

A prospective study to evaluate the medication adherence in COPD patients in a tertiary care centre

Acsah Oommen ^{1,*}, A Abhi ¹, Blessy Ann Rajeev ¹, Alfet Raju Anthraper ², Chitra C Nair ³ and Beena P ⁴

¹ Pharm D Intern, KVM College of Pharmacy, Cherthala, Kerala, India.

² Associate Professor, Department of Pharmacy Practice, Cherthala, Kerala, India.

³ Professor and HOD, Department of Pharmacy Practice, Cherthala, Kerala, India.

⁴ Principal, KVM College of Pharmacy, Cherthala, Kerala, India.

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Abstract

BACKGROUND: The third greatest cause of mortality globally, chronic obstructive pulmonary disease (COPD) affects approximately 390 million individuals. For patients with COPD, medication adherence is essential to increasing quality of life, lowering hospitalizations, exacerbations, and medical expenses. Reduced quality of life, exacerbations, and the advancement of the disease can result from noncompliance with medication, including bronchodilators and inhaled corticosteroids. Finding adherence obstacles such as socioeconomic limitations, adverse effects, or a lack of education might help direct actions to increase compliance.

METHOD: At baseline, we used a standardized adherence scale to evaluate medication adherence in 100 COPD patients. Patient information leaflets outlining the significance of medications and methods for overcoming typical obstacles were distributed in an effort to increase adherence. The efficiency of the instructional materials was tested by reassessing adherence after two months.

RESULTS: Medication adherence at baseline was 4.51 ± 1.78 , but at follow-up, it improved to 6.20 ± 1.83 ($t=7.214$, $p<0.001$), a statistically significant change.

CONCLUSION: At first, the majority of patients had low to medium adherence; 39 patients had medium adherence and 61 patients had low adherence. Adherence improved after the intervention, and at follow-up, 23 patients showed high adherence. This change illustrates how well patient counseling and educational techniques work to increase COPD patients' adherence to their medication.

Keywords: COPD; Medication Adherence; Exacerbation; Quality of Life

1. Introduction

A progressive respiratory condition marked by irreversible airflow restriction, chronic obstructive pulmonary disorder (COPD) is mostly brought on by tobacco smoking, environmental factors, and genetic susceptibility. By limiting their physical, emotional, and social well-being, COPD severely lowers patients quality of life (QoL), affecting millions of people worldwide ⁽¹⁾.

Despite the fact that medication adherence is a critical component of therapeutic results, patients with COPD continue to have inadequate adherence rates, which frequently result in worsening of their condition and a lower quality of life ⁽²⁾.

* Corresponding author: Acsah Oommen.

The primary objective of this study is to evaluate medication adherence among COPD patients. Effective treatment of Chronic Obstructive Pulmonary Disease (COPD) depends on medication adherence.

It guarantees improved symptom management, lessens the frequency and intensity of flare-ups, and delays the course of the illness. Adherence lowers hospitalization rates and allows patients to carry out everyday tasks, which greatly enhances quality of life (QoL). Using medications correctly also reduces complications by managing common co morbidities like diabetes and hypertension⁽³⁾.

Counseling and patient education is essential for removing obstacles to adherence, like complicated regimens or forgetting. Enhancing adherence is a key component of comprehensive disease management since it can help healthcare systems lower costs and improve outcomes for people with COPD⁽⁴⁾.

According to the hypothesis, people with COPD who take their prescriptions as directed have better symptom control, fewer acute episodes, a higher quality of life, and a lower need for medical interventions including emergency room visits and hospital stays⁽⁵⁾.

Evidence showing consistent adherence to treatment regimens reduces disease progression and improves general health status, whereas non-adherence to regimens exacerbates COPD symptoms, served as the basis for the development of this theory⁽⁶⁾.

This work is significant because it fills in the knowledge vacuum about how adherence affects the management of COPD and offers insights into individualized patient care. It emphasizes the necessity of patient counseling and other interventions to improve patient outcomes, lower healthcare costs, and increase adherence. The results are intended to guide clinical procedures and advance knowledge of chronic illness treatment techniques⁽⁶⁾.

2. Materials and methods

The study was a prospective, conducted at a tertiary care hospital on 100 COPD patients for a period of six months. The inclusion criteria are patients with COPD in OPD, above 18 years of age. Patients with other co morbid conditions, polypharmacy, and patients of all gender were included in the study. Patients admitted with acute exacerbation of COPD or respiratory failure, patients who are bedridden and pregnant women were excluded.

Adherence to medication regimens in COPD patients were evaluated by direct interaction with patients and caregiver. Patient counseling was provided to individual patients to educate about compliance to medication.

The data were entered into Microsoft Excel Spreadsheet and Statistical analysis was performed by IBM SPSS 22.0. After obtaining permission from the IEC, study began with data collection. Case records were retrospectively and prospectively reviewed for demographic data, clinical presentations, investigations, management and prognosis.

3. Results and discussion

Table 1 frequency and percentage distribution of sample according to age in years

Age (in years)	Frequency	Percentage (%)
30-40	1	1
41-50	7	7
51-60	15	15
61-70	39	39
71-80	27	27
>80	11	11

The study reveals that COPD predominantly affects older individuals, with the highest prevalence observed in the 61–70-year age group.

Table 2 frequency and percentage distribution of samples according to gender

GENDER	FREQUENCY (n=100)	Percentage (%)
Male	52	52
Female	48	48

The data shows that COPD is more common in men, with 52% of patients being male. This suggests that men are at a higher risk for COPD when compared to women's.

Table 3 frequency and percentage distribution of sample according to symptom on admission

SYMPTOM ON ADMISSION	FREQUENCY(n=205)	PERCENTAGE (%)
Shortness of breath	91	44.39
Cough	62	30.24
Sputum	19	9.26
Fever	12	5.85
Wheezing	8	3.90
Chest pain	4	1.95
Body pain	3	1.46
Headache	2	0.97
Sputum with blood	2	0.97
Throat pain	1	0.48
Low appetite	1	0.48

Our study reveals that the most common symptom on admission among COPD patients are shortness of breath, cough, sputum production and fever. These symptoms are indicative of respiratory distress and infection.

Table 4 frequency and percentage distribution of sample according to comorbidity of patients

Comorbidity of patients	Frequency(n=143)	Percentage (%)
Hypertension	47	32.86
Diabetes mellitus	37	25.87
Dyslipidemia	20	13.98
Coronary artery disease	17	11.88
Hypothyroidism	7	4.89
Chronic kidney disease	3	2.09
Tuberculosis	2	1.39
Benign prostate hyperplasia	2	1.39
Transient ischemic attack	1	0.699
Non-hodgkin's lymphoma	1	0.699
Parkinson's disease	1	0.699
Addison's disease	1	0.699
Tachycardia	1	0.699

Migraine	1	0.699
Stroke	1	0.699
Fatty liver	1	0.699

Our study highlights hypertension (32.86%), diabetes mellitus (25.87%), and dyslipidemia (13.98%) as prevalent co morbidities among COPD patients, potentially impacting the medication adherence.

Table 5 frequency and percentage distribution of sample according to polypharmacy

Polypharmacy	Frequency(n=100)	Percentage (%)
Present	44	44
Absent	56	56

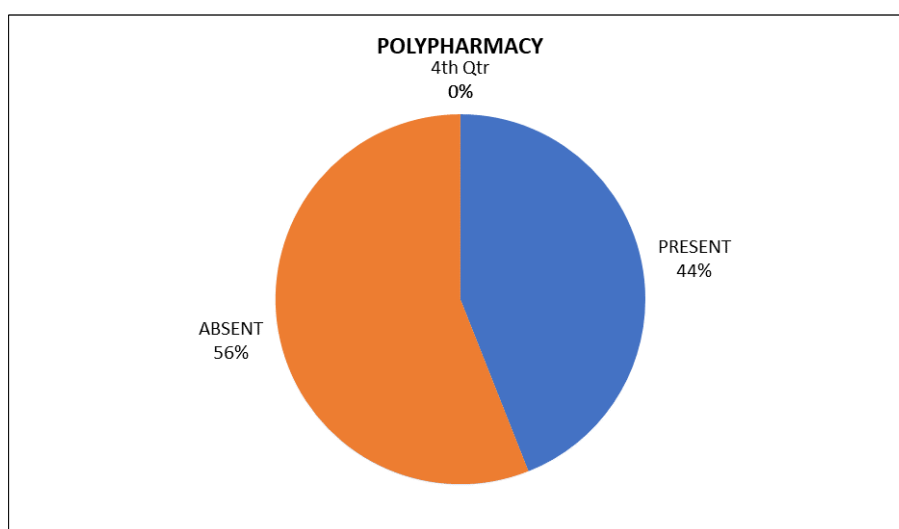


Figure 1 The distribution of sample according to polypharmacy

The data illustrates that 44% of the 100 patients in our study are experiencing polypharmacy, suggesting that medication adherence may be a significant consideration in COPD management.

Table 6 frequency and percentage of distribution of sample according to medication adherence [n=100]

Level of adherence	Baseline		Follow-up	
	Frequency(n=100)	Percentage (%)	Frequency(n=100)	Percentage (%)
Low	61	61.0	25	25.0
Medium	39	39.0	52	52.0
High	-	-	23	23.0

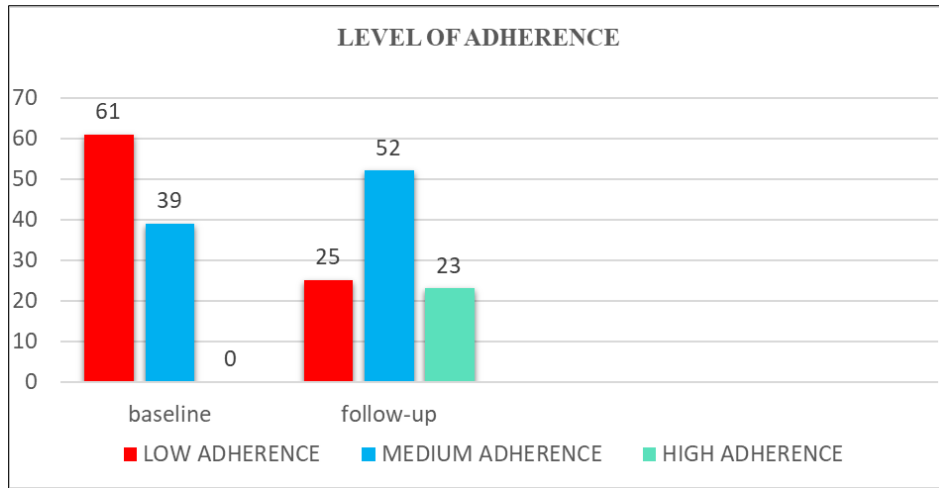


Figure 2 The distribution of sample according to level of medication adherence

Compared to the baseline, there is noticeable progress in medication adherence among the patients, with more individuals transitioning to moderate and high adherence categories. This improvement can be attributed to the effectiveness of patient counseling interventions.

Table 7 mean, standard deviation, mean difference, t value and p value of medication adherence score during baseline and follow-up [n=100]

Time	Mean	Standard deviation	Mean difference	t value (paired t test)	p value
Baseline	4.51	1.78	1.69	7.214	<0.001***
Follow-up	6.20	1.83			

*** Significant at 0.001 level

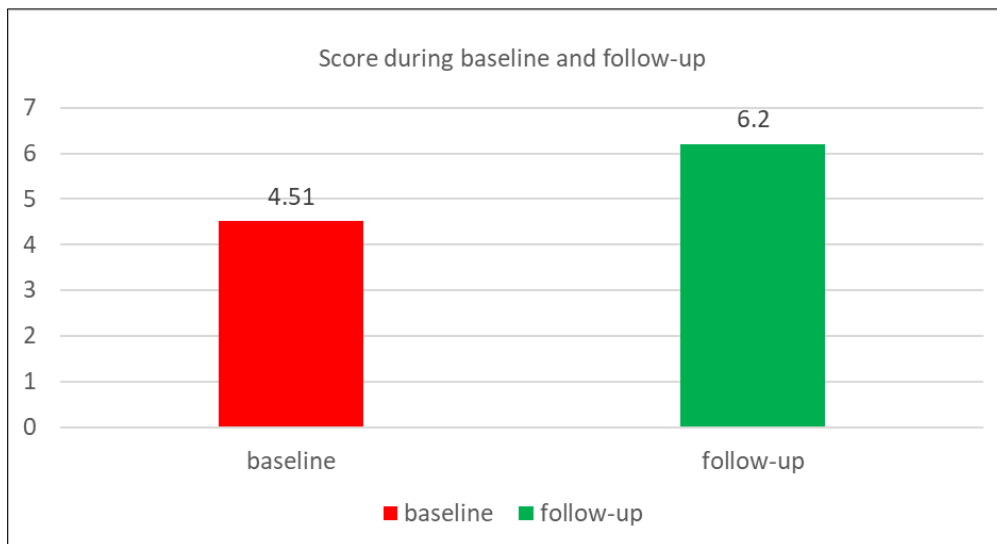


Figure 3 The mean, standard deviation, mean difference, t value and p value of medication adherence score during baseline and follow-up

A comparison of the Medication Adherence Scale baseline and follow-up mean scores for COPD patients highlights significant insights. Initially, the mean score was 4.51, indicating lower medication adherence levels among the patients. However, after receiving patient counselling interventions, the mean score surged to 6.20 upon subsequent evaluation, indicating a marked improvement in medication adherence over time. This underscores the effectiveness of patient

counselling in enhancing medication adherence among COPD patients, ultimately leading to better treatment outcomes and improved disease management.

4. Limitations

Limitations of the Study include

- It was a single-centre study, reducing the applicability to other geographic regions or Healthcare settings.
- Uncontrolled confounding variables, such as psychological and socioeconomic factors,
- May have influenced the results.
- The follow-up period was short, limiting observation of long-term effects.
- There may have been selection bias in patient enrollment, affecting the study's outcomes.
- In many cases, essential data of patients were missing (such as , past Medical and medication history).

5. Conclusion

The results from our study revealed a significant improved medication adherence among COPD patients. When the mean (Medication Adherence Scale) score changes from 4.51 to 6.2, it indicates an improvement in medication adherence by rendering patient counseling within the population being assessed. When individuals adhere more closely to their medication regimens, they are more likely to manage their condition effectively, leading to better health outcomes and an enhanced quality of life. Therefore, in this case, improved medication adherence seems to correlate with improved health-related quality of life.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

The study was approved by the Institutional Ethics Committee

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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