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Original Research Article.

Treatment Adherence in Patients with Chronic Obstructive Pulmonary Disease (COPD): A Cross Sectional Study

Ajitpal Singh Gill[1], Guramrit Kaur Gill[2*]

[1]Associate Professor, Department of Internal Medicine, Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh, India.
[2*]Assistant Professor, Department of Medical Surgical Nursing, Saraswati College of Nursing, Gharuan, Mohali, Punjab, India.

ABSTRACT

Background: Chronic Obstructive Pulmonary Disease (COPD) is a progressive condition which cannot be cured but optimal management give reliefs from symptoms, slows the progression of disease and also improves the quality of life of patients The patient must adhere to drug therapy, in order for a drug to have a therapeutic effect. There are a limited number of studies hence, this study was planned to find treatment adherence in patients with Chronic Obstructive Pulmonary Disease (COPD).

Methodology: This observational, cross-sectional study was conducted for a period of 18 months on patients suffering from COPD and on medication were recruited in the study. A detailed history was taken and the participants underwent a thorough clinical examination, they were also given counselling for life style modifications. The patients were given questionnaire of Morisky Medication Adherence Scale-8 (MMAS-8) and WHO-QOL Bref.

Results: A total of 134 patients participated in the study with mean age of patients was 51.24±11.65 years, the mean number of medication used was 2.68±0.83 per person and 91% of patients were taking combination of drugs for COPD. The mean MMAS-8 Score was 3.25±1.31. Group 1 had patients who were on single medication for COPD, whereas Group 2 had patients who were taking two or more medications in combination or single compound. The mean duration of illness was significantly ($p<0.05$) less in Group 1 as compare to Group 2, the MMAS-8 scores and WHO-QOL Bref Scores were significantly better in Group 1.

Conclusion: Our study also demonstrated that quality of life was slightly better in patients on single medication and had better adherence correlation as compared to patients on more than two medications.

Key words: Adherence, Quality of Life, Treatment, Medication.

***Correspondence to:**

Guramrit Kaur Gill,
Assistant Professor,
Saraswati College of Nursing,
Gharuan, Mohali, Punjab, India.

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a progressive condition causing both pulmonary and systemic consequences[1-3] with an estimated 210 million people suffering from it and accounting for 3 million deaths in 2005 as per WHO.[4,5] COPD has an estimated global prevalence in adults aged over 40 years is 9-10%[6] and is projected to increase due to past high rates of tobacco use, and an ageing population.[7,8] It is projected to be the fourth leading cause of death worldwide by 2030.[9] The burden of COPD assessed by disability-adjusted life years (DALYs) ranks 10th worldwide[5] and the total deaths are projected to increase by more than 30% in the next 10 years unless urgent preventive measures are in place.[5,9]

Though COPD cannot be cured but optimal management give reliefs from symptoms, slows the progression of disease and also improves the quality of life of patients.[5]

A multicomponent approach for the management of COPD has been recommended in Clinical practice guidelines[10], which includes both oral and inhaled medications (e.g. bronchodilator therapy, corticosteroid therapy and combination therapy), as well as non-pharmacological interventions like pulmonary rehabilitation, lifestyle advice and self-management techniques so as slow down the disease progression, and reduce exacerbations.[11]

Suboptimal management of COPD occurs when either the physicians fail to prescribe appropriate therapies, or due to poor adherence to evidence based guidelines, or when patients fail to adhere to prescribed treatment regimens.[5] Few studies conducted have shown that medication adherence is associated with reduced healthcare utilization[11], significantly better survival, and overall better health outcomes.[3]

The patient must adhere to drug therapy, in order for a drug to have a therapeutic effect. Adherence to medical therapies is a growing issue, and World Health Organization has defined it as "a new pharmacological problem".

There are several consequences of non-adherence and is associated with increased risk of poor clinical outcome, associated with worsening of the quality of life and increase in health-care expenditure.[12] There are a limited number of studies on the physician knowledge and practice patterns for individuals with COPD that may result in suboptimal management and adversely affect patient outcomes.[5] Hence, this study was planned to find treatment adherence in patients with Chronic Obstructive Pulmonary Disease (COPD).

MATERIALS AND METHODS

This observational, cross-sectional study was conducted in the Department of Internal Medicine, of a tertiary care teaching hospital in North India for a period of 18 months between April 2016 and October 2017. All patients suffering from COPD and on medication were recruited in the study. The study was approved by the Institutional Ethics Committee and patients were recruited after they gave written informed consent.

The patients who were in the age group of 18-65 years, suffering from COPD and willing to give written informed consent were included in the study. Patients suffering from any other co morbid illness, on drug therapy likely to interfere with pulmonary function or substance abuse were excluded from the study. Pregnant and lactating females were also excluded from the study. Patient with severe exacerbation /previous hospitalization/ emergency visit in previous 2 weeks, on oral corticosteroids in past 2 weeks, on current treatment with antibiotics for upper respiratory tract infections and presence of lungs disease other than COPD were also excluded from the study.

Procedure

The participants suffering from COPD and on treatment were enrolled in the study. A detailed history was taken and the participants underwent a thorough clinical examination, they were also given counselling for life style modifications. The patients were given questionnaire of Morisky Medication Adherence Scale-8 (MMAS-8) and WHO-QOL Bref; they were given time to fill up the questionnaire in a separate room without any interference from the treating physician.

PARAMETERS : **Measurement of adherence**

To increase the strength and consistency of our results, we included an adherence assessment through the eight-item Morisky medication adherence scale (MMAS-8).[13] The MMAS-8 asks patients to respond with ''yes" or ''no" to a set of 7 questions and to one 5-point Likert scale question. The score for full adherence is 8, with lower scores indicating a poorer level of adherence with a lower boundary of zero. In this study patients were described as non-adherent if they had an MMAS-8 score < 6 and as adherent if their score was ≥ 6.

The WHOQOL – Bref: was monitored at visit. This is a 26-item self-administered generic questionnaire, a short version of WHOQOL -100 scales. It can be analyzed from perspective of either six domains (physical health, psychological health, level of independence, social relationships, environment, & spiritual) or four domains (physical health, psychological health, social relations, and environment).[14] The QOL index of each domain and their associations with demographic factors were assessed, a higher score indicated a better quality of life.[14]

Statistical Analysis: The data was tabulated as mean ± standard deviation (SD). Results were analyzed using non parametric tests (Chi-Square Test), parametric tests (two tailed student t-test) and correlation (Pearson correlation coefficients) analysis. A $p<0.05$ was considered statistically significant.

Table 1: Baseline characteristic of participants

Characteristic	(n=134)
Age (years) (Mean±SD)	51.24±11.65
Sex(M:F)	89:45
Duration of illness (years) (Mean±SD)	7.39±2.61
Number of Medications used (Mean±SD)	2.68±0.83
% Medications as Drug Combination	91 % (n=122)
Morisky Medication Adherence Scale – 8 (MMAS-8) Score (Mean±SD)	3.25±1.31
Domain I/ Physical Health (Mean±SD)	8.73±1.38
Domain II/ Psychological (Mean±SD)	9.27±1.67
Domain III/ Social Relationship (Mean±SD)	8.63±1.87
Domain IV/ Environment (Mean±SD)	9.11±1.92

Table 2: Baseline characteristic of both groups

Characteristic	Group 1 (n=12)	Group 2 (n=122)	p value
Age (years) (Mean±SD)	53.47±12.11	49.02±11.19	0.37#
Sex(M:F)	8:4	81:41	**<0.05ᵉ**
Duration of illness (years) (Mean±SD)	5.45±2.27	9.33±2.95	**<0.05*#**
Number of Medications used (Mean±SD)	1	4.33± 0.50	
Medications as Drug Combination (single drug: drug combination)	10:2	35:87	**<0.05*ᵉ**
Morisky Medication Adherence Scale – 8 (MMAS-8) Score (Mean±SD)	4.16±1.16	2.36±1.46	**<0.05*#**
Domain I/ Physical Health (Mean±SD)	11.52±1.66	5.96±1.12	**<0.05*#**
Domain II/ Psychological (Mean±SD)	11.31±2.13	7.21±1.23	**<0.05*#**
Domain III/ Social Relationship (Mean±SD)	10.11±2.62	7.18±1.09	**<0.05*#**
Domain IV/ Envoirment (Mean±SD)	12.19±2.24	6.06±1.62	**<0.05*#**

*p<0.05 and statistically significant; #using student 't' test; ᵉusing Chi Square Test

RESULTS

A total of 167 patients suffering from COPD visited the Internal Medicine OPD in a period of 18 months were screened for enrollment in the study, 21 patients were not enrolled in the study as they did not fulfill the eligibility criteria for enrollment in the study. Around 12 patients were not included because they did not give the informed consent. A total of 134 patients participated in the study, the baseline demographics of the participants are shown in Table 1. The mean age of patients was 51.24±11.65 years, the mean number of medication used was 2.68±0.83 per person and 91% of patients were taking combination of drugs for COPD. The mean MMAS-8 Score was 3.25±1.31, the mean scores of WHO-QOL Bref scores are shown in Table 1.

Based on the number of medications used by patients, they were subdivided into two groups, Group 1 had patients who were on single medication for COPD whether it was single compound or two compounds in single medication, whereas Group 2 had patients who were taking two or more medications in combination or single compound. 12 patients were included in Group 1 and 122 patients were included in Group 2. All the patients gave informed consent and were included in the analysis of result. The characteristics of the patients in both groups are shown in Table 2. As compared to participants in Group 1 who were taking a single medication, the participants in Group 2 were on 4.33± 0.50 medication per person for treatment of COPD. The number of participants in Group 1 who were on single compound in one medication was 10 which was statistically ($p<0.05$) higher than participants in Group 2 (n=35). The mean duration of illness was significantly ($p<0.05$) less in Group 1 as compare to Group 2 (5.45±2.27 years vs. 9.33±2.95 years), the MMAS-8 scores were significantly ($p<0.05$) higher in Group 1 (4.16±1.16 vs. 2.36±1.46) – patients in Group 1 were more adherent to treatment as compared to Group 2.

WHO-QOL Bref Scores

WHO-QOL bref scores are shown in Table 2. Group 1 had higher scores in all four domains that is, physical health (11.52±1.66 vs. 5.96±1.12), social relationship (10.11±2.62 vs. 7.18±1.09), environment (12.19±2.24 vs. 6.06±1.62) and psychological (11.31±2.13 vs. 7.21±1.23) domain, which was not statistically significant. As the questionnaires were to be filled up by patients only, hence there was a possibility of interpretation bias based on understanding of the patients.

DISCUSSION

Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality in both developed and developing countries and is expected to be the third leading cause of death in the world by 2020.[15]

COPD causes a substantial impact worldwide resulting in heavy economic burden with the annual per capita health care expenditure more than two times as compared to people without respiratory disease. The efficacy and real world effectiveness of drug therapy is reduced due to suboptimal treatment adherence which decreases the clinical benefit of therapy and account for differences in treatment.[15] This observational study was done to assess the adherence to medication in patients suffering from COPD, the study showed that patients had a low adherence score and it was significantly lower in patients who were taking two or more medications in combination or single compound. Our study also demonstrated that quality of life was significantly better in patients on single medication as compared to patients on more than two medications.

An observational, cross-sectional study conducted in Turkey and Saudi Arabia to investigate adherence to COPD treatment demonstrated that adherence to COPD treatment is poor in Turkey and Saudi Arabia. The non-adherence to treatment was associated with higher disease impact and reduced quality of life. The results of our study are similar to this study as are study also demonstrated that patients who were on more number of drugs and longer duration of illness had a compromised quality of life as depicted by the low scores of WHO-QOl Bref Scores. Our study is different from this study as the tool used were different and we only focused on one aspect of low adherence.[16]

Another observational, cross sectional study done to estimate adherence to respiratory medication and to identify factors related to adherence in COPD patients demonstrated that adherence to COPD medication regimens was poor. They concluded that less frequent dosing regimens, quality-of-life monitoring within clinical practice settings could facilitate improved medication adherence. The results of this study are similar to our study as our study also demonstrated that patients on more number of medication had lower adherence and decreased quality of life. The study differs from our study as we divided the participants into two groups which gave us a comparative adherence scores.[15]

One study done in Copenhagen reported the levels of adherence among COPD patients was ranging from 25% to 68% depending on the treatment regimen, and in the USA, 58% of patients were found to be non-adherent to their COPD medications. Our study shows similar trends as patients on lesser number of medications were more adherent and had a better quality of life.[17,18]

A systematic review done to examine the effectiveness of interventions designed to improve medication adherence demonstrated that improving medication adherence among individuals with COPD is critical to optimizing patient outcomes. The review also emphasized that there was a clear need for rigorous research to determine effective interventions for improving medication adherence. The results of our study are different from this study as we did not give any intervention but our study demonstrated that patients on lesser number of drugs had better adherence and better quality of life.[3]

There are certain limitations in our study, firstly the sample size could have been larger but, the duration of study was less hence we tried to include patients who fulfilled the eligibility criteria. Secondly, an intervention in our study group could have been done but this could have prolonged the duration of study.

To conclude it was observed that patients had a low adherence score and it was significantly lower in patients who were taking two or more medications in combination or single compound. Our study also demonstrated that quality of life was slightly better in patients on single medication and had better adherence correlation as compared to patients on more than two medications.

REFERENCES

1. Agustı´ AGN, Noguera A, Sauleda J, Sala E, Pons J, Busquets X. Systemic effects of chronic obstructive pulmonary disease. Eur Respir J 2003; 21:;347–60.

2. Barnes PJ, Celli BR. Systemic manifestations and comorbidities of COPD. Eur Respir J 2009; 33: 1165–85.
3. Bryant J, McDonald VM, Boyes A, Sanson-Fisher R, Paul C, Melville J. Improving medication adherence in chronic obstructive pulmonary disease: A systematic review. Respiratory Research 2013; 14: 109.
4. World Health Organization. Chronic Respiratory Diseases [online]. Accessed January 20, 2018. URL: www.who.int/gard/publications/chronic_respiratory_diseases.pdf.
5. Restrepo RD, Alvarez MT, Wittnebel MD, Sorenson H, Wettstein R, Vines DL, et.al. Medication Adherence issues in patients treated for COPD. International Journal of COPD 2008; 3 (3): 371-84.
6. Halbert R, Natoli J, Gano A, Badamgarav E, Buist A, Mannino D. Global burden of COPD: systematic review and meta-analysis. Eur Respir J 2006; 28: 523–32.
7. Feenstra T, van Genugten M, Hoogenveen R, Wouters E, Rutten-van Molken M. The impact of aging and smoking on the future burden of chronic obstructive pulmonary disease: A model analysis in the Netherlands. Am J Respir Crit Care Med 2001; 164: 590-6.
8. Murray C, Lopez A. Alternative projections of mortality and disability by cause 1990–2020: Global burden of disease study. Lancet 1997; 349: 1498–1504.
9. Chronic Obstructive Pulmonary Disease (COPD). Fact sheet No 315. November 2007 [online]. Accessed January 20, 2018. http://www.who.int/mediacentre/factsheets/fs315/en/index.html.
10. Qaseem A, Wilt TJ, Weinberger SE, Hanania NA, Criner G, van der Molen T, et.al. Diagnosis and management of stable chronic obstructive pulmonary disease: A clinical practice guideline update from the American college of physicians, American college of chest physicians, American thoracic society, and European respiratory society. Ann Intern Med 2011; 155: 179–91.
11. Toy EL, Beaulieu NU, McHale JM, Welland TR, Plauschinat CA, Swensen A, et.al. Treatment of COPD: relationships between daily dosing frequency, adherence, resource use, and costs. Respir Med 2011; 105: 435–41.
12. Sanduzzi A, Balbo P, Candoli P, Catapano GA, Contini P, Mattei A, et.al. COPD: adherence to therapy. Multidisciplinary Respiratory Medicine 2014; 9: 60.
13. Morisky DE, Ang A, Krousel-Wood M, Ward HJ. Predictive value of a medication adherence measure in an outpatient setting. Journal of Clinical Hypertension 2008; 10 (5): 348-54.
14. Skevington SM, Lotfy M, O' Connell KA, the WHOQOL Group. The World Health Organization's WHO-QOLBref quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. Qual Life Res 2004; 13: 299-310.
15. Agh T, Inotai A, Meszaros A. Factors associated with medication adherence in patients with chronic obstructive pulmonary disease. Respiration 2011; 82: 328-34.
16. Kokturk N, Polatli M, Oguzulgen IK, Saleemi S, Al Ghobain M, Khan J, et.al. Adherence to COPD treatment in Turkey and Saudi Arabia: results of the ADCARE study. https://doi.org/10.2147/COPD.S150411
17. Ingebrigtsen TS, Marott JL, Nordestgaard BG, Lange P, Hallas J, Dahl M, et.al. Low use and adherence to maintenance medication in chronic obstructive pulmonary disease in the general population. J Gen Intern Med 2015; 30(1): 51–9.
18. Krauskopf K, Federman AD, Kale MS, Sigel KM, Martynenko M, O'Conor R, et.al. Chronic obstructive pulmonary disease illness and medication beliefs are associated with medication adherence. COPD. 2015; 12(2): 151–64.

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