A Study on the impact of Clinical pharmacist initiated patient counselling in Asthma and COPD patients

Ancy Baby[1], Fathima Naja M.P[2], Shilpa Maria Siby[3], Jeny Samuel[4], Aziz K.S[5], Boby Johns.G[6]

1,2,3,4 Department of Pharmacy Practice, 6. Department of Pharmaceutics, St.
        Joseph's College of Pharmacy, Cherthala, Kerala, India.
5 Department of Pulmonology, Lourdes Hospital, Ernakulam, Kerala, India.

ABSTRACT

Chronic obstructive lung diseases like Asthma and COPD are accompanied by diversity of symptoms, demand and increase in health care utilization, medication cost and loss of productivity to the individual. The major treatment option is by inhalation therapy, as it can deliver drugs into airways, achieving greater local concentration with a very minimum risk of side effects. The aim of our study was to analyze the impact of clinical pharmacist initiated patient counseling in Asthma and COPD patients. The major objectives were to evaluate the patient knowledge on the proper use of inhalers, to assess the knowledge of patient regarding disease condition and to study the impact of clinical pharmacist initiated patient counseling on medication adherence. The study was carried out in Pulmonology department in a tertiary care teaching hospital. It was a prospective interventional study using retrospective data as control and the patients visiting Pulmonology department and prescribed with inhalation therapy with age ≥18yrs were selected. We identified problems with proper use of inhalation techniques in the prospective arm and also provided proper education to improve knowledge and adherence of patients and compared with the retrospective arm. There was statistically significant improvement in knowledge score and medication adherence of patients in the intervention group as compared to control group. The study proves that intervention of clinical pharmacist can bring about major changes in the knowledge about the disease and inhalation techniques, adherence related attitude of the patients eventually affect the better health of the patients.

INTRODUCTION

Asthma is a common, chronic respiratory disease affecting 1-8% of the population in different countries. Asthma is usually associated with airway hyper responsiveness to direct or indirect stimuli, and with chronic airway inflammation[1]. COPD (chronic obstructive pulmonary disease) is characterised by airflow limitation that is not fully reversible [2].

Inhalers are the most common type of medication devices used in asthma treatment. However, they are often used sub-optimally leading to uncontrolled asthma and increased costs, either as a result of uncontrolled disease, or increased drug utilization for relief medication or preventative therapy. This remains a common problem in asthma and COPD. Improper

inhalation technique can lead to decreased efficacy through reduced deposition of medication in the lungs. Critical inhaler handling errors, likely to significantly impair delivery of adequate medication, thatis associated with different inhaler devices. Poor inhaler technique leads either to worse asthma control than could otherwise be achieved, or to stepping up to higher doses or prescribing of additional therapies such as fixed dose combinations in patients who could manage well with inhaled steroid therapy alone. Hence there is tremendous potential for improved inhaler technique to lead to better asthma control and reduced prescription costs [3-4].

Through patient education, the pharmacist aims at "right drug to the right patient at the right time, in the right dose through the right route, and in a right manner"[5]. The objective of the

counselling is to provide directions, instructions, advices about the drug as per prescription and imply a positive behaviour in which the patient is motivated to adheres to the prescribed treatment. Moreover, as per the new code of ethics it become the responsibility of the pharmacist to counsel the patient before dispensing of drugs [6-7]. Patient compliance or adherence is the extent to which a patient takes or uses medication in accordance with the medical or health advice given[8-9].

The goals of the study were to assess the level of patient knowledge about disease condition and proper use of inhalation techniques, their medication adherence and thereby ensure safer and effective use of inhalation techniques by the impact of clinical pharmacist initiated interventions. Patient counselling with complete demonstration of inhalation techniques with all relevant details about their proper usage make sure their therapy are safe and effective.

METHODS

STUDY DESIGN AND SETTINGS

A Prospective interventional study was conducted in Pulmonology department of a tertiary care hospital. The study site was a 500 bedded multispecialty tertiary care referral teaching hospital. During the first interview of the patient, informed consent was obtained from the patients or bystanders of patients who satisfied inclusion and exclusion criteria of the study. Patients of either gender with age group between18-85 years, diagnosed with mild or moderate asthma and COPD and willing to participate in the study were included in the study. Pregnant or lactating women, patients with psychiatric illness or other unstable conditions and patients with severe asthma were excluded from the study.

A data collection form was prepared and pertinent data including demographic details, medical and medication history, social history, current medications, the type of inhalers used, etc were obtained by direct interview of patient and with the help of their medical chart. Initial baseline knowledge of the patient on the proper use of inhalers, and their disease condition was obtained using prepared questionnaires and were scored separately. Their medication adherence was also assessed using Morisky medication adherence questionnaire.

All the patients included in the study received a standard care of treatment and counseling from the consultant Pulmonologist. Apart from the care of the Pulmonologist, clinical pharmacist counseled the patients and increased their awareness about the diseases, drugs and its importance, proper inhalation techniques, and dietary modification through patient counseling. On follow-up, the patients' knowledge was assessed using the same questionnaire, score was calculated again and also adherence was re-assessed and similarly scored again. The comparison between previous and recent scores in knowledge and adherence of patients after clinical pharmacist initiated counselling was done. Follow-up was done either in person and/or via the telephone.

The study was conducted after approval from the Institutional Scientific Review Board andMedical Ethics Committee of Lourdes hospital, Kochi [Reference number: LH/EC/2016-26].

STATISTICAL ANALYSIS:

The collected data were compiled using Microsoft Excel and were presented in graphical format using pie charts and bar graphs. Calculation of the mean and standard deviation were done by using statistical calculators. The statistical software SPSS was used for the analysis of the data. The significance of the study results were assessed using Paired sample t test.

RESULTS

The study involved 66 patients who satisfied the inclusion and exclusion criteria. All patients successfully completed the study. Among the study population, occurrence of asthma or COPD condition were highest in the age group of 51-80 years (65.2%) followed by 21-50 years (25.7%) and lowest in the age group >80 years (9.1%). There was a male preponderance in our study population with 36 male patients.

PERSONAL HISTORY OF STUDY POPULATION

The most common allergy among the study population was a combination of dust and climate allergy (48.4%), followed by dust allergy alone(4.8%).

SOCIAL HISTORY OF THE STUDY POPULATION

In our study we found that even non-smokers &non-alcoholics (86.4%) were also exposed to asthma and COPD conditions. This finding states that apart from smoking and alcohol there may be other major risk factors contributing to asthma and COPD.

We have compared the use of different types of inhalers in our study population and we observed that majority of patients were maintained on a combination of long acting beta agonist + corticosteroid combination as inhaler medication. On comparing the past medication history to the present medication list, we found that the use of above said combination has increased from 82.4% to 97.6%.

When the pre-test and post-test levels of proper use of inhalers

Table 1 : Mean, S.D. and t value to compare the pre-test & post-test levels of proper use of inhalers

Test	Mean	S.D	n	Difference between mean	df	p value
Inhaler device assessment tool before	4.68	1.73	66	1.42	65	P< 0.001
Inhaler device assessment tool after	6.81	1.02				

were compared, it was found that there was an elevation in the scoring of inhaler device assessment tool in the baseline and follow-up data. The Mean column in the t test table displays the mean score of proper use of inhaler assessment scale in the pre-test and post-tests (Table 1). The Standard Deviation column displays the standard deviation of the scale scores. The difference between mean (1.42424) shows the difference between mean scores in pre and post-tests (4.6818 & 6.8106). There was an elevation in the scoring of inhaler device assessment tool in the baseline and follow-up data. Since the p-value < 0.001, there is significant difference in the pre-test and post-test among the proper use of inhaler assessment scale. From this we can conclude that the patient counselling has significant effect on quality of life in patients.

towards the health.

The comparison of baseline and follow-up data of medication adherence using Morisky medication adherence scale was depicted in Table 3. The Mean column in the t test table displays the mean score of Morisky medication adherence scale in the pre-test and post-tests (Table 3). The difference between mean (2.12879) shows the difference between mean scores in pre and post-tests (2.5758 & 4.0000). Since the p-value < 0.001, there is significant difference in the pre-test and post-test among Morisky medication adherence scale. There was a drastic change in the adherence level in the study population from the baseline data and the follow-up data after clinical pharmacist initiated patient counselling, by using 8 item questionnaire of Morisky medication

Table 2 : Mean, S.D. and t value to compare the pre-test & post-test levels of the knowledge assessment

Test [BEFORE and AFTER]	S.D	n	Difference between mean	df	Significance P value
What are the factors that trigger your asthma	0.20		0.02	65	0.01
Did you have Asthma/COPD exacerbation over past one month	0.53		0.06	65	0.00
Was the last attack worsen than the previous	0.52	66	0.06	65	0.00
Did you feel difficulty in breathing while performing exercise	0.34		0.04	64	0.01
Did Asthma/COPD attack disturbed your sleep	0.35		0.04	64	0.01

Table 3 : Mean, S.D. and t value to compare the pre-test & post-test levels of Morisky medication adherence scale

Test	Mean	S.D	n	Difference between mean	df	p value
Morisky medication adherence scale before	2.57	1.16	66	2.18	65	P< 0.001
Morisky medication adherence after	4.00	0.64				

Table 2 narrates the comparison of baseline and follow-up knowledge of the disease condition, which was improved after clinical pharmacist initiated patient counselling and shows a significance. The Mean column in the t test table displays the mean score of knowledge assessment in the pre-test and post-tests (Table 2). The difference between mean shows the difference between mean scores in pre and post-tests. Since the significance (p-value) is less than 0.001, there is significant difference in the pre-test and post-test among the knowledge assessment in asthma and COPD patients. This table helps to derive a conclusion that patient counselling has a major impact on improving the disease condition and changing their attitude

adherence scale. This marked increase in adherence shows the importance of patient counselling, which can significantly improve the quality of life in patients with asthma and COPD conditions.

DISCUSSION

This study was designed to assess the effectiveness of patient counselling by clinical pharmacist on asthma and COPD's patient disease condition, medication adherence and inhaler technique.In our study population, we found that male patients were more prone to developing asthma and COPD than female patients. This result can be supported by another study by Ajay R Fugate and A

M Kadam et al, where there study also had a similar prepondance in male population (71.6%) [10]. Our study results showed that even non-smokers & non-alcoholics (86.4%) were also affected with asthma and COPD conditions. This finding states that apart from smoking and alcohol there may be other major risk factors contributing to asthma and COPD. A study conducted by Faheemuddin MD and Ramaiah B et al concluded that in their study majority of asthmatic patients were smokers [12]; which is in contrary to our study. Our study setting was limited to a single centre and the duration of study was limited, both of which suggest that this result cannot be generalized. The number of patient put on combination of long acting beta agonist+ corticosteroids, were increased from 82.40% in the past medication to 97.90% in the current medication.

Our study results show the baseline knowledge data indicates that patients had minimum knowledge on inhalation techniques, which improved after proper counselling and is shown in the follow-up data. The mean value of baseline knowledge of patients in proper use of inhalers by inhaler assessment tool is showing amarked increase after counselling (p value <0.001). The reasons behind this elevation in assessment score is because more patients in our study population use their inhalers improperly. Some common but major problems that we identified regarding the improper use of inhalers during the study period is that; most patients had a practise of taking multiple puffs together, without any gap when they were asked to take more than one puff, also they were not informed on importance of washing mouth after using steroid type inhalers, and so majority of them skipped this habit. Due to insufficient knowledge 8 patients used to take inhalation in their sleeping position. 17 patients were not aware of spraying the first puff of the inhaler when it was newly brought. This result can be supported by a study conducted by Prabhakaran L and Lim G et al , in which among 67 patients who completed the two-phase AEP, there was significant improvement in some knowledge aspects related to disease condition after providing counselling and follow-up [12].

Regarding the Knowledge assessment, there was a significant difference in the pre-test and post-test in asthma and COPD patients. The knowledge of patient was improved when compared with the follow-up data. This can be related with another study done by Mohammed arief, Bonthu Sathyanarayana et al, in which they conducted their study using a questionnaire and was found to be significant with changes significant in test group (122.57%) and in control group (45.94%)[12]. The major problem analyzed from patients were they were not aware of their triggering factors towards their disease condition, so interviewed patients in detail, history were taken and found their major triggering factors , hence counselled them to be apart from those. By our study we conclude that recurrence of symptoms and exacerbation of disease condition may be due to improper knowledge about these factors.

In case of medication adherence, by using Morisky medication adherence scale there was a low adherence in the baseline knowledge of the patient and there was an improved adherence after counselling and follow-up of the patients. Explaining importance of medication adherence and counselling was given and follow up scores were collected on further follow up. The result was 93.9% (pre-test) with low adherence have changed to 18.2% (post- test), 3% (pre-test) with medium adherence improved to 65.2% and 3% (pre-test) with high adherence16.7% (post-test); showing a significant increase in adherence of study population. This can be compared with the results found in the study done by Faheemuddin MD, Ramaiah B et al, in their study total 60 patients were enrolled; out of 60, 30 were taken as the control group and the other 30 were taken as intervention group. The p values at the base line medication adherence was having no difference followed by first follow up was <0.01, followed by second follow-up was <0.0001 which also found that there was an low adherence in baseline and there was an improved adherence after counselling and follow up of the patients [13]. The analyzed reasons for this tremendous elevation in the medication adherence assessment tool may be due to clarification of the un-necessary thoughts of patients. The reasons were14 patients used to stop medication when they felt better, forgetting to take medication (21 patients), due to expensive (8 patients) and lack of access to drug store/hospital (6 patients). Other minor reasons were fear of side effects due to medication, mis-concept that when started on inhaler it should be continued lifelong (22 patients) and feel non beneficial (3patients).

Clinical pharmacist is an integral part of medical team for identifying and resolving disease related concerns, medication and medication technique related problems such as the proper use of inhalers. Inclusion of such professionals in health care system, particularly in proper education of patients through patient counselling technique can improve health care outcome.

CONCLUSION

This study aims to assess the impact of patient counselling in asthma and COPD patients. The knowledge of patient regarding their disease condition, medication adherence and proper use of inhalers have increased from baseline due to the additional knowledge imparted to the patients by Clinical pharmacist. This clearly points the need for a trained clinical pharmacist to educate patients to ensure correct inhalation techniques. Patients counselling may be effective to resolve the problems associated with medication non-adherence except high cost of medications and lack of access to medications/ hospital which require further strategies.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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