



## A Study To Evaluate Relationship Of Anxiety With Severity Of Copd In Western Rajasthan

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### ABSTRACT:

The goal of this study, conducted in collaboration with the Departments of Physiology and Medicine, was to assess the link between COPD severity and anxiety severity in 150 chronically stable COPD patients. For the identification of COPD grades and severity, we use a computerised Spirometer to perform a pulmonary function test (as per the guidelines of Global Initiative for chronic obstructive lung disease -GOLD). The difference between different grades of COPD severity and anxiety severity was statistically non-significant (p value 0.123(NS)). The Spearman's correlation between anxiety severity and COPD grading demonstrates a statistically highly significant correlation. (p value greater than 0.005)(HS). As a result of our research, we have established that as COPD progresses, anxiety levels will rise as well.

**KEYWORDS:**Chronic obstructive pulmonary disease( COPD),Pulmonary function test(PFT),Anxiety,Global Initiative for chronic obstructive lung disease (GOLD).

### I. INTRODUCTION

According to the **Global Initiative for Obstructive Lung Disease (GOLD)** characterizes COPD as “an avoidable condition with a few significant additional pulmonary consequences that may contribute to the severity in particular people .COPD lung disease is distinguished by airflow restriction that is not completely reversible. Airflow restriction is frequently progressive and accompanied with an inappropriate inflammatory response of the lung to irritating particulates or gasses.”[1]

COPD has become one of the leading causes of death globally, with an incidence and morbidity that varies among nations and groups within nation.[2] COPD could be the third leading

reason of death in the worldwide by 2030, up from COPD's present fifth position or cause of illness and mortality in the general population, particularly among the elderly. Cigarette smoking in men and women worldwide has expanded the occurrence of COPD (Rajkumar, et al., 2017).[3]

Affective disorders, which include anxiety and depression problems, phobias and fear attacks are usually experience in COPD patients.[4]

Symptoms of anxiety composed physiological symptoms of arousal, such as difficulty in respiration (dyspnoea), tachycardia and sweating.

Some previous research additionally found that anxiety occurs first than depression. COPD prognosis is affected by both disorders remarkably. Due to lack of specific evaluation and analysis of psychiatric problems in COPD patients, those problems aren't usually dealt with appropriately. This has deleterious impact on patient's lifestyle; it additionally will increase healthcare expenditure [5]

Only few researches are to be had in which evaluation of anxiety has been evaluated on COPD patients. And there are few works regarding topics of Indian foundation on this field. No such work or publication is made during recent years. So this present study is undertaken for evaluation of relation of severity of COPD with anxiety severity.

### II. MATERIAL AND METHOD

The observational research took place on 150 patients with chronic obstructive pulmonary patients in western Rajasthan in coordination with the Department of Medicine at Dr. S.N. Medical College, Jodhpur, irrespective of status of smoking,



and had spirometer validated COPD Gold group I-IV<sup>[1]</sup>, were participants in this study. Pulmonary function tests were evaluated using Spirometer [6,7] and assessment of anxiety was done by the Generalized anxiety disorder-7 (GAD-7) Questionnaire[8].

### GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE

As per GOLD, the level of airflow limitation in COPD (FEV1/FVC 0.7) was determined using post-bronchodilator FEV1.<sup>[1]</sup>

<b>GOLD1</b>	MILD	FEV1>80%
<b>GOLD2</b>	MODERATE	50-80%
<b>GOLD3</b>	SEVERE	30-50%
<b>GOLD4</b>	VERY SEVERE	<30%

For data analysis, SPSS statistical software was utilised. To establish the significance of difference in mean, the chi-square test was applied. A p-value of less than 0.05 was considered

statistically significant. To investigate the degree of connection between the parameters investigated in this research, the Spearman's Coefficient was calculated when suitable.

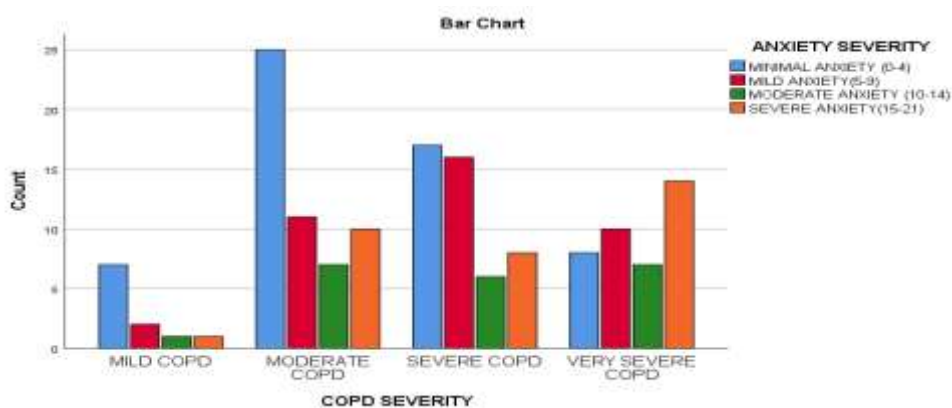
### III. RESULTS AND OBSERVATIONS

TABLE 1: Comparison of COPD grading with Severity of Anxiety.

COPD SEVERITY	ANXIETY SEVERITY				TOTAL
	MINIMAL ANXIETY (SCORE 0-4)	MILD ANXIETY (SCORE 5-9)	MODERATE ANXIETY (SCORE 10-14)	SEVERE ANXIETY (SCORE 15-21)	
MILD COPD	7	2	1	1	11
MODERATE COPD	25	11	7	10	53
SEVERE COPD	17	16	6	8	47
VERY SEVERE COPD	8	10	7	14	39

Chi-square value, 13.967, p value 0.123 (non-significant p value > 0.05)

Graph 1: Comparison of COPD grading with Anxiety severity.





**Table no. 2: Spearman's Correlation of COPD grading (severity) with Anxiety severity**

Variables	COPD Grading	
	r value	p value
Generalized Anxiety Disorder -7 (GAD-7)	0.248**	0.002(s)
Anxiety severity	0.255**	0.002(s)

**Table no. 3: Crude Model between Generalized Anxiety Disorder and COPD Severity**

Model	Beta Coefficient	R <sup>2</sup>	F	t	Sig.	95% C.I. for B	
						Lower Bound	Upper Bound
COPD Severity	0.256	0.066	10.408	3.226	0.18	0.628	2.612
COPD Severity (Adjusted Age Category, & Gender Category)	0.200	0.131	7.309	2.518	0.013	0.272	2.258

Dependent Variable: GAD-7

The dependent variable **Generalized Anxiety Disorder -7(GAD-7)** was regressed on the predictive variable COPD severity to see how strong the relationship was. COPD severity was shown to be a major predictor of GAD-7 (F=7.309, p<0.05), indicating that COPD severity may have a role in moulding GAD-7 (beta coefficient = 0.200, p<0.05). These findings clearly show that COPD severity has a positive influence. Furthermore, the R<sup>2</sup> = 0.131 indicates that the model accounts for 13.10 percentage of the variation in GAD-7[8]. The summary of the findings is shown in the table above.

#### IV. DISCUSSION

**Generalised anxiety disorder-7(GAD-7)[8]:-** In this study we used GAD-7 questionnaire for evaluation of severity of anxiety in 150 COPD subjects.

GAD-7[8], a self-rated scale, is a screening tool which consist of 7-Items. Total score of all seven items will ranges between 0-21 score. Higher the total score, will leads to higher the anxiety severity in patients. Total score between 0- 4, suggestive of having minimal anxiety in patients , 5 - 9 total score denotes mild anxiety , score of 10 – 14

shows moderate anxiety and a score of 15- 21 suggested of severe anxiety .

Out of total 150 COPD subjects 38% subjects were having minimal anxiety score, 26% subjects were having mild anxiety, 14% subjects were having moderate anxiety and 22% subjects were suffering from severe anxiety.

From our study we didn't found any considerable disparity between the different levels of COPD severity and severity of anxiety (**p value 0.123(NS)**).

Result from Table no.2 , shows statistically significant positive Spearman's correlation between COPD grading and anxiety severity (p value = 0.002) & between COPD grading's and GAD-7 (p value= 0.002) (HS).

**So data from abovementioned table suggested that with advancement of COPD disease, severity of anxiety also rises.**

Anxiety has a negative effect on patient with COPD, as it affects physical health of patient, interferes with functional activity of patient and decrease exercise performance. Also due to anxiety there are more chances of disease exacerbations, which require hospital admission treatment,[9] Submaximal exercise performance and COPD exacerbation. Thus COPD disease will



raise the level of anxiety in patient and with advancement of disease, anxiety will produce negative effect on health related factors.[10]

Also cigarette smoking is considered to be a risk element for occurrence of anxiety in patient. Free radicals are also present as a concentrated element in cigarette and this free radical will activate

formation of cytokines like interferon-gamma (IFN- $\gamma$ ). These cytokines will activate indoleamine 2, 3-dioxygenase for oxidizing, so these cytokines will affect metabolism of serotonin. And due to this there will be decrease in levels of serotonin and tryptophan, which ultimately leads to rise in sign and symptoms of anxiety.[11]

**Table no.:4 Some Previous Research Study Regarding Anxiety & COPD Severity**

S · N O ·	AUTHOR NAME	PUBL CATI ON YEAR	NO. COP D PAT IENT	COU NTRY	TOOLS	RESULTS
1.	Balcells et. al[12]	2010	337 COP D PT.	Spain	Hospital Anxiety & Depression Scale(HADS), SGRQ	Patient with mild to moderate COPD showed stronger association between having anxiety alone & poor HRQL.
2	Adam Vrzeciona et. al[13]	2021	51 COP D	Poland	HADS, Perception of stress questionnaire	Level of anxiety was correlated with severity of COPD.
3	Dr. Abdul Wahab Haji et. al[14]	2019	30	India	PHQ-9 and Beck dep. inventory, Hamilton anxiety scale	The anxiety severity was related with progression of COPD.
4	GehanElassal et.al[15]	2014	80	Egypt	Back inventory, Dep. Hamilton an. scale	Association of anxiety score and grades of COPD(P value<0.001) was significant.
5	D. Janssen et. al[16]	2010	701	Nether lands	Hamilton Anxiety and depression scale	Pt. with severe COPD had significantly higher anxiety score.
6	GamzeKirkil et.al[17]	2012	80	Turkey	Beck's anxiety inventory, Hamilton Anxiety and depression scale	Anxiety score were signi. Higher in advanced stage of disease.
7	Lu Dong Mei et.al[18]	2017	62	China	Hamilton anxiety scale	Anxiety was <b>not</b> correlated with COPD severity.

Result of our study was agreement with some previously done studies- Balcellset. al[12],

Adam Vrzeciona et. al[13] , Dr. Abdul Wahab Haji et. al[14], GehanElassal et.al[15], D. Ja[12]nsen



et. al[16], GamzeKirkil et.al[17].They reported significant association between anxiety score and severity of COPD and our results are not in agreement with the study done by Lu Dong Mei et.al [18] ,they observed that anxiety was not correlated with COPD severity.

## V. CONCLUSION

So from our study we concluded that with advancement of COPD disease there will be increase in severity of anxiety in patients. So proper diagnosis and assessment of mental disorder is essential for patient's quality of life.

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