



## BARRIERS TO ATTENDANCE IN PULMONARY REHABILITATION PROGRAMMES: AN OBSERVATIONAL STUDY

**Dr. Ravi Shankar Mishra**

Assistant Professor , Department Of Respiratory Medicine, L.N. Medical College & Research Centre,bhopal.

**Dr. Ashish Kumar Dubey\***

Associate Professor ,department Of Respiratory Medicine, L.N. Medical College & Research Centre,bhopal \*Corresponding Author

**ABSTRACT** **BACKGROUND:** Pulmonary rehabilitation is an essential component of care for people with chronic obstructive pulmonary disease and is supported by strong scientific evidence. Despite this, many people with COPD do not complete their program or choose not to attend at all.

**AIM:** This study was conducted to determine the factors associated with poor attendance in pulmonary rehabilitation programmes.

**MATERIALS & METHODS:** A hospital based cross-sectional study was done including patients (both OPD and IPD) diagnosed with COPD over a period of 1.5 years. A pre-tested proforma was used for interview of patients. Questions were asked pertaining to socio-demographics, medical reasons, transport issues and psychological factors. Statistical analysis was done using SPSS v20 and other quantitative and qualitative tests were used as required. Significance level was fixed at  $p < 0.05$ .

**RESULTS:** Out of 227 patients enrolled in the study, only 71 patients completed the 3 month follow up in PRP. Dropout percent was 68.72 with 95.51% being males and 4.48% females. Baseline characteristics showed 43.7% subjects in age group 61-70 years, most having primary level of education(45.5%), having a partner(70.1%) and working(59%). The subjects belonging to the more severe COPD groups i.e.C and D were 22.5% and 26.8% respectively. The mean Borg dyspnea score, Cat score and FEV1 improved drastically in all COPD groups during the course of the study( $n=71$ ). The main causes of non-attendance of PRP was not any specific reason(39.4%) followed by transportation problems and disease-related conditions.

**CONCLUSIONS:** Attendance at PRPs is independently influenced by a lot of psychosocial factors. Proper counselling, instructions and coordination between the physician and the patient is mandatory for the success of such programmes.

**KEYWORDS :** Copd, Pulmonary Rehabilitation, Attendance, Dropout, Transport

### INTRODUCTION

Pulmonary rehabilitation is integral in managing patients with COPD. It involves a multidisciplinary input from occupational therapists, physiotherapists, dietician, physician, specialist nurses, social workers and a counsellor.[1] PR is the most important evidence-based, non-pharmacological measure of improving the quality of life of patients with chronic respiratory disease.[2-4] However, to obtain satisfactory improvement, an adequate attendance is crucial.[4] Poor attendance is likely to contribute to suboptimal improvements or maybe a marker of a more severe disease. The aim of this study was to identify the possible factors playing a role in defining the attendance and dropout rates of a pulmonary rehabilitation programme.

### MATERIALS AND METHODS

A hospital based cross-sectional study was done in a tertiary care hospital in Central India over a period of 1.5 years from January 2015 to July 2016. Two-hundred and twenty-seven patients diagnosed with COPD were enrolled in this study (both OPD and IPD) and their baseline characteristics noted using a pre-formed questionnaire after taking a proper informed consent. Those having other associated medical conditions such as cardiovascular diseases, neurological conditions, lumbar spondylitis or osteoarthritis and those admitted with acute exacerbation requiring oxygen therapy were excluded from the study. The questionnaire included questions regarding their socio-demographics, marital status and smoking habits. Baseline Borg score for dyspnea, CAT score and FEV1 were noted. The patients were categorised into A, B, C and D groups on the basis of combined COPD assessment.[5] A monthly follow up for a total period of 3 months was explained to the subjects. Those subjects who missed even one follow up were dropped out from the study. A separate questionnaire was used to extract the reasons behind missing the follow up date. Chi square and ANOVA were applied as required. Statistical analysis was done using SPSS v20. Significance level was fixed at  $P < 0.005$ .

### RESULTS

Out of 227 subjects enrolled, 156 did not attend one or any follow up and hence were considered as a dropout(68.72%). Other socio-demographics and smoking status is tabulated herewith in Table 1. The mean Borg score for dyspnea as well as main CAT score and mean FEV1 improved with 3 months of continued pulmonary rehabilitation and these results were highly significant with  $P=0.001$ . Smoking status of patients who were initially enrolled in the study is tabulated.

However, of the 71 patients who completed the follow up, 86% were smokers and only 14% were either non-smokers or had quit smoking recently.

**Table 1: Characteristics of study sample**

VARIABLE(N)	VALUE	PERCENT%
TOTAL SCREENED	227	
DROPOUT	156	68.72
STUDY COMPLETED	71	31.3
GENDER(227)		
MALE	206	90.74
FEMALE	21	9.25
DROPOUT(156)		
MALE	149	95.51
FEMALE	7	4.48
AGE(227)		
50-60 yrs	96	42.2
61-70 yrs	99	43.7
>70 yrs	32	14.1
EDUCATION(227)		
Illiterate	58	25.4
Primary school	103	45.5
High school	48	21.1
Graduate	18	8.0
OCCUPATION(227)		
Working	134	59
Not working/retired	93	41
MARITAL STATUS(227)		
Unmarried/widowed	68	29.9
Married	159	70.1
COPD GROUP(227)		
A	48	21.1
B	67	29.6
C	51	22.5
D	61	26.8
SMOKING STATUS(227)		
Never	10	4.4
Recently stopped	176	77.5
Infrequent	23	10.1
Daily	18	7.9

PACK YEARS(227)		
<20	42	18.3
21-40	51	22.5
41-60	102	45.1
61-80	32	14.1
<b>VARIABLE(N=71)</b>	<b>VALUE</b>	<b>P VALUE</b>
BORG DYSPNEA SCORE		
Before	6.65	P=0.001
After	3.21	
CAT SCORE		
Before	22.42	P=0.001
After	17.14	
FEV1 SCORE		
Before	49.65	P=0.001
After	50.25	

Table 2 enlists the causes for the dropouts. Most subjects could not state any specific reason for not attending these programmes(39.4%). Next most common cause was transportation issues which accounted for 18% of all dropouts and disease related conditions having 15% of this share. 12% subjects had financial problems causing them to withdraw from the study.

**Table 2: CAUSES OF DROPOUT**

CAUSE	VALUE	PERCENT%
NO SPECIFIC REASON	61	39.4
DISEASE RELATED CONDITION	23	15
CO-MORBIDITY	14	9
INCONVENIENT SCHEDULE	5	3
APPOINTMENT FORGOTTEN	6	3.6
TRANSPORTATION PROBLEMS	28	18
FINANCIAL PROBLEM	19	12

## DISCUSSION

An important and integral part of holistic management of patients with COPD is pulmonary rehabilitation. This non-pharmacological treatment is not only evidence based but also helps in improving exercise tolerance, dyspnea, fatigue and overall quality of life.[6] However, a significant proportion of the eligible patients do not complete the rehabilitation programme. Non-completion rates usually vary between 20-40% although non-completion rates as high as 70% have also been reported.[7-11] Our study, with 227 subjects enrolled, also showed a dropout rate of 68.72%. Of these, most were men (95.51%) comprising of the age group 61-70years (43.7%). High drop out and non-attendance rates lead to ineffective use of training staff and limits the potential benefits of rehabilitation.[12,13] The non-attendance of such fruitful programmes might be due to some unavoidable conditions but can also be due to some false disease schemata formed in a patient's brain due to his surroundings, other people's experiences and also his/her own common sense. Leventhal's common sense model states that a patient tends to adhere to some specific treatment only if they consider it effective enough out of his own sense.[14] This involves a complex interplay of interpretation, coping efforts and evaluation of effectiveness of these efforts ultimately producing a cycle of self-regulation. This could be used to explain the 39.4% of subjects who did not seem to have any specific reason for not attending the PRP. This section also comprised of the maximum number of subjects. Out of the rest, the most important reason was transportation factors(18%). Although, the study place was a tertiary care hospital, but it mainly tended to the people coming from remote villages in the nearby districts. Transportation from these places was a huge hindrance as reaching the nearest railway station also needed a walk of a few kilometers for some, while some did not have any direct train or bus route and had to change transportation to reach the hospital. This also meant requirement of more finances since study subjects were mainly elderly and needed to be accompanied by some other member of the family. This, thus, formed the 3<sup>rd</sup> most important reason(12%) for not attending the clinic amongst the people who could state the reason. A longer journey time is likely to cause greater inconvenience and stress to often very disabled patients as suggested by a survey done by Yohannes and Connolly in 2004.[15] Young et al found that age, sex and physiological parameters such as FEV1 did not predict attendance and similar findings were seen in our study.[16] Cote and Celli reported that smokers had a poorer attendance in PRPs as compared to non-smokers[8]. They explained it with the lack of motivation and refraining from smoking cessation. However, in our study, the proportion of smokers completing the PRP was higher than the non-smokers. As high as 86% smokers comprised

of the study population that adhered to the programme. Smoking cessation is not a pre-requisite for attendance. Rather these patients must be offered extra support and encouragement along with counselling for smoking cessation which was done in our study. Disease related conditions such as acute exacerbations and hospitalisation comprised the second most important reason for dropout amongst the subjects stating reasons for same. This high number (15%) can also be attributed to the bias of exclusion criteria wherein our study frame excluded patients having acute exacerbations and requiring oxygen therapy. The drop-out rates due to medical reasons in other studies ranged from 0-11% which was lower as compared to our study.[8,17,18]. General parameters of disease severity did not differentiate between completors and non-completors as found in other studies as well.[19-21]

## CONCLUSION

The issue of patient non-adherence to PRPs is extremely multifaceted resulting from interaction between many variables, some of which are difficult to quantitate. However, offering supportive interventions and targeting a few significant factors to efficiently use limited resources for those requiring it the most, is the need of the hour.

## ABBREVIATIONS

COPD- chronic obstructive pulmonary disease

PRP- pulmonary rehabilitation programme

FEV1- Forced expiratory volume in 1<sup>st</sup> second

CAT- COPD assessment test

## REFERENCES

- Griffiths TL, Burr ML, Campbell IA, et al. Results at 1 year of outpatient multidisciplinary pulmonary rehabilitation: a randomised controlled trial. *Lancet* 2000;355(9201):362-8.
- National Institute for Clinical Excellence (NICE). Chronic obstructive pulmonary disease: national clinical guideline for the management of chronic obstructive pulmonary disease in adults in primary care and secondary care. *Thorax* 2004;59 (Suppl. 1).
- Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) workshop summary. *Am J Respir Crit Care Med* 2001;163(5): 1256-76.
- Nici L, Donner C, Wouters E, et al. American Thoracic Society/ European Respiratory Society statement on pulmonary rehabilitation. *Am J Respir Crit Care Med* 2006;173(12):1390-413.
- Global Initiative for Chronic Obstructive Lung Disease. Global strategy for the diagnosis, management and prevention of Chronic Obstructive Pulmonary Disease (Revised 2011). Available from: [http://www.goldcopd.org/uploads/users/files/GOLD\\_Report\\_2011\\_Feb21\\_pdf](http://www.goldcopd.org/uploads/users/files/GOLD_Report_2011_Feb21_pdf), accessed on September 16, 2012.
- Nici L, Donner C, Wouters E, et al. American Thoracic Society/ European Respiratory Society statement on pulmonary rehabilitation. *Am J Respir Crit Care Med* 2006;173:1390e413.
- Cockram J, Cécins N, Jenkins S. Maintaining exercise capacity and quality of life following pulmonary rehabilitation. *Respir-ology* 2006;11:98e104.
- Cote CG, Celli BR. Pulmonary rehabilitation and the BODE index in COPD. *Eur Respir J* 2005;26:630e6.
- Garrod R, Marshall J, Barley E, Jones PW. Predictors of success and failure in pulmonary rehabilitation. *Eur Respir J* 2006;27: 788e94.
- Singh SJ, Smith DL, Hyland ME, Morgan MD. A short outpatient pulmonary rehabilitation programme: immediate and longer term effects on exercise performance and quality of life. *Respir Med* 1998;92:1146e54.
- Shenkman B. Factors contributing to attrition rates in a pulmonary rehabilitation program. *Heart Lung* 1985;14: 53e8.
- Nishiyama O, Taniguchi H, Kondoh Y, et al. Factors in maintaining long-term improvements in health-related quality of life after pulmonary rehabilitation for COPD. *Qual Life Res* 2005;14:2315e21.
- Troosters T, Gosselink R, Decramer M. Exercise training in COPD: how to distinguish responders from nonresponders. *J Cardiopulm Rehabil* 2001;21:10e7.
- Leventhal H, Diefenbach M, Leventhal EA. Illness cognition: Using common sense to understand treatment adherence and affect cognition interactions. *Cognit Ther Res* 1992;16: 143e63.
- Yohannes AM, Connolly MJ. Pulmonary rehabilitation programmes in the UK: a national representative survey. *Clin Rehabil* 2004;18:444-9.
- Young P, Dewse M, Fergusson W, Kolbe J. Respiratory rehabilitation in chronic obstructive pulmonary disease: predictors of nonadherence. *Eur Respir J* 1999;13(4):855-9.
- de Blok BMJ, de Greef MHG, ten Haeken NHT, et al. The effects of a lifestyle physical activity counseling program with feedback of a pedometer during pulmonary rehabilitation in patients with COPD: a pilot study. *Patient Educ Couns* 2006;61: 48e55.
- Trappenburg JC, Troosters T, Spruit MA, et al. Psychosocial conditions do not affect short-term outcome of multidisciplinary rehabilitation in chronic obstructive pulmonary disease. *Arch Phys Med Rehabil* 2005;86:1788e92.
- Fan VS, Giardino ND, Blough DK, et al. Costs of pulmonary rehabilitation and predictors of adherence in the National Emphysema Treatment Trial. *COPD* 2008;5:105e16.
- Sewell L, Singh SJ, Williams JEA, Collier R, Morgan MD. Can individualized rehabilitation improve functional independence in elderly patients with COPD? *Chest* 2005;128: 1194e200.
- Young P, Dewse M, Fergusson W, Kolbe J. Respiratory rehabilitation in chronic obstructive pulmonary disease: predictors of nonadherence. *Eur Respir J* 1999;13:855e9.