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ORIGINAL ARTICLE

COMPARATIVE STUDY OF QUALITY OF LIFE AMONG PATIENTS WITH COPD, BRONCHIAL ASTHMA AND HEALTHY INDIVIDUALS

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ABSTRACT: The present study was conducted to compare quality of life of patients with Chronic obstructive pulmonary disease (COPD), bronchial asthma and healthy controls in different domains namely, physical health and mental health components, in addition overall quality of life and general health hence, a sample of 90 patients was used, in which 30 were COPD patients, 30 were bronchial asthma patients and 30 were healthy controls. Data was analyzed by using T-test, Chi-square test, Analysis of variance (ANOVA), and Bonferroni multiple comparisons. The findings revealed that adult male patients with COPD have poor quality of life as compared to bronchial asthmatics patients and healthy controls. The results were exhaustively discussed in the light of existing findings and other possible explanations of the findings were also offered.

KEYWORDS: Quality of life, COPD, bronchial asthma.

INTRODUCTION: Quality of life is the degree of well-being felt by an individual or group of people. It consists of two components: physical and psychological. The physical aspect includes such things as health, diet, and protection against pain and disease. The psychological aspect includes worry, stress, pleasure and other positive or negative emotional states. WHO defines quality of life as "a state dependent on physical and functional status and the degree of family support, social activity and friendship, personal achievement and philosophy; and financial adequacy and work achievement?"

The Center for Disease Control and Prevention defined quality of life as the perception of physical and mental health over time. Quality of life has assumed a special importance in the medical field in the wake of progressive move towards re humanizing high tech medicine. Quality of life is clearly becoming an important part of clinical decision making both in individual patient care and in clinical trials for the purpose of evaluating and deciding among treatment alternative. There are many states of life that are worse than death, and hence it is difficult for many to accept the "Life at any cost" principle.

Quality of life measure serve as a common denominator for comparing the overall impact of different health interventions, both at the individual and community needs. Illness and its treatment can have a major impact on many aspects that are highly relevant to the individual quality of life, such as cognitive, emotional and sexual functioning, life satisfaction and the ability to fulfill economic and other social roles. Many quality of life measures have been developed, some of which measure quality of life from a specific perspective and others, which cover a general, wider perspective.

While generic measures are broadly applicable across, types and severities of disease, across different medical treatments and across demographic and cultural subgroups, specific measures assess specific diagnostic group of patient population often with the goal of measuring

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responsiveness or clinically important changes. The performance of basic social roles and activities of daily living (ADL) is often used as a standard for the impact of a disease entity on quality of life.

A relatively early study was conducted by Barstow (1974). She reported that "major changes were evident in the style of living" manifested by the COPD patients in her study. These included alterations in bathing, grooming, dressing, eating, sleeping and mobility. Norwood (2007) reported that 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.[1]

Another case control study on elderly patients was conducted by Yohannes et al in which 96 Subjects were elderly outpatients with irreversible COPD aged between 70-93 years. They found that sample with epilepsy had better health related quality of life score than other chronic diseases.[2] Stavem et al (2000) studied the association of health related quality of life is associated with arterial PaO_2 in chronic obstructive pulmonary disease.[3] Yen et al (2000) found association between PaO_2 and quality of scores in moderately to severely affected COPD patients was moderate, but higher than previously reported.[4]

This study was conducted to examine the association of respiratory symptoms and COPD severity with HRQoL (health related quality of life). This study concluded that a high level of perceived neighborhood problems were associated with poorer QOL, poorer physical functioning, and increased depressive symptoms among people with asthma when disease severity and socio-demographic factors were taken into consideration.

Over the past ten years one of the most intensely researched and discussed topic in the field of mental health has been quality of life of persons with medical diseases[3]. Quality of life has great significance and importance for the person's social, psychological and emotional as well as personal life. Since quality of life is dependent to a great extent on our physical health, psychological functioning, social relationships and environmental factors. Therefore, it is logical to assume that persons with medical diseases are likely to have relatively poor quality of life as compared to the healthy individuals.

The present study is basically designed to test this assumption. Additionally it would also be interesting to compare COPD and bronchial asthmatic patients with healthy individuals in different domains of quality of life. Thus the present study also addressed this issue.

AIMS & OBJECTIVES:

1. To evaluate the quality of life in patients with COPD, Bronchial Asthma and healthy individuals.
2. To compare the quality of life in patients with COPD, bronchial asthma and healthy controls.

MATERIALS AND METHODS:

PARTICIPANT: 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 1st September 2008 to the 31st of August 2010. The sample for the study consisted of ninety (N=90) males of which 30 consecutive patients with chronic COPD, 30

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with bronchial asthma and 30 healthy controls which were first degree non-affected relatives of COPD patients and bronchial asthma.

Inclusion Criteria:

- Patients with clinical diagnosis of COPD according to GOLD's criteria.[5]
- Male patients (COPD more common in males).
- 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 nicotine.
- Patients who refused to give consent.

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. Quality of life was assessed by using Short Form 36 health survey (SF-36)[6,7] The results obtained were analyzed using T-test, Chi-square test, Analysis of variance (ANOVA), and Bonferroni multiple comparison.

RESULTS: The three samples do not significantly differ in terms of age, marital status, religion, domicile distribution, education, occupation and income. This fact indicates that the chronic obstructive pulmonary disease (COPD) patients and the two control groups are matched.

	Group	**N**	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**ANOVA F**	**P**
						Lower Bound	**Upper Bound**		
PHYSICAL FUNCTIONING (PF)	COPD	30	85.000	13.896	2.537	79.811	90.189	18.664	<0.001
	Bronchial Asthma	30	94.167	7.887	1.440	91.221	97.112		
	Healthy Controls	30	99.500	2.013	.368	98.748	100.252		
	Total	**90**	**92.889**	**10.990**	**1.158**	**90.587**	**95.191**		
ROLE-PHYSICAL (RP)	COPD	30	71.167	32.654	5.962	58.974	83.360	15.243	<0.001
	Bronchial Asthma	30	95.000	13.772	2.514	89.858	100.142		
	Healthy Controls	30	98.333	6.343	1.158	95.965	100.702		
	Total	**90**	**88.167**	**23.882**	**2.517**	**83.165**	**93.169**		

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ROLE EMOTIONAL (RF)	COPD	30	74.444	31.176	5.692	62.803	86.086	8.003	.001
	Bronchial Asthma	30	87.774	22.295	4.070	79.449	96.099		
	Healthy Controls	30	97.775	8.466	1.546	94.619	100.937		
	Total	**90**	**86.665**	**24.380**	**2.570**	**81.558**	**91.771**		
VITALITY (VT)	COPD	30	62.667	31.038	5.667	51.077	74.256	17.160	<0.001
	Bronchial Asthma	30	85.667	17.056	3.114	79.298	92.036		
	Healthy Controls	30	93.333	9.034	1.649	89.960	96.707		
	Total	**90**	**80.556**	**24.637**	**2.597**	**75.395**	**85.716**		
MENTAL HEALTH (MH)	COPD	30	72.533	24.017	4.385	63.565	81.501	11.613	<0.001
	Bronchial Asthma	30	87.867	11.434	2.088	83.597	92.136		
	Healthy Controls	30	91.567	9.043	1.651	88.190	94.943		
	Total	**90**	**83.989**	**18.051**	**1.903**	**80.208**	**87.770**		
SOCIAL FUNCTIONING (SF)	COPD	30	72.333	22.504	4.109	63.930	80.737	18.753	<0.001
	bronchial asthma	30	90.833	11.340	2.070	86.599	95.068		
	Healthy controls	30	94.667	7.032	1.284	92.041	97.293		
	Total	**90**	**85.944**	**17.866**	**1.883**	**82.203**	**89.686**		
BODILY PAIN (BP)	COPD	30	73.167	20.171	3.683	65.635	80.699	18.083	<0.001
	Bronchial Asthma	30	88.417	13.732	2.507	83.289	93.544		
	Healthy controls	30	95.750	8.072	1.474	92.736	98.764		
	Total	**90**	**85.778**	**17.456**	**1.840**	**82.122**	**89.434**		
GENERAL HEALTH (GH)	COPD	30	61.667	32.625	5.956	49.484	73.849	17.800	<0.001
	Bronchial Asthma	30	86.167	18.132	3.310	79.396	92.937		
	Healthy Controls	30	94.667	9.553	1.744	91.099	98.234		
	Total	**90**	**80.833**	**26.107**	**2.752**	**75.365**	**86.301**		
PHYSICAL COMPONENT SUMMARY	COPD	30	73.483	21.878	3.994	65.313	81.652	22.208	<0.001
	Bronchial Asthma	30	90.938	10.493	1.916	87.020	94.856		
	Healthy Controls	30	97.062	4.228	.772	95.483	98.640		
	Total	**90**	**87.161**	**17.280**	**1.821**	**83.542**	**90.780**		

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MENTAL COMPONENT SUMMARY	COPD	30	69.739	23.826	4.350	60.842	78.636	18.081	<0.001
	Bronchial Asthma	30	88.061	13.733	2.507	82.933	93.188		
	Healthy Controls	30	94.240	7.205	1.315	91.550	96.931		
	Total	**90**	**84.013**	**19.308**	**2.035**	**79.969**	**88.057**		

Table 1: Short Form Survey 36

Table 1: comparison of all three groups (COPD, BA, Healthy Controls) on different domains of SF-36 which were Physical Functioning, Role Physical, Role Emotional, Vitality, Mental Health, Social Functioning, Bodily Pain, General Health, Physical Component Summary, Mental Component Summary. Results of SF-36 revealed that quality of life among all the three groups, COPD patients have lowest quality of life followed by Bronchial Asthma patients. Healthy controls have high QOL in all the domains of SF-36. When statistical analysis done, it shows highly significant difference in all the domains of SF-36(P<0.001), among the three groups (Table 1).

Dependent Variable	**(I) Group**	**(J) Group**	**Mean Difference (I-J)**	**Std. Error**	**P value**
PHYSICAL FUNCTIONING (PF)	COPD	Bronchial Asthma	-9.167	2.401	.001
		Healthy Controls	-14.500	2.401	<0.001
	Bronchial Asthma	Healthy Controls	-5.333	2.401	.087
ROLE-PHYSICAL (RP)	COPD	Bronchial Asthma	-23.833	5.367	<0.001
		Healthy Controls	-27.167	5.367	<0.001
	Bronchial Asthma	Healthy Controls	-3.333	5.367	1.000
ROLE EMOTIONAL (RF)	COPD	bronchial asthma	-13.330	5.851	.076
		Healthy Controls	-23.331	5.851	<0.001
	Bronchial Asthma	Healthy Controls	-10.001	5.851	.273
VITALITY (VT)	COPD	Bronchial Asthma	-23.000	5.448	<0.001
		Healthy Controls	-30.667	5.448	<0.001
	Bronchial Asthma	Healthy Controls	-7.667	5.448	.489
MENTAL HEALTH (MH)	COPD	Bronchial Asthma	-15.333	4.188	.001
		Healthy Controls	-19.033	4.188	<0.001

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	Bronchial Asthma	Healthy Controls	-3.700	4.188	1.000
SOCIAL FUNCTIONING (SF)	COPD	Bronchial Asthma	-18.500	3.900	<0.001
		Healthy Controls	-22.333	3.900	<0.001
	Bronchial Asthma	Healthy Controls	-3.833	3.900	.985
BODILY PAIN (BP)	COPD	Bronchial Asthma	-15.250	3.831	<0.001
		Healthy Controls	-22.583	3.831	<0.001
	Bronchial Asthma	Healthy Controls	-7.333	3.831	.177
GENERAL HEALTH (GH)	COPD	Bronchial Asthma	-24.500	5.743	<0.001
		Healthy Controls	-33.000	5.743	<0.001
	Bronchial Asthma	Healthy Controls	-8.500	5.743	.427
PHYSICAL COMPONENT SUMMARY	COPD	Bronchial Asthma	-17.455	3.672	<0.001
		Healthy Controls	-23.579	3.672	<0.001
	Bronchial Asthma	Healthy Controls	-6.124	3.672	.297
MENTAL COMPONENT SUMMARY	COPD	Bronchial Asthma	-18.322	4.238	<0.001
		Healthy Controls	-24.501	4.238	<0.001
	Bronchial Asthma	Healthy Controls	-6.180	4.238	.445

Table 2: Multiple Comparisons

TABLE 2 shows there is highly significant difference between COPD and bronchial asthma patients in all the domains of SF-36 ($p<0.001$) except in the domain of role emotional in which there is no difference between these two groups. There is highly significant difference in all the domains of SF-36 ($p<0.001$) between COPD patients and healthy controls. There is no statistically significant difference between bronchial asthma patients and healthy controls in the domains of SF-36.

DISCUSSION: COPD is a chronic condition with numerous psychological and physical consequences. Quality of life is generally found to be poor in COPD and other chronic pulmonary diseases. Similar findings found by Mohammed A. Zamzam et al (2012) that quality of life is impaired in patients with COPD and it deteriorates considerably with increasing severity of disease.[8] Quality of life is worsened by co-morbid psychopathology and cognitive impairment.

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Present investigation reveals that patients with COPD have poor quality of life both in mental component summary and physical component summary of SF – 36. These findings are consistent with those of earlier investigations. Earlier studies by McSweeny et al (1982),[9] Prigatano et al (1984),[10] Williams SJ, Burry MR (1989)[11] and Schrier AC (1990)[12] have used profile of mood states, sickness impact profile, Katz adjustment scale, respiratory quality of life in COPD patients and all these studies report that in COPD patients ambulation, mobility, a variety of recreational activities, sleep, rest, physical functioning, emotional functioning all are affected.

They have major problems in areas including difficulty in breathing on day to day activities and fatigue. Studies done by Yen et al (2006)[4] and Goodridge et al (2009)[13] using SF – 36 and SF – 12 to measure quality life reports similar findings.

Present study reveals that quality of life is significantly related to the severity of COPD. Similar finding is reported in an earlier studies, Goodridge et al (2009)[13] Ferrer et al (1997).[14] Present study also indicates that quality of life is poor in COPD patients compared to Bronchial asthma patients which are consistent with an earlier study Mark C (2011),[15] using SF – 36. Present study finds that quality of life in patients with bronchial asthma is poorer in comparison to healthy controls.

Present investigation reveals that quality of life is significantly related to steroid use in COPD and bronchial asthma patients. Study done by Weldam et al. (2013) indicated that in COPD patients, the combination of illness perceptions and depressive symptoms contribute to HRQoL. More positive illness perceptions about COPD and lower levels of depressive symptoms were associated with better HRQoL.[16]

MERITS & LIMITATIONS: The population of this study is a selected one which does not have the characteristics of the general population of patients with COPD. Hence the samples as well as the controls are not representative of the general population. Recruitment of consecutive patients ensures that there is no sample bias. The inclusion and exclusion criteria are specific. Hence the sample consists of homogenous group of COPD patients who are otherwise not compromised. But a larger sample size will be required to enhance the reliability and validity of the results.

The present study is a comparative cross sectional case control study examining the quality of life in COPD, Bronchial asthma patients and healthy individuals. The subjects are assessed on one occasion only. The tools used have adequate established reliability and validity. All the tools are rater friendly, easy to administer, less time consuming thereby causing no discomfort to the patients. The assessment is not blind due to constraints of the study, therefore rater bias is possible.

Absence of sample selection bias, homogenous uncompromised sample of COPD patients and the control groups which includes bronchial asthma patients are conspicuous merits of this study. This is one of the few studies which compared COPD patients with bronchial asthma patients in terms of quality of life. Despite its limitations the present study definitely indicates that there is significant lower quality of life in patients with COPD in comparison to bronchial asthma patients and healthy individuals.

CONCLUSION: Present study concludes that adult male patients with chronic obstructive pulmonary disease (COPD) have poor quality of life as compared to bronchial asthma patients and healthy controls.

SUGGESTIONS FOR FUTURE STUDIES: Further research should ideally address the following issues:

Selection of samples which are representative of general population, Larger sample size, Use of more appropriate tools for assessment of quality of life, Blind assessment and Prospective assessment on multiple occasions.

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