# THE PROSPECTIVE STUDY ON MEDICATION ADHERENCE AND CLINICAL OUTCOMES OF ORAL ANTIDIABETIC AGENTS IN DIABETES MELLITUS PATIENT

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***ABSTRACT***

***Background:***

*Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycaemia, which predisposes patients to cardiovascular, renal, and neurological complications. Among the critical determinants of diabetes management, medication adherence plays a pivotal role in achieving optimal glycaemic control and preventing disease progression.*

***Aim:***

*To evaluate the impact of medication adherence on clinical outcomes among patients with type 2 diabetes mellitus (T2DM) receiving oral hypoglycaemic agents (OHAs), and to assess the effectiveness of pharmacist-led counselling in improving adherence.*

***Methodology:***

*A prospective observational study was conducted over six months in 100 outpatients diagnosed with T2DM. Medication adherence was measured using the Morisky Medication Adherence Scale (MMAS-8). Clinical outcomes, including glycated haemoglobin (HbA1c), fasting blood sugar (FBS), and the presence of diabetes-related complications, were systematically assessed. Statistical significance was determined using paired t-tests.*

***Results:***

*Before counselling, adherence levels were categorized as low (40%), moderate (28%), and high (32%). After pharmacist-led counselling, adherence improved markedly, with*

*high adherence rising to 40%, moderate to 38%, and low decreasing to 22%. Correspondingly, HbA1c levels demonstrated significant reductions, with mean adherence scores improving from 6.13 ± 1.63 to 7.49 ± 3.14 (p = 0.001).*

***Conclusion:***

*The study highlights that higher medication adherence is strongly associated with improved glycaemic outcomes in T2DM patients. Pharmacist-led counselling and education were shown to be effective interventions for enhancing adherence, thereby contributing to better glycaemic control and reduced risk of complications.*

***Keywords:*** *Diabetes mellitus, oral hypoglycemic agents, medication adherence, glycemic control, patient education, clinical outcomes*

## 1. INTRODUCTION

Diabetes mellitus is a multifaceted metabolic condition defined by elevated blood glucose levels that progressively impair cardiovascular, renal, ophthalmic, and neural systems. Type 2 diabetes mellitus (T2DM) represents the majority of global diabetes cases. Successful management relies heavily on patient adherence to oral hypoglycaemic therapy. Inadequate compliance results in suboptimal glycaemic control, higher risk of complications, and premature mortality.

The WHO defines medication adherence as “the extent to which a person’s behaviour aligns with the agreed-upon recommendations from a healthcare provider.” Adherence to anti-diabetic medications enhances glycaemic control, which helps prevent complications and leads to a more favourable prognosis.

**Some strategies that may help improve adherence include:**

- Focusing on patient-related issues
- Focusing on medication-related issues
- Focusing on prescriber-related issues
- Focusing on pharmacist-related factors
- Education
- Monitoring

## 2.AIM:

This study aimed to Prospective study on medication adherence and clinical outcomes of oral antidiabetic agents in diabetes mellitus patients.

## 3.MATERIALS AND METHODS:

### Study Design:

A prospective, Observational investigation was carried out in the outpatient diabetology department over 100 patients in a six-month Period.

### Study Criteria:

**Inclusion criteria:**

- Patients diagnosed with T2DM
- On oral antidiabetic drugs, across all age groups,
- Whoever is willing to participate.

**Exclusion criteria:**

- Patients on insulin,
- Unwilling participants,
- Those who are unable to comprehend questionnaires, or lacking proper follow-up.

### Data Collection:

Demographic details, co-morbidities, dietary habits, and complications were recorded using questionnaires and case sheets. Medication adherence was assessed using MMAS-8. Clinical outcomes were evaluated via HbA1c, FBS, and complication records.

### Statistical Analysis:

Data were analysed using SPSS with paired t-tests. Significance was set at $p < 0.05$.

## 4. RESULT:

### Participants characteristics:

During the study period, A total of 100 patients were enrolled in the study.
The demographic and socio-economic characters and the factors associated with their medication adherence were collected during their study period.

### A. BASED ON DEMOGRAPHICS:

**Age:**
Among 100 patients, 42 patients were found to be in the age between 41-60, 28 patients were in the range of 61-80, 18 patients were in range of 18-40, 12 patients were in the range of above the age 80 years.

**Gender:**
From the obtained data, patients were categorized based on gender. among them 58% were males and 42% were females.

**B. Based on Medication related factors:**

**Co-morbities:**
A total of 100 patients were enrolled in the study based on the inclusion criteria, out of which 7% patient had Hyperlipidemia,42%patient had hypertension (HTN),38% Patient had Heart problems,13% patients had any other comorbidities.

**Awareness about the Disease:**

From the data obtained, patients were categorized based on Awareness about the disease. Among them 78 patients were Awareness about the disease. Whereas 22 patients were Unawareness about the disease.

**Number of medications Prescribed:**

A total of 100 patients were enrolled in the study based on the inclusion criteria, out of which 30% patients had Monotherapy, 57% patients had Dual therapy,13%had above 2 drugs.

**Nature of Diet Followed:**

From the data obtained, patients were categorized based on Nature of diet followed. Among them 12 patients Intake High fat,14 patient's intake High carbohydrate,56 patients follow Mixed diet,18 patients follow Balanced diet.

**Complications:**

A total of 100 patients were enrolled in the study based on the inclusion criteria, out of which 22% patient had Retinopathy,16% patient had DFU ,28% patient had Nephropathy and 32 % patient were not having any complications.

**C. Percentage distribution of patients based on adherence range**

**Before counselling:**

Out of 100 patients, 40 patients have low adherence, 28 patients have moderate adherence and 32 of them have high adherence before counselling.

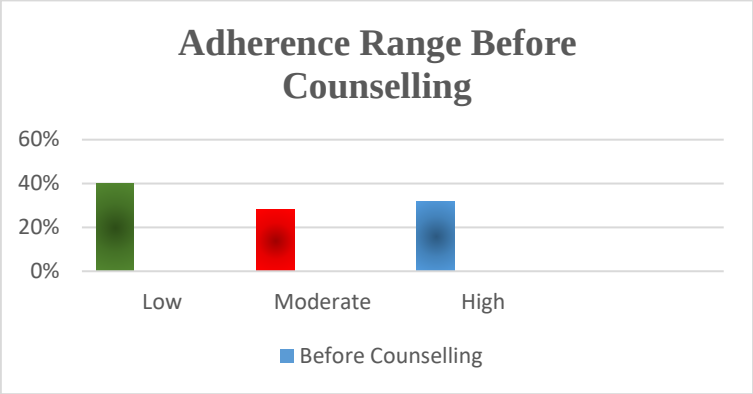



**Fig 3.4.1 Adherence Range Before Counselling**

**After counselling:**

Out of 100 patients, 40 patients have high adherence, 38 of them have moderate adherence and 22 of them have low adherence after counselling.

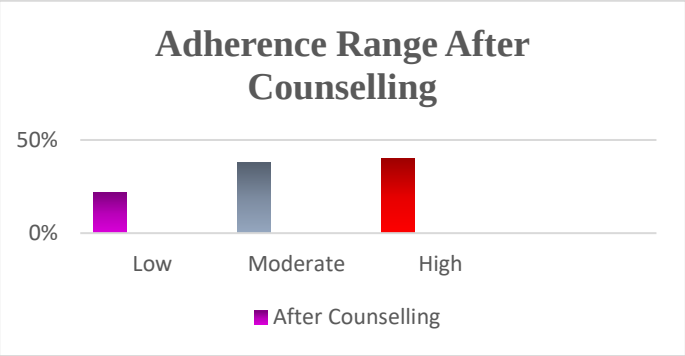
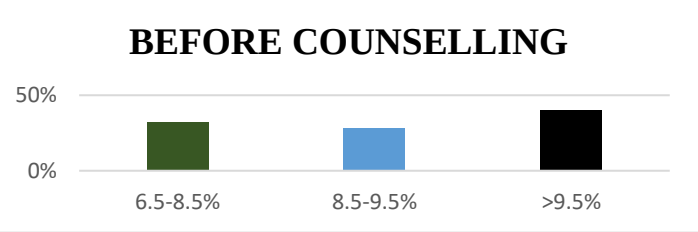



**Fig 3.4.2 Adherence Range After Counselling**

**D. Percentage distribution of patient based on HBA1C Level**

**Before counselling**

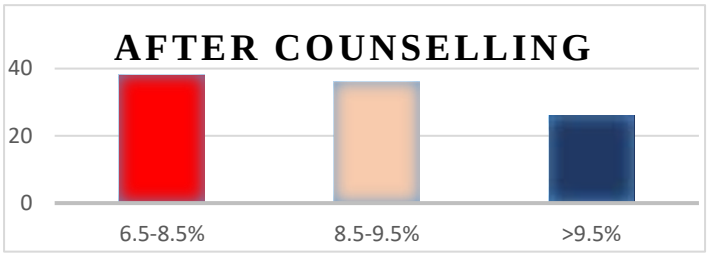
Out of 100 patient, 32 patient have 6.5-8.5% HBAIC level,28 patient have8.5-9.5% ,40 patients have > 8.5% HBA1C level before counselling.




**3.5.1 Percentage Distribution based on HBA1C level Before Counselling**

**After counselling:**

Out of 100 patients 38 patients have 6.5-8.5%,36 patients have 8.5-9.5%,26 patients have >9.5% HBA1C level after counselling.




**3.5.2 Percentage Distribution based on HBA1C level After Counselling**

**E. Effectiveness of counselling:**

**Comparison between before and after counselling:**

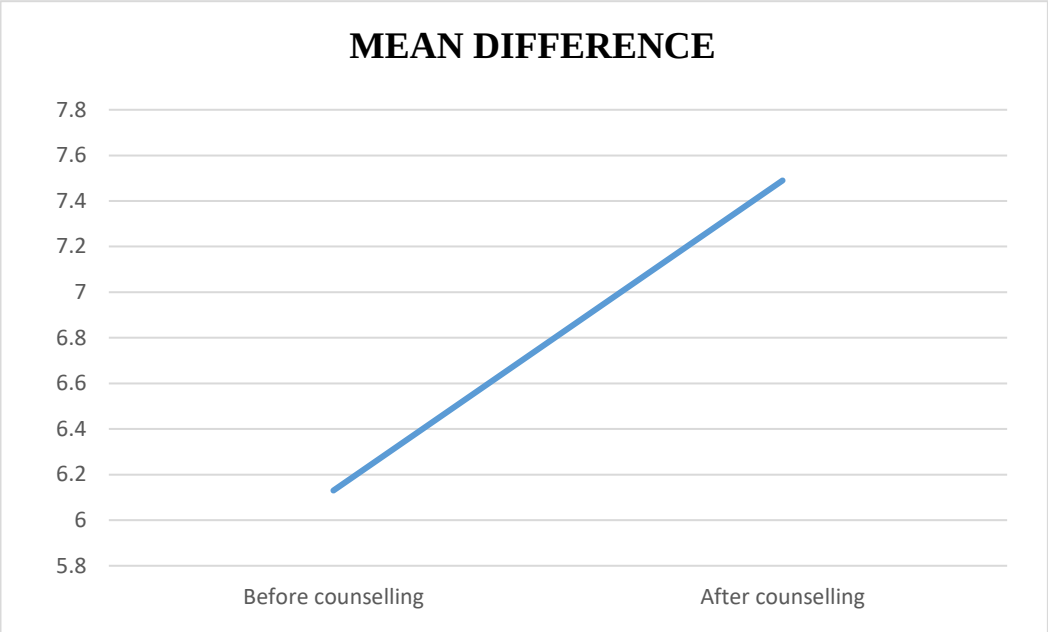
Comparison between before counselling and after counselling. From the observed data we state that there is an improved adherence after counselling patients.

| Category | Mean ± SD | t value | Df | Significance value |
|---|---|---|---|---|
| **Before counselling** | **6.13±1.63** | 1.68 | 99 | 0.001* |
| **After counselling** | **7.49±3.14** | | | |

**F. Mean difference significant at 0.05 level**

Before counselling mean difference, range was 6.13 which was increased to 7.49. Statistically, there was a significant difference in the mean adherence scores before and after counselling, with a significance level of 0.001.

**Mean Difference**




## 5. CONCLUSION:

This prospective study demonstrates that higher medication adherence to oral antidiabetic agents significantly improves clinical outcomes in diabetes mellitus patients. To enhance the better adherence, we the pharmacist provide counselling and education by using pamphlets to the patient whose score is poor and moderate. We also encourage the patient whose score is high, to continue their medication to maintain good adherence.

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**CONFLICTS OF INTEREST:** None

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