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Research Article

Pharmacist Care to Improve Medication Adherence and Quality Of Life of COPD Patients

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Abstract



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The objective of this study was to determine whether pharmaceutical care by pharmacists could improve medication adherence and quality of life in patients with chronic obstructive pulmonary disease or not. A prospective interventional study was conducted among 156 patients to assess medication adherence and find the reason for non-adherence, analyze the quality of life, and provide counseling to improve the quality of life in patients, to determine whether pharmaceutical care by pharmacists could improve medication adherence as well as the quality of life and to prepare patient information leaflet to educate the patients regarding the disease. Prescriptions were collected and Medication Adherence Questionnaire and St. George's Respiratory Questionnaire were used to assess medication adherence and quality of life respectively. Among 156 patients, 76 were taken as a control group and the other 80 were taken as an intervention group. At the baseline, the patients in both intervention and control groups were found to have no significant difference. After the second follow-up, the total quality of life score was improved significantly in the intervention group when compared with the control group (53.55 ± 6.79 vs. 68.89 ± 9.13 , $p=0.001$). Medication adherence was significantly improved after pharmacist intervention (6.38 ± 1.53 , 7.42 ± 0.74 , $p=0.001$) as compared with control group (4.73 ± 2.16 , 4.89 ± 2.18 , $p=0.01$). As per the study results, the implementation of pharmacist intervention played an important role in improving medication adherence as well as the quality of life of chronic obstructive pulmonary disease patients. It may improve patient outcomes and reduce their social and economic burdens.

Keywords: Pharmacist intervention, Medication adherence, COPD, MAQ, SGRQ.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a respiratory disease defined by chronic inflammation, which is mainly caused by environmental pollutants and leads to a progressive loss of airway function as well as systemic comorbidities.^{1,2} It is a leading cause of morbidity and mortality, as well as a considerable economic and social burden. Chronic obstructive pulmonary disease is the fourth greatest cause of death worldwide, posing a significant public health threat. COPD's impact is set to persist or worsen, even though it is preventable and treated,³ with predictions from the World Health Organization (WHO) estimating that it will be the third biggest cause of mortality worldwide by 2030.^{4,5} It is linked to rising healthcare resource utilization and expenses, in addition to its impact on patients' lives. Because of the chronic nature of COPD, the use of numerous medications (polypharmacy), and the periods of symptom remission, pharmaceutical regimens for COPD patients are particularly sensitive to adherence issues. Other different factors that influence medication adherence such as forgetfulness, feeling better, lack of family support, old age, financial reasons, and fear of side effects.^{6,7,8}

Health-related quality of life measures the impact of disease and treatment on the lives of patients. The FDA defines Health-related quality of life (HRQoL) as a multi-domain concept that represents the patient's general perception of the effects of illness and treatment on physical, psychological, and social aspects of life. The St. George's Respiratory Questionnaire (SGRQ) was used to analyze the quality of life in COPD patients.⁹

Pharmacist-led interventions have been found to have an influence on COPD clinical outcomes in numerous trials employing various combinations of interventions. However, the data for various therapies is not completely conclusive, necessitating a quantitative assessment of effectiveness, focusing on breathing techniques and drug adherence.¹⁰

Patient information leaflets were given to provide information regarding the use of inhalers. The education will consist of a review of the current inhaler technique and, if necessary, correction or instruction. Pharmacists will also provide adherence support tactics by identifying knowledge gaps, learning about the patient's expectations for COPD treatment, and emphasizing medication and administration practices.¹¹ The pharmacist plays an important role in improving health related outcomes in patients. Based on these, we decided to

add further more interventions to improve medication adherence and quality of life by structured pharmacist led programme.

MATERIALS AND METHODS:

This was a prospective interventional study conducted in the pulmonology department of a tertiary care teaching hospital at Palakkad. The study was approved by the Institutional Ethical Committee of Nehru College of Pharmacy, Thrissur.

A total of 180 patients with COPD disease from the pulmonology department were enrolled in the study as per the inclusion-exclusion criteria. Informed consent was obtained from the all patient before enrolling into the study. The study was conducted for a period of 6 months from March 2021 to September 2021. The inclusion criteria for the study were patients diagnosed with COPD and of age more than or equal to 18 years, patients who are keeping up their regular follow-up appointment, and who are willing to give informed consent. The exclusion criteria were patients with mental disorders, pregnant, lactating, breastfeeding women, and cancer patients. The instruments taken for the study include patient case notes, laboratory investigation reports, suitably designed data collection forms, and Patient Information Leaflets. The questionnaires used are Medication Adherence Questionnaire (MAQ) and St. George Respiratory Questionnaire.

The demographic details such as age, gender, family history, dietary habits, social habits, co-morbidities, lab investigations, clinical examinations, and medications were collected with designed data collection form. Risk factor profiles including smoking status, cough, phlegm, fatigue, dyspnoea, and quantity of phlegm were noted at baseline. The study was undertaken to assess the quality of the patient and their adherence to therapy using the St. George respiratory questionnaire and Medication Adherence Questionnaire respectively.

A total of 180 patients were enrolled, out of which 90 were taken as the control group and the other 90 were taken as the intervention group. At the end of study, 76 patients from control group and 80 patients from invention group were completed two follow ups (n=156). The intervention group subjects were counselled by using structured patient

information leaflet. The first follow-up was done after 60 days and the second follow was at 120 days from the baseline. After the first and second follow-ups, the patient population was declined to 156 due to death, and missed follow-up.

Statistical Analysis:

The categorical variables were presented as frequency and percentage and the continuous variables were reported using mean and standard deviation. The quantitative variables were evaluated by independent and paired student t-test¹² at 95% confidence interval (p<0.05). The categorical variables were analyzed using the chi-square test.¹⁰

RESULTS

During the study period, a total of 180 patients, who fulfilled the inclusion criteria were included in this study and 156 patients were completed the follow-ups. The reasons for dropout were death and loss to follow up. From the study population, 125 (80.13 %) were male and 31 (19.87 %) were female. (Table-1)

Table 1: Gender and Smoking Status (n=156)

S. N.	Gender	Number of Patients	Percentage
1	Male	125	80.13
2	Female	31	19.87
3	Non-smokers	41	26.28
4	Smokers	48	30.77
5	Ex-Smokers	67	42.95

At the baseline, the patients in both intervention and control group were found to have approximately similar scores in SGRQ (70.61±12.02 vs.70.48 ± 11.38, p= 0.949). After the second follow-up, the total SGRQ scores improved significantly in the intervention group when compared with the control group (53.55 ± 6.79 vs.68.89 ± 9.13, p=0.001). The maximum improvement was noted in the impact domain (45.38 ± 8.40 vs. 58.28 ± 9.18, p = 0.001). (Table-2)

Table 2: Assessment of Quality of Life (n=156)

S. N.	QOL Domain	Control (n=76)	Intervention (n=80)	P-value
SYMPTOM				
1	Baseline	69.73 ± 13.66	68.04 ± 15.63	0.47
2	1 st Follow up	64.90 ± 14.53	51.01 ± 14.43	0.001
3	2 nd Follow up	71.62 ± 13.28	45.88 ± 10.47	0.001
ACTIVITIES				
1	Baseline	75.39 ± 12.87	75.18 ± 14.33	0.925
2	1 st Follow up	62.52 ± 14.13	52.60 ± 12.21	0.001
3	2 nd Follow up	66.84 ± 10.04	46.04 ± 8.43	0.001
IMPACT				
1	Baseline	67.39 ± 14.73	68.66 ± 14.17	0.588
2	1 st Follow up	61.92 ± 15.09	52.61 ± 14.50	0.001
3	2 nd Follow up	58.28 ± 9.18	45.38 ± 8.40	0.001
TOTAL				
1	Baseline	70.48 ± 11.38	70.61 ± 12.02	0.949
2	1 st Follow up	69.75 ± 9.76	56.84 ± 9.24	0.001
3	2 nd Follow up	68.89 ± 9.13	53.55 ± 6.79	0.001

The medication adherence of the patients in both intervention and control were found to have no significant difference (5.16 ± 2.21 vs. 5.16 ± 2.21 , $p=0.30$) at baseline. The scores were

significantly improved in the intervention group than in the control group after the second follow-up (7.42 ± 0.74 vs. 4.89 ± 2.18 , $p=0.001$). (Table-3)

Table 3: Independent t-Test of MAQ Scores in Control and Intervention Groups

S. N.	Parameter	Control (n=76)	Intervention (n=80)	P-value
1	Baseline	4.36 ± 2.29	5.16 ± 2.21	0.30
2	1 st Follow up	4.73 ± 2.16	6.38 ± 1.53	0.001
3	2 nd Follow up	4.89 ± 2.18	7.42 ± 0.74	0.001

According to our study results, majority of the patients had more than one reason for non-adherence. The main reason for

non-adherence was forgetfulness (74.3%), financial reason (61.8%) and old age (55.9%). (Table-4)

Table 4: Factors influencing poor medication adherence

S. N.	Reasons	Number of Patients	Percentage (%)
1	Forgetfulness	113	72.44
2	Feeling better	28	17.95
3	Polypharmacy	37	23.72
4	Lack of family support	14	08.97
5	Financial reason	94	60.26
6	Old age	85	54.49
7	Fear of side effects	8	05.13

DISCUSSION

This study demonstrates the value of a structured pharmacist-led program to improve medication adherence in COPD patients and highlights the importance of patient education by the pharmacist in India.

In this study, we assessed the effect of pharmacist intervention to improve medication adherence in 156 patients. From the study population, 125 (80.13 %) were male and 31 (19.87 %) were female who are diagnosed with COPD. (Table-1) A similar observation was found in the study of Nejc Horvat et al which showed COPD was significantly more common in males (67.7%) than in females.^{5, 15}

The structured pharmacist-led intervention significantly improves the medication adherence and quality of life of COPD patients. Based on our study results, 67 (42.95 %) COPD patients were ex-smokers which showed in Table-1 and it is similar to the study of M. R. Khmour et al from Northern Ireland which showed 60% of patients were ex-smokers.⁷

The progression of COPD affects the normal daily activities of the patient as well as their quality of life. The SGRQ score in the intervention group after the second follow-up showed significant improvement in QOL by providing the structured pharmacist-led intervention. As similar to results obtained by Chuanwei et al study results also showed significant improvement in SGRQ score after pharmacist intervention.^{12, 16}

The result of our study showed that low medication adherence persists among COPD patients due to forgetfulness (74.3%). By comparing with results obtained from Suhaj Abdulsalim et al, their study showed low medication adherence in COPD patients due to carelessness (25.6%).⁸

Medication adherence was approximately similar in the control and intervention groups at the baseline, but the scores were significantly improved in the intervention group after the first and second follow up (p -value = 0.001) (Table-4) which is similar to a study conducted by Faheemuddin et al.¹⁰

The role of the clinical pharmacist is very important in the healthcare team to act as a link between the physician and the patient.¹⁶ Many patients often lack knowledge about the disease which includes symptoms, exacerbation, medications, etc. So when patients are allowed to discuss their situations or concerns about the medications or lifestyle, patients' approach to disease and medications can be improved.

Reasons for non-adherence in our study include forgetfulness, feeling better, polypharmacy, lack of family support, financial reasons, old age, and fear of side effects. Table-5, showed the most common reason for poor medication compliance was forgetfulness in 113 (72.44 %) patients. 60.26 % of participants revealed that they stopped taking medications due to financial reasons, 54.49 % of patients stopped taking drugs due to old age, and 23.72 % patients due to polypharmacy. Other reasons for poor drug compliance were found to be feeling better (17.95 %), lack of family support (08.97 %), and fear of side effects (05.13%).

CONCLUSION

Both the medication adherence and quality of life of subjects were significantly improved in the intervention group than in the control group through proper patient counseling and education. The study also emphasizes the therapeutic importance of taking the required efforts to reduce the negative consequences of non-adherence with medication therapy. There is a need to provide effective counseling to

patients and their caregivers regarding the nature and severity of their illness, as well as a better understanding of the duration of therapy, use of medications, associated side effects, and the consequences of non-adherence. The study results revealed that improvement in health-related quality of life and medication adherence of patients, who are diagnosed with COPD, reflects the effectiveness of implementing pharmacist intervention. It may improve patient outcomes and decreases social and economic burdens in COPD patients. So Clinical pharmacist plays an important role and provides good support to the doctor in the management of patients with COPD.

CONFLICT OF INTEREST:

The authors have no conflicts of interest regarding this investigation.

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