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RELATIONSHIP BETWEEN PSYCHOPATHOLOGY & SOCIO-DEMOGRAPHIC AND CLINICAL VARIABLES IN COPD AND BRONCHIAL ASTHMA: A COMPARATIVE STUDY

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ABSTRACT: This is a cross sectional comparative case control study assessing the Relationship between psychopathology and socio demographic and clinical variables in chronic obstructive pulmonary disease (COPD) and Bronchial Asthma in comparison to healthy individuals. The investigation reveals that there is psychopathology in all the three groups. The psychopathology is significantly more in patients with COPD. Psychopathology in COPD patients is related to age, duration, severity of illness and steroid medication. It is found that psychopathology in bronchial asthma patients are more than those of healthy controls but there is no significant difference. The psychopathology is significantly related to relate to age, marital status, occupational status, and smoking. Duration severity of illness and steroid medication.

KEYWORDS: psychiatric morbidity, COPD, Bronchial Asthma, socio demographic, clinical variables.

INTRODUCTION: Chronic obstructive pulmonary disease (COPD) has been defined by the Global Initiative for Chronic Obstructive Lung Disease (GOLD), an international collaborative effort to improve awareness, diagnosis, and treatment of COPD, as a disease state characterized by airflow limitation that is not fully reversible. GOLD estimates suggest that COPD will rise from the sixth to the third most common cause of death worldwide by 2020. In India, COPD is the second most common lung disorder after pulmonary tuberculosis.¹

Patients with COPD are more likely than age-matched peers to report symptoms of distress, especially depression and anxiety. In addition, psychological distress in patients with COPD is associated with impaired quality of life and restricted activities of daily living. Furthermore, functional capacity of patients with COPD is more strongly associated with emotional/psychosocial factors (e g, depression, anxiety, somatization, low self-esteem, attitudes toward treatment, social support) than with traditional physiological indicators. Although psychological factors are associated with functional performance, the influence of psychological factors on disease progression and mortality in patients with COPD is still unknown.

Six percent to 42% of patients with COPD have substantial symptoms of depression or clinical depression. Depression in patients with COPD is often marked by feelings of hopelessness and pessimism, reduced sleep, decreased appetite, increased lethargy, concentration difficulty, and social withdrawal. Depression is associated with impairment in functional abilities and performing activities of daily living, poorer self-reported health, impaired self-management of disease exacerbations, and poor health behaviors. The correlation between depressed mood and disease severity is modest, but depression symptoms are important correlates of perceived functioning, and

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subclinical depression symptoms are associated with greater self-reported physical disability and poorer quality of life.

Recent estimates indicate a prevalence of anxiety disorders ranging from 2% to over 50% in patients with COPD. Anxiety is associated with reduced functional ability and re hospitalization in patients with chronic lung disease. Symptoms of anxiety are manifested in a variety of ways, including physiological signs of arousal, such as tachycardia, sweating, and dyspnea. Symptoms of anxiety may overlap with symptoms of depression.²

According to Thompson and Thompson difficult breathing has many psychiatric implications. Patients react emotionally to discomfort of dyspnea, the loss of functional capacity and the threat of death, while hypoxia, hypercarbia, hyperventilation, respiratory failure and medications all have direct effect on the brain.³

Hypoxia is known to induce not only psychomotor slowing and memory impairment but also depressed mood. Both smoking and COPD generates hypoxia leading to neuropsychiatric disturbances in these patients. Depression in COPD is a heterogeneous entity with a potentially composite etiology including genetic predisposition, environmental losses and stressors, as well as direct damage to the brain mediated by the physiologic effects of chronic respiratory illness. As such, the relationship between depression COPD and smoking are not linear but, rather interconnected with each element influencing the others to different degrees in any given patients at any given time.

Smoking, COPD and depression are inter-related in a sort of trinity, with depression playing a role in the initiation and maintenance of smoking, smoking leading to the development of COPD and COPD, in turn contributing to the genesis of depression.⁴ Catherine and Colleagues study found that psychiatric disorders are at least 3 times higher in COPD patients compared to general population and nearly two times higher in women than in men. Women also have greater psychological distress, worse perceived control of symptoms and greater functional impairment.⁵

Smoking in COPD, patient is considered to have both anxiolytic and anxiogenic effect and in a large community sample Breslau found that smokers who met the criteria for Nicotine dependence had elevated life time rates of anxiety disorders.⁶ Yohannes AM et al compared the prevalence of depressive symptomatology in elderly outpatients with stable disabling COPD with that in healthy controls and age matched patients with other disabilities, and also assessed the relation between degree of disability, quality of life and depressive symptoms and concluded that depressive symptoms are common in elderly patients with COPD, prevalence and or severity of depressive symptoms may be greater in those who are most disabled.⁷

One epidemiological survey was done to identify the prevalence of anxiety, depression and panic fear in adults with asthma compared with that of the general population and to investigate whether there is a specific relationship between asthma and anxiety and authors concluded that a significant minority of people have high levels of panic fear, associated with asthma. However in adults with asthma there is also high prevalence of both generalized anxiety and depression, suggesting that the link of anxiety to asthma may be part of a broader relationship between psychological distress and chronic disease rather than a specific one.⁸

A comparative study done by Georgios Moussas and his co-workers to assess anxiety and depression in patients with bronchial asthma, chronic obstructive pulmonary disease and tuberculosis in a general hospital of chest diseases, using Spielberger state trait anxiety scale and Beck depression inventory. They found that patients with COPD and bronchial asthma had higher

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depression scores than patients with tuberculosis, and women had higher depression and anxiety scores than men. Depression was positively correlated with anxiety, age and time from diagnosis and anxiety was positively correlated with depression and time from diagnosis.⁹

One study examined factors that predicated depressed mood at discharge and 3 months after discharge for 124 elders with chronic obstructive pulmonary disease. After the use of control for physiologic status (forced expiratory volume in 1 second percent predicted), the factors of anxiety, perceived health competence, daily functioning and family emotional coping predicted depressed mood.¹⁰

AIMS AND OBJECTIVES:

1. To find out the correlation between socio-demographic variables and Psychopathology in patients with COPD, Bronchial Asthma and Healthy individuals.
2. To find out the correlation between clinical variables and Psychopathology in patients with COPD, Bronchial Asthma and Healthy individuals.

METHODOLOGY: SOURCE OF DATA: The clinical study was conducted in Father Muller Medical College, Kankanady, Mangalore, which is a multi-specialty hospital. All patients attending the outpatient and inpatient facilities of the department of Medicine with a clinical diagnosis of chronic obstructive pulmonary disease constituted the population for the study. The study was conducted from the 1st September 2008 to the 31st of August 2010.

METHOD OF COLLECTION OF DATA: The sample for the study consisted of thirty consecutive patients with chronic obstructive pulmonary disease who satisfied the inclusion and exclusion criteria.

INCLUSION CRITERIA:

- Patients with clinical diagnosis of COPD according to GOLD's criteria.¹
- Age group between 18 and 50 years

EXCLUSION CRITERIA:

- Patients with family history or past history of psychiatric illness not attributable to COPD.
- Patients with COPD having other medical disorders like DM, Hypertension, thyroid and other endocrine disorders, renal failure and other chronic debilitating medical conditions known to cause cognitive impairment and psychiatric morbidity.
- Patients with substance dependence other than smoking.
- Patients who refused to give consent.

Consecutively selected 30 first degree male non-affected relatives of COPD patients between age 18 and 50 years and 30 male patients with bronchial asthma between age 18 and 50 years who met the same inclusion and exclusion criteria constituted the control groups for the study.

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PROCEDURE: This study has been cleared by the institutional ethical committee. A written informed consent was obtained from all participants both in COPD patients and control groups. The socio demographic and clinical variables were recorded in a specific proforma prepared for this clinical study. All the participants underwent a thorough clinical examination to rule out psychopathology and medical disorders if any. Psychopathology was rated in all the participants using Comprehensive Psychopathological Rating Scale (CPRS).

DESCRIPTION OF THE TOOL USED: The Comprehensive psychopathological rating scale (CPRS). The scale has been constructed explicitly for the measurement of psychopathology and change in psychopathology. The items for the construction of this scale are selected from a wide range of psychiatric signs and symptoms chosen from clinical experiences and from the literature. This is a comprehensive selection of items relevant for all psychiatric illnesses. Personality dimensions (trait characteristics), habitual psychopathological defense mechanisms and traits which are normally measured rather than rated (intelligence) are avoided. It consists of 67 items which include 40 reported items (symptoms) and 23 observed items (signs). All the items are scored on a 4 point scale (0-3). CPRS has established reliability and variability.

The use of CPRS does not require special training. It is comprehensive enough to cover signs and symptoms which are relevant to ICD10 categories. This comprehensive scale includes positive and negative symptoms, psychotic and non-psychotic symptoms and organic and non-organic symptoms.¹¹

RESULTS:

		Age	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	18 - 40yrs	15	5.26667	5.5480	0.001	HS
		41 - 50yrs	15	12.86667	6.1628		
		Total	30	9.06667	6.9378		
	Bronchial Asthma	18 - 40yrs	15	2.312500	2.6512	0.015	Sig
		41 - 50yrs	15	5.50000	4.0335		
		Total	30	3.80000	3.6803		
	Healthy	18 - 40yrs	15	1.50000	1.9110	0.009	HS
		41 - 50yrs	15	4.0000	2.0976		
		Total	30	2.0000	2.1655		
OBSERVED	COPD	18 - 40yrs	15	1.66667	2.1269	0.002	HS
		41 - 50yrs	15	4.66667	2.6903		
		Total	30	3.16667	2.8294		
	Bronchial Asthma	18 - 40yrs	15	.437500	0.8920	0.026	Sig
		41 - 50yrs	15	1.6428571	1.8232		
		Total	30	1.00000	1.5085		
	Healthy	18 - 40yrs	15	.3750000	0.76966	0.389	
		41 - 50yrs	15	.66667	0.51639		
		Total	30	.433333	0.72793		

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TOTAL	COPD	18 - 40yrs	15	6.93333	7.3333	0.001	HS
		41 - 50yrs	15	17.53333	8.5345		
		Total	30	12.23333	9.4965		
	Bronchial Asthma	18 - 40yrs	15	2.750000	3.3763	0.015	Sig
		41 - 50yrs	15	7.142857	5.7493		
		Total	30	4.80000	5.0678		
	Healthy	18 - 40yrs	15	1.7916667	2.63717	0.023	Sig
		41 - 50yrs	15	4.6667	2.50333		
		Total	30	2.36667	2.82212		

Table 1: Relation between Age and Psychopathology (CPRS Score)

As shown in table 1, psychopathology is more common in older age group compared to younger on all the domains of CPRS that is reported, observed and total CPRS score. There is highly significant difference in COPD patients on all the domains of CPRS. There is significant difference in all the domains of CPRS in bronchial asthma patients, and there is highly significant difference in the domain of observed and significant difference in total CPRS score among healthy controls.

		Marital Status	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	Single	7	6.71	7.45	.483	NS
		Married	21	9.48	6.43		
		Others	2	13.00	12.73		
		Total	30	9.07	6.94		
	Bronchial Asthma	Single	8	2.25	3.06	.000	HS
		Married	18	3.11	2.74		
		Others	4	10.00	2.45		
		Total	30	3.80	3.68		
	Healthy	Single	10	.600000	1.07496	.031	Sig
		Married	17	2.588235	2.20960		
		Others	3	3.3333	2.88675		
		Total	30	2.0000	2.16556		
OBSERVED	COPD	Single	7	2.43	3.15	.531	NS
		Married	21	3.24	2.36		
		Others	2	5.00	7.07		
		Total	30	3.17	2.83		
	Bronchial Asthma	Single	8	.50	1.07	.000	HS
		Married	18	.61	.92		
		Others	4	3.75	1.71		
		Total	30	1.00	1.51		
	Healthy	Single	10	.0000	.0000	.040	Sig
		Married	17	.5882353	.79520		
		Others	3	1.0000	1.0000		

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		Total	30	.43333	.727932		
TOTAL	COPD	Single	7	9.14	10.57	.480	NS
		Married	21	17.71	8.41		
		Others	2	18.00	19.80		
		Total	30	12.23	9.50		
	Bronchial Asthma	Single	8	2.75	3.92	.000	HS
		Married	18	3.72	3.58		
		Others	4	13.75	3.86		
		Total	30	4.80	5.07		
	Healthy	Single	10	.60000	1.07496	.035	Sig
		Married	17	3.058823	2.967966		
		Others	3	4.3333	3.785938		
		Total	30	2.36667	2.82212		

Table 2: Relation between Marital Status and psychopathology (CPRS score)

Table 2 shows that other group which includes separated, divorced and widower had more psychopathology than the married and singles. Singles had least psychopathology among all the groups. There is highly significant difference in bronchial asthma group in all the domains of CPRS, and there is significant difference in healthy controls in all the domains. There is no significant difference found in COPD group related to their marital status.

		Educational Status	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	Higher Professional/MA/ Msc/BA/Bsc	11	5.909090	7.09160	.056	NS
		Intermediate/Higher School/Middle Pass/ Primary School	19	10.89474	6.32363		
		Total	30	9.06667	6.937819		
	Bronchial Asthma	Higher Professional/ MA/ Msc/BA/Bsc	11	3.636363	3.93122	.857	NS
		Intermediate/Higher School/ Middle Pass/ Primary School	19	3.8947368	3.63462		
		Total	30	3.80000	3.680329		
	Healthy	Higher Professional/MA/ Msc/BA/Bsc	16	1.75000	2.113449	.509	NS
		Intermediate/Higher School/ Middle Pass/ Primary School	14	2.28714	2.267786		
		Total	30	2.000	2.165561		
OBSERVED	COPD	Higher Professional/ MA/ Msc/BA/Bsc	11	2.272727	3.37908	.193	NS
		Intermediate / Higher School/	19	3.684210	2.404916		

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		Middle Pass/ Primary School						
		Total	30	3.16667	2.82944			
	Bronchial Asthma	Higher Professional/ MA/ Msc/BA/Bsc	11	1.09090	1.868397	.807	NS	
		Intermediate / Higher School/ Middle Pass/ Primary School	19	.947368	1.311220			
		Total	30	1.0000	1.50859606			
	Healthy	Higher Professional/ MA/ Msc/BA/Bsc	16	.3125000	.704154	.340	NS	
		Intermediate/Higher School/Middle Pass/ Primary School	14	.571428	.753928			
		Total	30	.43333	.727932			
	TOTAL	COPD	Higher Professional/MA/ Msc/BA/Bsc	11	8.818182	10.42898	.075	NS
			Intermediate/Higher School/Middle Pass/ Primary School	19	14.57895	8.30873		
			Total	30	12.23333	9.496581		
Bronchial Asthma		Higher Professional/MA/ Msc/BA/Bsc	11	4.72727	5.71123	.954	NS	
		Intermediate/Higher School/ Middle Pass/Primary School	19	4.8421053	4.82197			
		Total	30	4.80000	5.06781			
Healthy		Higher Professional/MA/ Msc/BA/Bsc	16	2.062500	2.71952	.537	NS	
		Intermediate/Higher School/Middle Pass/ Primary School	14	2.71428	2.99816			
		Total	30	2.3667	2.82212			

Table 3: Relation between Educational Status and psychopathology (CPRS score)

Table 3 shows that there is more psychopathology in less educated persons compared to highly educated persons. Psychopathology is more common cases as evident by mean values followed by bronchial asthma group, but there was no statistically significant difference.

		Occupation	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	High Professional/Semi professional	8	6.2500	7.5734498	.208	NS
		Clerical shop/Farm	9	8.000	7.106335		

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OBSERVED		Owner/Skilled worker/Service Worker						
		Semi-Skilled Worker/Unskilled Worker	13	11.5384	6.036215			
		Total	30	9.06667	6.937819			
	Bronchial Asthma	High Professional/Semi professional	10	3.30000	4.110960	.188	NS	
		Clerical shop/Farm Owner/Skilled worker/Service Worker	10	2.60000	2.98868			
		Semi-Skilled Worker/Unskilled Worker	10	5.50000	3.56682			
		Total	30	3.80000	3.6803298			
	Healthy	High Professional/Semi professional	11	1.909090	2.165850	.286	NS	
		Clerical shop/Farm Owner/ Skilled worker/Service Worker	8	1.25000	1.807721			
		Semi-Skilled Worker/Unskilled Worker	11	2.72727	2.32769			
		Total	30	2.0000	2.165561			
	OBSERVED	COPD	High Professional/Semi professional	8	2.375000	3.5831990	.497	NS
			Clerical shop/Farm Owner/ Skilled worker/Service Worker	9	2.8888	2.619372		
			Semi-Skilled Worker/Unskilled Worker	13	3.8461538	2.511511		
			Total	30	3.16667	2.829442		
		Bronchial Asthma	High Professional/Semi professional	10	.90000	1.85292	.412	NS
Clerical shop/Farm Owner/Skilled worker/Service Worker			10	.60000	1.07496			
Semi-Skilled Worker/Unskilled Worker			10	1.50000	1.509230			
Total			30	1.0000	1.508596			
Healthy		High Professional/Semi professional	11	.363636	.809039	.497	NS	
		Clerical shop/Farm	8	.25000	.4629100			

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		Owner/Skilled worker/Service Worker					
		Semi-Skilled Worker/Unskilled Worker	11	.636363	.80903983		
		Total	30	.43333	.727932		
TOTAL	COPD	High Professional/Semi professional	8	8.62500	11.109037	.258	NS
		Clerical shop/Farm Owner/ Skilled worker/Service Worker	9	10.8889	9.518986		
		Semi-Skilled Worker/Unskilled Worker	13	15.38462	8.047136		
		Total	30	12.23333	9.49658		
	Bronchial Asthma	High Professional/Semi professional	10	4.20000	5.8840651	.226	NS
		Clerical shop/Farm Owner/Skilled worker/Service Worker	10	3.20000	3.88158		
		Semi-Skilled Worker/Unskilled Worker	10	7.0000	4.94413		
		Total	30	4.80000	5.067815		
	Healthy	High Professional/Semi professional	11	2.272727	2.86673	.397	NS
		Clerical shop/Farm Owner/Skilled worker/Service Worker	8	1.375000	2.1998		
		Semi-Skilled Worker/Unskilled Worker	11	3.181818	3.15622		
		Total	30	2.36667	2.82212		

Table 4: Relation between Occupation and Psychopathology (CPRS score)

Occupation wise data reveal as shown in table 4, that semiskilled/unskilled worker group had more psychopathology in all the groups and among the three groups mean value is highest in cases. And there is statistically no significant difference.

		Substance used habits	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	Smoking	16	8.31250	6.42618	.794	NS
		Smoking & Alcohol	9	10.3333	8.17006		
		Nil	5	9.20000	7.39594		

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		Total	30	9.06667	6.9378			
OBSERVED	Bronchial Asthma	Smoking	10	2.50000	1.957891	.001	HS	
		Smoking & Alcohol	10	7.10000	3.634709			
		Nil	10	1.80000	2.85968			
		Total	30	3.8000	3.680329			
	Healthy	Smoking	4	2.75000	2.217355	.033	Sig	
		Smoking & Alcohol	5	4.0000	2.54930			
		Nil	21	1.3809	1.802115			
		Total	30	2.0000	2.165561			
	TOTAL	COPD	Smoking	16	3.312500	2.77413	.813	NS
			Smoking & Alcohol	9	3.3333	3.53533		
			Nil	5	2.4000	1.8165902		
			Total	30	3.6667	2.829442		
Bronchial Asthma		Smoking	10	.30000	0.6749	.001	HS	
		Smoking & Alcohol	10	2.30000	1.7669			
		Nil	10	.10000	.96609			
		Total	30	1.0000	1.50859			
Healthy		Smoking	4	1.000	.81649	.015	Sig	
		Smoking & Alcohol	5	1.000	1.0000			
		Nil	21	.19047	.51176			
		Total	30	.4333	.72793			
TOTAL	COPD	Smoking	16	11.62500	9.0397	.872	NS	
		Smoking & Alcohol	9	13.6667	11.5717			
		Nil	5	11.6000	8.67756			
		Total	30	12.2337	9.49658			
	Bronchial Asthma	Smoking	10	2.80000	2.52982	.001	HS	
		Smoking & Alcohol	10	9.40000	5.2535			
		Nil	10	2.20000	3.64539			
		Total	30	4.80000	5.06781			
	Healthy	Smoking	4	3.750000	2.98607	.019	Sig	
		Smoking & Alcohol	5	5.0000	3.316624			
		Nil	21	1.47619	2.24986			
		Total	30	2.36667	2.82212			

Table 5: Relation between substances used habits and psychopathology (CPRS score)

Substance use data analysis reveals that psychopathology is more in the persons who were smoking as well as using alcohol. Cases are highest psychopathology followed by bronchial asthma group. There is highly significant difference in bronchial asthma group in all the domains of CPRS, and there is significant difference in healthy controls on all the domains. (table 5)

		Duration of illness	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	2 to 5 yrs	13	5.1538	5.6986	.008	HS
		5- 10 yrs	8	9.87500	6.5995		
		More than 10yrs	9	14.000	5.8949		
		Total	30	9.06667	6.9378		

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	Bronchial Asthma	2 to 5 yrs	12	2.16667	3.21455	.006	HS
		5- 10 yrs	10	3.10000	2.60128		
		More than 10yrs	8	7.2500	3.64250		
		Total	30	3.8000	3.6803		
OBSERVED	COPD	2 to 5 yrs	13	1.5384	2.1838	.003	HS
		5- 10 yrs	8	3.25000	2.31455		
		More than 10yrs	9	5.444	2.65099		
		Total	30	31.16667	2.82944		
	Bronchial Asthma	2 to 5 yrs	12	.5000	1.0000	.017	Sig
		5- 10 yrs	10	.6000	1.074967		
		More than 10yrs	8	2.250000	1.9820		
		Total	30	1.0000	1.50859		
Total	COPD	2 to 5 yrs	13	6.6923	7.50982	.004	HS
		5- 10 yrs	8	13.1250	8.60958		
		More than 10yrs	9	19.4444	8.263036		
		Total	30	12.3333	9.49658		
	Bronchial Asthma	2 to 5 yrs	12	2.6667	.28867	.006	HS
		5- 10 yrs	10	3.70000	1.3333		
		More than 10yrs	8	9.3375	0.99103		
		Total	30	4.8000	1.02833		

Table 6: Relation between duration of illness and psychopathology (CPRS Score)

There is highly significant difference in COPD patients in all the domain of CPRS. And there is highly significant difference in the domain of reported and total score in bronchial asthma group. This indicates that duration of illness is directly proportional to psychopathology. Psychopathology is more common in COPD patients compared to bronchial asthma group (table 6)

		Current Medications	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	Bronchodilators	8	13.000	3.3570	.005	HS
		Steroids, Bronchodilators and other medications	22	22.000	11.1363		
		Total	30	22.000	9.0666		
	Bronchial Asthma	Bronchodilators	21	2.71428	2.9350	.011	Sig
		Steroids, Bronchodilators and other medications	9	6.3333	4.1533		
		Total	30	3.8000	3.6803		
OBSERVED	COPD	Bronchodilators	8	1.37500	2.3260	.005	HS
		Steroids, Bronchodilators and other medications	22	3.8181	2.7539		
		Total	30	3.1667	2.8290		
	Bronchial Asthma	Bronchodilators	21	.5714	1.0821	.011	Sig
		Steroids, Bronchodilators	9	2.000	2.000		

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		and other medications					
		Total	30	1.000	1.5085		
TOTAL	COPD	Bronchodilators	8	4.7500	6.6922	.007	HS
		Steroids, Bronchodilators and other medications	22	14.9545	8.9733		
		Total	30	12.233	9.4965		
	Bronchial Asthma	Bronchodilators	21	3.2857	3.8359	.010	Sig
		Steroids, Bronchodilators and other medications	9	8.3333	6.0207		
		Total	30	4.8000	5.0678		

Table 7: Comparison of Current Medications with Psychopathology (CPRS score)

There is highly significant difference in COPD group and significant difference found in bronchial asthma patients in psychopathology with respect to current medications. Patients who are only on bronchodilators have less psychopathology compared to other group patients. (table 7)

		Staging	N	Mean	Std. Deviation	P-value	
REPORTED	COPD	Stage I	15	5.333	5.459	.004	HS
		Stage II	10	11.500	6.1508		
		Stage III and IV	5	15.400	6.5038		
		Total	30	8.0667	6.9378		
OBSERVED	COPD	Stage I	15	1.600	2.0632	.006	HS
		Stage II	10	4.7000	2.8303		
		Stage III and IV	5	4.8000	2.5884		
		Total	30	3.1667	2.8294		
TOTAL	COPD	Stage I	15	6.9333	7.1859	.003	HS
		Stage II	10	16.2000	8.7279		
		Stage III and IV	5	20.2000	8.8147		
		Total	30	12.2333	9.4965		

Table 8: Comparison of Staging of COPD or Spirometry with Psychopathology (CPRS Score)

COPD patients who belongs to stage III and stage IV have more psychopathology compared to patients belongs to stage I and stage II. This difference is highly significant in all the domains of CPRS. (table 8).

DISCUSSION: The three samples do not significantly differ in terms of age, marital status, religion, domicile distribution, occupation and income. This fact indicates that the chronic obstructive pulmonary disease (COPD) patients and the two control groups are matched. In the case of education there is significant difference among the patients and both the control groups. The healthy individuals have significantly better educational status when compared to that of patients with bronchial asthma and COPD. Such findings are not reported in literature reviewed. It could be possible that the poorer education status in both groups of patients may be attributable to the chronic states of the respiratory diseases and their consequences.

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About fifty percent of COPD patients and 33% bronchial asthma patients are smoking and using alcohol whereas 70% of healthy controls do not use them. The difference is statistically significant. It is likely that smoking is one of the causes for COPD and bronchial asthma, rather than the consequences. Smoking is one of the major risk factor in COPD patients¹. There is no statistically significant difference with respect to duration of illness in COPD patients and patients with bronchial asthma.

A significant proportion of patients of COPD are on steroids as well as bronchodilators, whereas only thirty percent patients of bronchial asthma are on steroids. An earlier study on psychopathology in COPD patients postulates that the medication could be related to psychopathology.³ But the nature of medications and the dosage of medications are not mentioned. Spirometry done on COPD patients reveals that fifty percent belongs to stage I and about thirty three percent belongs to stage II. Thirty percent patients with bronchial asthma had family history of psychiatric medial or substance use disorders, whereas no significant family history is reported in COPD patients.

Present investigation indicates that psychopathology in COPD patients is more common in older age group compared to the younger age group. This finding is consistent with one of the earlier study.⁷ Psychopathology in terms of reported, observed and total is found to be more in the older age group. To find out the association between depression and anxiety with demographic, health-related quality of life and clinical characteristics of COPD patients Jennifer A Cleland et al conducted a Cross-sectional population-based postal survey and they found that depressive and anxious symptoms in COPD are related to age and high levels of symptoms.¹²

Current investigation reveals that psychopathology is less in single persons compared to other group which includes, widowers, separated and divorced. But the difference is statistically significant in bronchial asthma patients and healthy controls. In COPD patients the psychopathology does not have any significant difference related to marital status. Present investigator fails to find earlier studies which report relation of psychopathology to marital status. Present study reveals that there is more psychopathology in less educated persons. But the difference is not statistically significant. Similar finding is not reported in earlier studies. Earlier studies have not attempted to study the relation between occupation and psychopathology in COPD patients.

And current investigation finds that semiskilled/ unskilled laborers' have much more psychopathology but the difference is not statistically significant. It is possible that due to chronic respiratory diseases such patients are less educated and less qualified and are under constrained to take up manual labor.

In COPD patients psychopathology is significantly more in smokers. Present investigation find that in COPD patients psychopathology is significantly more in smokers and alcohol users. This finding is consistent with earlier studies.^{4,6,13} COPD patients who smoke and use alcohol have higher prevalence of psychopathology when compared to those who smoke and those who do not smoke. The difference is also statistically significant. The current investigation reveals that duration of respiratory disease is significantly related to psychopathology. Present investigator fails to find such reports in earlier studies.

Possible relationship between duration of illness and psychopathology could be explained on the basis of the fact that the longer duration might lead to more chronic hypoxia and other consequences of COPD and asthma. Present investigator also reveals that COPD stage III and IV have

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more psychopathology compared to those in stage I and II. Airway obstruction leads to hypoxia which is a key factor in COPD. Current investigator found that psychopathology is related to FEV₁, smoking, hypoxia, severity of illness and staging of illness. These findings are consistent with earlier studies.^{6,10,14}

Present investigation reveals that psychopathology is significantly related to steroids in COPD and bronchial asthma patients. Similar finding is reported in an earlier study⁴. One study attempted to quantify the prevalence of psychiatric morbidity relative to asthma severity, quality of life (QOL), and Inhaled corticosteroids dose. They concluded that Psychiatric morbidity is more prevalent in this population and Use of high-dose inhaled corticosteroids benefited pulmonary function and “physical” QOL, yet may have negatively affected patients' mental well-being.¹⁵

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