**Prevalence of Anxiety and Depression in Patients with Chronic Respiratory Diseases**

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**Abstract**

Psychological issues, particularly anxiety and depression, have received growing attention in chronic disease patients and should not be overlooked when assessing patient’s quality of life (QoL). This is an important target in the clinical management of a chronic irreversible diseases, such as chronic obstructive pulmonary disease (COPD) A case control study of include 100 patients with advanced chronic respiratory diseases including severe persistent asthma, severe COPD, extensive bronchiectasis and interstitial lung diseases. Patients were selected randomly from those attending inpatient ward and outpatient clinic at Chest department in Benha University Hospitals. 20 age and sex matched apparently normal subjects will be also included as negative controls as well as 20 mild chronic respiratory disorders as positive controls.There was high significant FEV1 was in negative control than positive control than the studied group, Anxiety and depression more in female than males .Also absence of anxiety was significantly high in negative control than in positive control than in study group. highly significant depression scores in the study groups than control group. the Prevalence of anxiety and depression more in patients without respiratory failure than those have respiratory failure.Prevalence of anxiety and depression more common in chronic respiratory diseases.Many factors affect prevalence and severity of both anxiety and depression as gender,FEV1, PAP, dyspnea.

**Key words:** Prevalence of anxiety and depression in patients with chronic respiratory diseases

**1.Introduction**

Chronic respiratory diseases are increasing worldwide and are associated with an increased risk for mood and anxiety disorders. Such diseases are disabling and entail substantial cost for their management, which make patients dependable on others which is reflected on their mode ***(1)***

Depression and anxiety cause deterioration in social functioning and quality of life and are correlated with levels of subjective dyspnea and disease progression. Thus, detecting depression or anxiety in patients with chronic lung diseases is of great importance ***(2)***

**2.Patients and Methods:**

This study was included by 100 patients with advanced chronic respiratory diseases including severe persistent asthma, severe COPD, extensive bronchiectasis and interstitial lung diseases. Patients were selected randomly from those attending inpatient ward and outpatient clinic at Chest department in Benha University Hospitals. 20 age and sex matched apparently normal subjects also included as negative controls as well as 20 mild chronic respiratory disorders as positive controls.

**Exclusion criteria:**

1. Any previously diagnosed psychiatric problem
2. Disturbed conscious level
3. Patients with other chronic illness that are severe enough to affect patient mode like chronic kidney disease, chronic heart disease, chronic rheumatic disorders, chronic liver disease and malignancy
4. Refusal to sign the consent

***2.1. Methods:***

***All subjects will be classified into 2 groups:***

***Group I: patients,*** was classified into:

**Group Ia:** include patients with decompensated lung function (i.e. with respiratory failure)

**Group Ib:** include patients with compensated lung function (i.e. without respiratory failure)

***Group II:*** *include:*

**Group IIa:** healthy negative controls

**Group IIb:** patients with mild respiratory diseases (positive controls)

***All patients in the study subjected to the following:***

* + History and physical examination.
  + Full laboratory Investigations (CBC, ESR, liver and kidney function tests).
  + Chest x-ray
  + HRCT for patients with ILD and bronchiectasis to confirm diagnosis
  + Pulmonary function tests (spirometry and blood gases when clinically decompensated).
  + Beck Depression Inventory scale to diagnose depression:
  + In its current version, the BDI-II is designed for individuals aged 13 and over and is composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex **(3).**
  + Beck Anxiety Inventory scale to diagnose anxiety:
  + It is designed for individuals who are of 17 years of age or older and takes 5 to 10 minutes to complete **(4).**

**3.Results:**

There was non-significant value as regarding age and sex between groups, however significant value as regard smoking and no of cigarettes used to smoke.

Analysis of the association of sex between groups using Kruskall Wallis test (KW test) in group 1 (study) there were 42 males (42%) &58 females (58%) while in group 2 (positive control group) there were 10 males (50%) & 10 females (50%) and there were males (6) &females (14) with P value 0.42 (non-significant). (Table 1)

There was highly variable range of age giving non-significant P value (0.1) analysed by KW test. The age of study group was ranging from 22 year to 82 years with mean value 54.1 years and 15.3 SD. The age of positive control group was ranging from 27 year to 67 years with mean value 48.7 years and 12.8 SD. While the age of negative control group was ranging from 18 year to 62 years with mean value 47.1 years and 13.1 SD.

Analysis of the association of smoking and No of cigarettes between groups using KW test there is significant p value .002

**Table (1)** Clinical characteristics of the studied groups:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | | **Study group (n=100)** | | **Positive controls (n=20)** | | **Negative controls (n=20)** | | **Test of significance** | **P** |
| **Age (ys)** | **Mean±SD** | 54.1±15.3 | | 48.7±12.8 | | 47.1±13.1 | | **KW test=4.8** | **0.089 (NS)** |
| **Range** | 22-82 | | 27-67 | | 18-62 | |
|  | | **No.** | **%** | **No.** | **%** | **No.** | **%** | **χ2** | **P** |
| **Sex** | **Male** | 42 | 42.0 | 10 | 50.0 | 6 | 30.0 | **1.69** | **0.42 (NS)** |
| **Female** | 58 | 58.0 | 10 | 50.0 | 14 | 70.0 |
| **Smoking** | **Non smoker** | 58 | 58.0 | 14 | 70.0 | 19 | 95.0 | **18.5** | **0.002 (S)** |
| **Smoker** | 13 | 13.0 | 6 | 30.0 | 1 | 5.0 |
| **EX smoker** | 23 | 23.0 | 0 | 0.0 | 0 | 0.0 |
| **Passive smoker** | 6 | 6.0 | 0 | 0.0 | 0 | 0.0 |
| **No of cigarettes being or used to be smoked** |  | **n=36** | | **n=6** | | **n=1** | | **KW test** | **P** |
| **Mean±SD** | 1088±359.1 | | 500±275.6 | | 600±0 | | **12.9** | **0.002 (S)** |
| **Range** | 600-2000 | | 200-1000 | | 600-600 | |

There was high significant value of FEV1 in the study group than negative control and positive control groups.

Analysis of FEV1 in the studied groups by ANOVA test (table 2). significant p value 0.001 as FEV1 in the study group had a range from .58 to 3.28 with mean value 2 and .67 SD. FEV1 in positive control group had a range from 2.65 to 3.87 minutes with mean value 3.2 and .37 SD. FEV1 in negative control group had a range from 3.1 to 4.2 with mean value 3.2 and .37 SD.

The ANOVA test was used to characterize the sample and to analyze the relation of FEV1 in the studied groups giving P value 0.001(table 2), highly significant value

**Table (2)** FEV1 among the 3 groups**:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | **No.** | **FEV1** | | | **ANOVA** | **P** | **Sig. pairs** |
| **Mean** | **± SD** | **Range** |
| Study group | 100 | 2.0 | 0.67 | 0.58-3.28 | 95.1 | <0.001  (HS) | Study gr≠pos contr  Study gr≠Neg contr  Pos cont≠Neg contr |
| Positive control group | 20 | 3.2 | 0.37 | 2.65-3.87 |
| Negative control group | 20 | 3.8 | 0.27 | 3.1-4.2 |

There was high significant values of moderate and severe anxiety in study group than in positive control group than in negative control group. Also Absence of anxiety was significantly higher in negative control group than other groups while mild anxiety is significantly higher in negative control than in positive control, than in study groups.

Analysis of prevealance of anxiety among the studied groups by feisher extract test (table 3) there was high significant p value 0.001 and FET was 27.5 in comparsion of anxiety grades in the studied groups.

The FET test was used to characterize the sample and to analyze the relation of prevelance of anxiety in the studied groups giving P value 0.001(table 3), highly significant value

**Table (3)** Prevalence of anxiety among studied groups**:**

| BECK anxiety inventory | | | Groups | | | Total | FET &  P |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Study  group | Positive  controls | Negative  controls |
|  | No | Count | 2 | 3 | 7 | 12 | 27.5  <0.001  (HS) |
| % | 2.0% | 15.0% | 35.0% | 8.6% |
| Mild | Count | 31 | 9 | 9 | 49 |
| % | 31.0% | 45.0% | 45.0% | 35.0% |
| Moderate | Count | 44 | 6 | 2 | 52 |
| % | 44.0% | 30.0% | 10.0% | 37.1% |
| Severe | Count | 23 | 2 | 2 | 27 |
| % | 23.0% | 10.0% | 10.0% | 19.3% |
| Total | | Count | 100 | 20 | 20 | 140 |  |
| % | 100.0% | 100.0% | 100.0% | 100.0% |  |

There was mild depression was found in 15% of negative control group, 35% of positive control group, and in 27% of study group while moderate depression is found in 40% of study group, 10% of positive group and in 30% of negative controls. Severe depression is found in 25 % of study group, 10% in positive controls and in 0% of negative controls. Depression is absent in 55% of negative controls, 45% of positive controls and in 8% only in study group.

Analysis of prevealance of depression among the studied groups by feisher extract test (table 4) there was high significant p value 0.001 and FET was 36.1 in comparsion of depression grades in the studied groups.

The FET test was used to characterize the sample and to analyze the relation of prevelance of depression in the studied groups giving P value 0.001(table 3), highly significant value

**Table (4)** Prevalence of depression in studied groups:

|  |  |  | **Groups** | | | **Total** |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | **Study group** | **Positive controls** | **Negative controls** |
| BECK depression inventory | No | Count | 8 | 9 | 11 | 28 |
| % | 8.0% | 45.0% | 55.0% | 20.0% |
| Mild | Count | 27 | 7 | 3 | 37 |
| % | 27.0% | 35.0% | 15.0% | 26.4% |
| Moderate | Count | 40 | 2 | 6 | 48 |
| % | 40.0% | 10.0% | 30.0% | 34.3% |
| Severe | Count | 25 | 2 | 0 | 27 |
| % | 25.0% | 10.0% | .0% | 19.3% |
| Total | | Count | 100 | 20 | 20 | 140 |
| % | 100.0% | 100.0% | 100.0% | 100.0% |

FET=36.1 P<0.001 (HS)

**4.Discussion**

Physiological disorders such as pain, dyspnea, fatigue, insomnia, which may occur in chronic diseases, restrict the daily activities of an individual to a great extent, and their lives are adversely affected due to frequent hospitalizations. Degraded quality of life and limited physical activity cause loneliness and failure to meet their own needs or fulfill their family duties, resulting in mental problems such as anxiety and depression **(5)**.

The impact of living with CLDs can have tremendous psychological consequences for patients, families and carers. Psychological well-being is very important and therefore assessment and support of patients is central to management for many people with CLDs. The experience of care involves a reactive approach focused on physical symptoms and acute exacerbations. This often results in neglect of psychosocial problems and inappropriate management strategies, often involving multiple re-admissions. It is essential that health care staff understand and address these psychological aspects of disease so that patients and carers can be supported to live with their CLDs **(6).**

Chronic diseases continue to affect life, mentally, socially, physically and psychologically, since they cannot be treated quickly (**7)**.

Depression and anxiety cause deterioration in social functioning and quality of life and are correlated with levels of subjective dyspnea and disease progression **(8).** Importantly, symptoms of anxiety and depression were shown to be associated with a worse course of disease, including reduced quality of life and increased symptoms burden, health-care use, and even mortality **(9).**

Investigating anxiety and depression in patients is challenging because of the subjective nature of the diagnostic process, the variability in presentation and the significant overlap of symptoms between chronic respiratory diseases, anxiety and depression (i.e. dyspnea, [chest tightness](https://www.sciencedirect.com/topics/medicine-and-dentistry/chest-tightness), [palpitations](https://www.sciencedirect.com/topics/medicine-and-dentistry/palpitations), tremor, fatigue, disordered sleep and loss of appetite) **(10).**

The age of all 140 subjects ranges from 18 to 82, patients in the study group were relatively older than control groups. This denotes that chronic lung diseases especially when advanced are more common in the older population.

With the expected rapid growth of the aging population worldwide, there is a clear need to understand the complex process of aging to develop interventions that might extend the health span in this group of patients. Aging is associated with increased susceptibility to a variety of chronic diseases, and lung pathologies are no exception.The prevalence of lung diseases such as idiopathic pulmonary fibrosis and chronic obstructive pulmonary disease has been found to increase considerably with age. In October 2014, the Division of Pulmonary, Allergy, and Critical Care of the University of Pittsburgh cohosted the Pittsburgh-Munich Lung Conference focused in aging and lung disease with the Comprehensive Pneumology Center, Institute of Lung Biology and Disease, Ludwig-Maximilians University and Helmholtz Zentrum Munich Germany. The purpose of the conference was to disseminate novel concepts in aging mechanisms that have an impact in lung physiology and pathogenesis of pulmonary diseases that commonly occur in older populations **(11)**.

In this study, it was found that smoking was higher in the study group than that of both positive and negative controls group (table 1), which means that smoking is a main risk factor for chronic lung diseases, a fact that is well known in the science of respiratory medicine **(12).** This agrees with (**13)** who assessed depression and anxiety symptoms in chronic obstructive pulmonary disease and found that smoking and smoking severity more in the study group than control group.

In this study, therewas significantly higher distribution of ILD and bronchiectasis in the study group (diseased) than positive control group.

In this study FEV1 range 0.58-3.28L in study group, 2.65-3.87L in positive control group and 3.1 to 4.2L in negative control group and it was significantly higher in control groups than study group (table 2) which confirms good selection of patients.

In this study, moderate and severe anxiety were significantly more in study group than in positive control group and in the later than in negative control group. Absence of anxiety was significantly higher in negative controls than in positive controls than in study group (table3). This agrees with **(14)** who studied anxietyand depression in COPD patients to test the impact of gender and disease severity on both conditions in these patients and found that prevalence and severity of anxiety were higher in patients group than in control group.

In this study there was highly significant depression scores in the study groups than control groups as shown in (table 4) this is agreed with **(15)** who studied prevalence of depression and anxiety in outpatient with chronic airway lung diseases that found high depression scores in chronic lung disease than healthy control.

In this study, the absence of depression was significantly higher in negative control group than patients group while severe depression was significantly higher in patients than negative control group (table4). As regards comparison of depression between study group and positive control group, absence of depression was significantly higher in positive controls than study group patients while moderate depression was significantly higher in study group than positive controls (table4).

These results indicate that depression becomes more prevalent and more severe as severity of chronic respiratory diseases increase and agree with **(15)**who studied the prevalence of depression and anxiety in outpatients with chronic airway disease and found that prevalence of anxiety and depression was more in patients than controls. Why severe depression was not significantly different between both groups in our results, seems to be related to acclimatization of patients to their illness after long time of suffering.

In a study by **(16)** depression was found in 33 percent of COPD patients and 29 percent of asthma patients, as opposed to just 0.05 percent of controls. In the same study, anxiety was found in 42 percent of COPD patients and 41 percent of asthma patients, compared to 17 percent of controls which agrees with our results. In another study of patients with COPD, 33.3 percent met diagnostic criteria for PTSD, and moderate to severe depression in 48.5 percent, and moderate to severe anxiety in 69.7 percent which also agrees with our results **(17).** Higher prevalence of anxiety and depression in patients with chronic respiratory diseases might be due to high load of inflammatory mediators accumulated as a result of the ongoing inflammation **(16)**

**5.Conclusion**

Prevalence of anxiety and depression more common in chronic respiratory diseases, Many factors affect prevalence and severity of both anxiety and depression as gender, FEV1 PAP, dyspnea, treatment adherence.

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