%
₹7500	12.3%
Others	Remaining

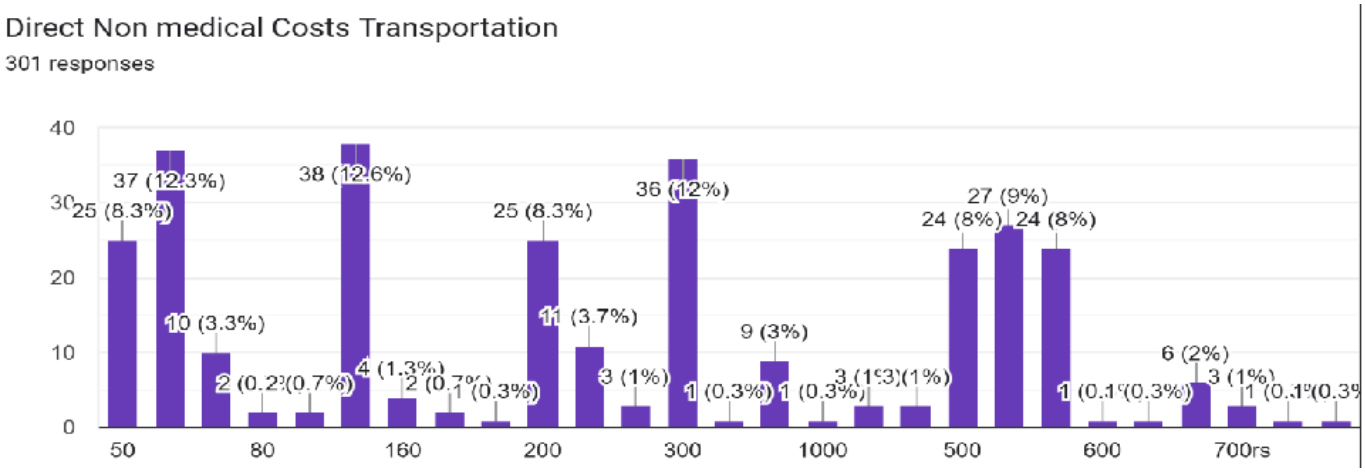
Most patients did not require hospitalization, but some incurred significant costs.

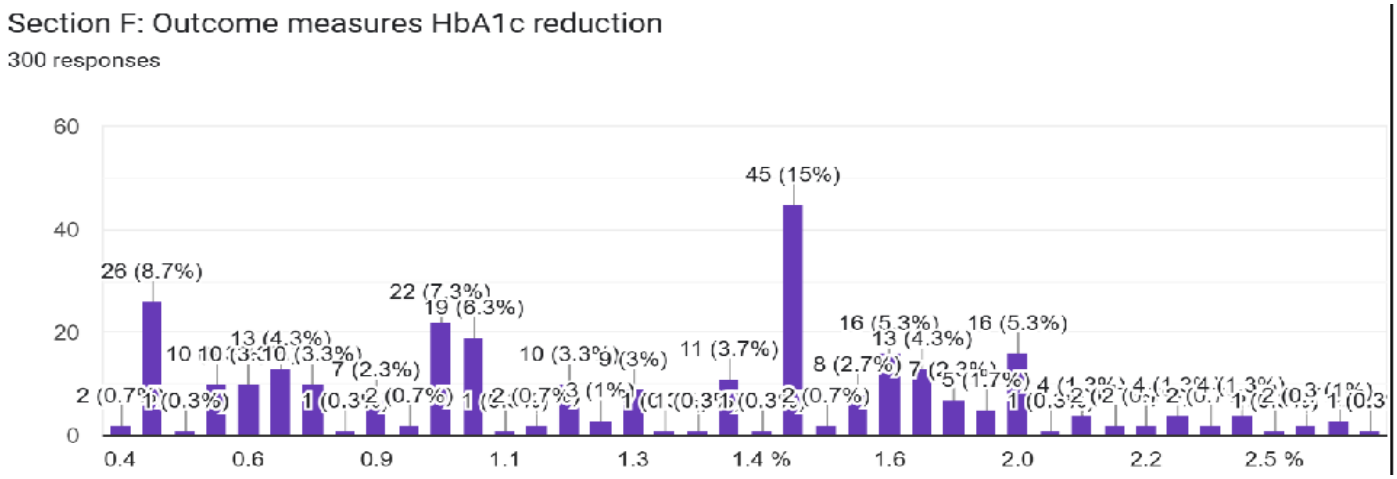


Transportation Cost (301 responses)

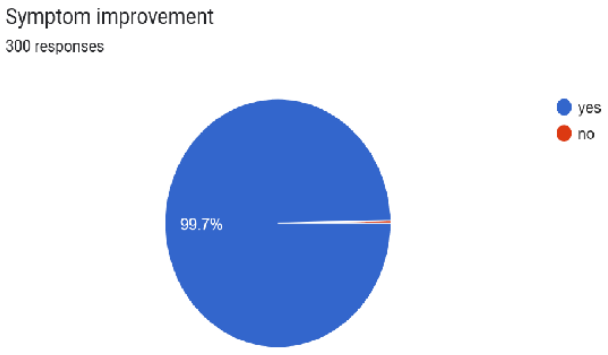
- Common range: ₹50 – ₹300
- Some higher values up to ₹1000

Travel contributes to **indirect healthcare costs**

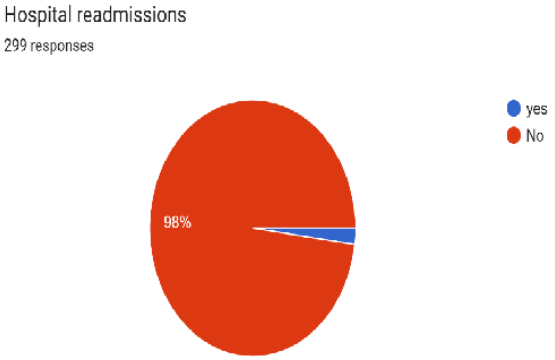


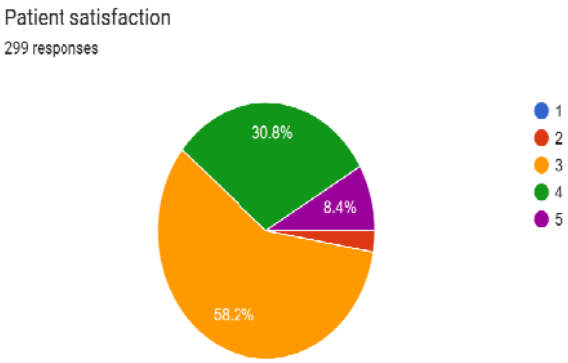


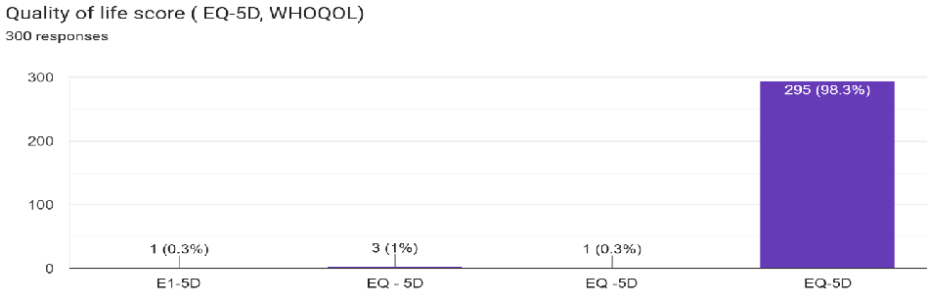
Symptoms Improvement	**Percentage(%)** **N=300**
YES	99.7%
NO	0.3%
TOTAL	100%



Hospital Readmission	Percentage(%) N= 299
YES	2%
NO	98%
TOTAL	100%







5.6 DISCUSSION

The study involved 297 prescriptions and we found a higher incidence of diabetes in elderly patients with a high incidence in age group of 50-65 years (40%). In general patients developing diabetes mellitus are in age group of more than 50 years. In our study 52% males and 48% females had diabetes mellitus.

The study involved 300 prescriptions (100%) of patients with Type 2 diabetes. The drug utilization pattern for prescribed antidiabetics was also evaluated which included the number of drugs given under monotherapy were 93 (31.80%) and drugs under dual therapy were 162 (54.45%) and drugs under triple therapy were 39 (13.73%), and we found that a greater number of antidiabetic drugs were dual therapy which is 54.45%.

The drug utilization pattern of antidiabetic drugs under monotherapy were evaluated and found metformin(5.78%) is the most commonly prescribed. This study also evaluated the drug utilization patterns of antidiabetic drugs under dual therapy and found that glimepiride + metformin is the most commonly prescribed dual therapy drug which is about 96(23.1%), followed by teneligliptin + metformin (16.1%),sitagliptin + metformin (5.5%), voglibose + metformin (3.1%). In the drug utilization pattern of antidiabetic drug under triple therapy, glimepiride + voglibose + metformin is most commonly given which is 9.39% followed by glimepiride + pioglitazone + metformin which is 4.33%.

CONCLUSION:

The pharmacoeconomic evaluation of antidiabetic drugs is an important aspect in assessing the cost and effectiveness of therapy in both government and private healthcare settings. This study highlights that there is significant difference in the cost of treatment between the two sectors, where government hospitals provide medications at lower cost due to the availability of generic drugs and subsidy schemes. In contrast, private hospitals are associated with higher treatment costs due to the use of branded medications and additional healthcare charges. Various factors such as drug cost, patient affordability, availability of medicines, and healthcare facilities the overall economic burden on patients. While private hospitals may offer better infrastructure and quicker services, the high cost may affect patient compliance and long-term disease management. On the other hand, government hospitals play a crucial role in providing cost- effective treatment. In conclusion, improving access to affordable medications, encouraging the use of cost-effective therapies, and implementing better healthcare policies are essential to reduce the economic burden and ensures both quality care and affordability of diabetes mellitus in **AREA HOSPITAL IN NARASARAOPET AND VIVEKANANDA SUPER SPECALITY HOSPITAL IN NARASARAOPET.**