

Original Article



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Sleep Disturbances and Depression in Adults with Steady-State Bronchiectasis

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Abstract

Objective: To study the sleep disturbances and depression in adults with steady-state bronchiectasis.

Methodology: This study was conducted at The University of Lahore. This is a descriptive cross-sectional study. Data was collected using Pittsburgh Sleep Quality Index (PSQI) questionnaire for sleep disturbance and Patient Health Questionnaire (PHQ-9) for depression. "Poor sleepers" with a PSQI score of >5, while "good sleepers" with a PSQI score of <5. Steady-state means stable patients of bronchiectasis. Data was entered and analyzed using SPSS 21.

Results: A total of 89 patients were included in our study, aged 18 to 80 years, with a mean age of 42.66±17.29 years. There were 53 (59.6%) female patients and 36 (40.4%) male patients. The duration of symptoms ranged from 3 to 6 months. Out of 89 patients, 67.9% suffered from post-TB bronchiectasis, 15.6% suffered from cystic fibrosis, 4.4% of patients suffered from other genetic disorders, 6.67% of patients suffered from Allergic Bronchopulmonary Aspergillosis (ABPA), and 2.2% from post-infectious bronchiectasis. Approximately 1.1% of patients suffered from post-obstructive bronchiectasis. Out of 89 patients with bronchiectasis, 41(46%) were good sleepers, while 48 (53%) were bad sleepers. Out of 89 patients of bronchiectasis, 12(13.5%) had minimal depression, 17(19.1%) had mild depression, 31(34.8%) had moderate depression and 29(32.6%) had moderately-severe depression.

Conclusion: The results of this study showed that sleep disturbances and depression were common in patients suffering from bronchiectasis. Patients with moderate to severe bronchiectasis had lower sleep quality and scored low on the PSQI index. Patients with severe disease also scored high on the PHQ-9 index for depression.

Keywords: Bronchiectasis, Chronic disease, Depression, Dyssomnias, Extrinsic sleep disorder, Quality of life



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Introduction

Bronchiectasis is a pathologic illness of lung damage characterized by irreversible, inflamed, and expanded thick-walled bronchi. Bronchiectasis commonly presents with repetitive lower respiratory tract infections and a persistent productive cough. The characteristic highlights are abnormally, irreversibly dilated thick-walled bronchi that are aroused and colonized by microscopic organisms. Symptoms of bronchiectasis include persistent chronic cough with mucopurulent sputum production, hemoptysis, dyspnea, and fatigue.¹

Pathologically, bronchiectasis can be divided into four categories. One feature of the first variant of bronchiectasis, known as round and hollow bronchiectasis, is the uniform dilatation of the bronchi that expands towards the lung margins without decreasing. The asymmetrical, beaded bronchial structure of the second type, referred to as varicose bronchiectasis, is characterized by an unequal distribution of constriction and dilatation. The third and most severe type of bronchiectasis is cystic or secular bronchiectasis.²

Bronchiectasis occurs in patients over the range of age and gender, but the most noteworthy predominance is in geriatrics women. Bronchiectasis, which can be dif-fused or central, may happen without a predecessor malady but is frequently a complication of tuberculosis, infections, autoimmune conditions, and idiopathic causes or is due to fundamental systemic illness.³

It has recently been recognized that bronchiectasis frequently occurs in chronic bronchitis and emphysema patients. Up to 50% of patients with COPD may have coexisting bronchiectasis. Bronchiectasis may coexist with COPD in as many as 50% of the patients. Another characteristic of bronchiectasis is acute exacerbations, which are intermittent episodes of symptoms that frequently necessitate medication adjustments. These episodes are typically caused by increased inflammation of the airways.⁴

There is an expanded predominance of rest indications among grown-ups with unremitting aviation routes and obstructive maladies, particularly those with co-existent bronchiectasis, COPD, asthma, and constant bronchitis.⁵

There is no remedy for bronchiectasis, but treatment is vital to assist you in managing the condition. Treatment's main objective is to control infection and bronchial secretions. It is also necessary to anticipate advanced airway obstacles and minimize lung harm. Of all the psychiatric illnesses, the most common disorder is depression. It has been assessed that 90% of patients with persistent lung infections, such as Bronchiectasis, complain about depression.⁶

The negative effect of rest unsettling influenced day-time work. Mental working and improvement, dispo-

sition direction, scholarly and social execution, consideration and behavior, well-being and the resistant framework, and in general, quality of life have all appeared to be influenced by unsettling influences within the quality or amount of sleep.^{7,8}

The PHQ depression scale (PHQ-9) is a module of the larger Patient Health Questionnaire, half the length of numerous other types of depression measures. It has comparable specificity and affectability and nine items of this scale to evaluate signs of depression. The PHQ-9 could be a dual-purpose survey that can quantify the provisional depressive condition diagnoses and can also be used to screen the severity of depression. Good sleep is necessary for body and mind relaxation. Sleep disturbances are common in chronic pulmonary infections such as Emphysema, Chronic bronchitis, Idiopathic pulmonary fibrosis, Bronchiectasis, and Cystic fibrosis, which leads to weakness, mood disposition, and impeded health and quality of life.⁹

An individual may have trouble falling asleep and feel significantly tired throughout the day. A lack of sleep can have an adverse effect on energy, mood, concentration, and overall health. The Pittsburgh Sleep Quality Index is a reliable tool for assessing sleep patterns.¹⁰

Many people with bronchiectasis also have mental health problems such as depression and anxiety. Assessment and management are important in bronchiectasis as high levels of anxiety and depression are associated with lower health-related quality of life. The objective of this research is to study sleep disturbances and depression in adults with steady-state bronchiectasis.

Methodology

This cross-sectional descriptive study was conducted to study sleep disturbance and depression in adults with steady-state bronchiectasis. The study was performed at the University of Lahore and lasted 6 months. The sample size was 89 patients. The sample size was calculated based on the prevalence of sleep disturbance (62 %), using a 95% confidence level. A non-probability convenient sampling technique was used for data collection. Patients of both genders aged 18 to 80 years were included.

Patients who were diagnosed with bronchiectasis based on High-Resolution Computed Tomography (HRCT) findings were included in this study. Pittsburgh Sleep Quality Index (PSQI) questionnaire for sleep disturbance. "Poor sleepers" with a PSQI score of >5, while "good sleepers" with a PSQI score of <5. Patient Health Questionnaire (PHQ-9) for used for data collection regarding depression. PHQ-9 scale was administered to patients, and patients were categorized as having minimal, mild, moderate, and severe depression according to the scale. Data was collected and analyzed using SPSS 21.

Results

A total of 89 patients were included in our study, aged 18 to 80 years, with a mean age of 42.66 ± 17.29 years. There were 53 (59.6%) female patients and 36 (40.4%) male patients. The minimum duration of symptoms was 3 months, and the maximum was 6 months.

Of the 89 patients, 61 (68.53%) suffered from post-TB bronchiectasis, 2 (2.24%) from post-infectious, 1 (1.12%)

from post-obstructive, 4 (4.49%) from genetic diseases, 6 (6.74%) from ABPA, 14 (15.73%) from cystic fibrosis, and 1 (1.1%) from other causes (Table 1). Of the 89 patients with bronchiectasis, 41 (46.06%) were good sleepers and 48 (53.93%) were bad sleepers (Figure 1). Out of 89 patients with bronchiectasis, 12 (13.48%) had minimal depression, 17 (19.10%) had mild depression, 31 (34.83%) had moderate depression and 29 (32.58%) had moderately severe depression (Figure 2).

Table 1. Etiologies of Bronchiectasis

Causes of Bronchiectasis	Frequency	Percentages
Post TB	61	68.53
Post Infectious	2	2.24
Post Obstructive	1	1.12
Genetic Causes	4	4.49
ABPA	6	6.74
Cystic Fibrosis	14	15.73
Others	1	1.12



Figure 1: Sleep scores of patients using Pittsburgh Sleep Quality Index (PSQI) questionnaire for sleep disturbance

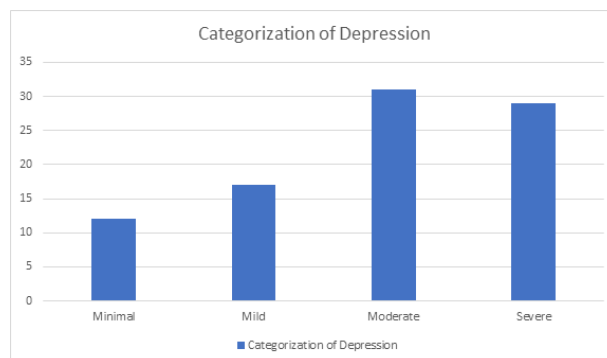


Figure 2: Categorization of depression using the Patient Health Questionnaire (PHQ-9)

Discussion

The results of the current study show that 67.9 % of patients have post-TB bronchiectasis, 15.5 patients have cystic fibrosis. There is a lot of variation in the literature regarding the etiology of bronchiectasis.¹¹ A Chinese study reported that more than two thirds of bronchiectasis was due to pneumonia and tuberculosis.¹² In another study conducted in Far East Asia and India, tuberculosis and post-infective causes are still among the leading causes of bronchiectasis.¹³

Forty-six percent of bronchiectasis patients have poor sleep in our study. The quality of life (QoL) in bronchiectasis patients is meaningfully impacted by the sleep disturbances. A poor quality of sleep can severely de-

crease the QoL of these patients and can exacerbate the severity of anxiety and depression.^{14,15}

Sleep disturbance and depression are closely linked in patients presenting with steady-state bronchiectasis.^{16,17} Several studies have shown an association between them. Patients with current sleep disturbances and a past history of depressive symptoms are more prone to develop depression. This is especially true in older populations, as insomnia also increases with age.¹⁸

Patients classified as "good" and "bad" sleepers can have different presentations based on the level of pain perception, activity levels, sensitivity to pain, and hypochondriasis. These findings may indicate the severity of the psychological distress the patient is having and the

risk of new depressive episodes.

Increased nighttime cough and 24-hour sputum volume were, moreover, associated with the other symptoms of depression. Studies reported that cough or sputum production was related to an increased chance of daytime drowsiness.^{14,19} Nighttime cough may make it difficult to enter into deeper stages of NREM sleep and rapid eye movement (REM) sleep. The total duration of REM sleep is significantly decreased in these patients.¹⁹ Gao et al. studied the severity of bronchiectasis and sleep disturbance. They found that sleep disturbance was not significantly associated with sleep disorders. Factors that showed significant association with sleep disturbance were aging, psychological issues, and the presence of cough.¹⁴ A causal link between the severity of systemic disease and sleep disturbances is not established. Further work needs to be done to establish causal relationships of sleep disturbance in these patients.¹⁷

This is a cross-sectional study; the temporal association of bronchiectasis and depression cannot be assessed. We could not analyze many parameters as patient records were used to collect the data. A prospective study with a larger sample size is necessary to study the association between bronchiectasis and depression. Although this study has limitations, it highlights the serious issue of depression in patients suffering from chronic conditions. Regular psychological assessment should be offered to patients who suffer from chronic conditions like bronchiectasis.

This study also highlights the need to conduct studies regarding psychological issues and sleep disturbances in patients suffering from chronic conditions. Diseases like bronchiectasis cannot be cured, but with right management, the "Quality of Life (QoL)" of the patient can be improved. Studies need to be done to identify these problems in our population so a multi-disciplinary approach can be made toward improving the QoL of our patients.

Conclusion

The results of this study showed that sleep disturbances and depression were common in patients suffering from bronchiectasis. Nighttime symptoms increase the risk of deprived sleep quality. Although the causal relationship between bronchiectasis and sleep disturbance is not developed, patients with moderate to severe bronchiectasis had lower sleep quality and scored low on the PSQI index. Patients with severe disease also scored high on the PHQ-9 index for depression.

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Authors' Contribution Statement

IR contributed to the manuscript's conception, design, acquisition, analysis, and drafting. SASZ contributed to the design, acquisition, analysis, drafting of the manuscript, and critical review of the manuscript. JA contributed to the design, acquisition, analysis, drafting of the manuscript, and critical review of the manuscript. MF contributed to the conception, acquisition, drafting of the manuscript, critical review of the manuscript, and final approval of the version to be published. SN contributed to the analysis, interpretation of data, drafting of the manuscript, and critical review of the manuscript. FA contributed to the drafting of the manuscript, critical review of the manuscript, and final approval of the version to be published. All authors are accountable for their work and ensure the accuracy and integrity of the study.

Conflict of Interest

Authors declared no conflict on interest

Grant Support and Financial Disclosure

None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.