

Interstitial Lung Disease and Depression – A Questionnaire Based Study

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ABSTRACT

Background and Objective: Interstitial lung disease (ILD) causes depression due to its painful course in patients. The aim of this study was to determine the prevalence of depression and find the association of depression with selected clinical variables in patients with ILD.

Methods: This questionnaire based cross-sectional study was done at the department of pulmonology, District head quarter hospital Sahiwal from 1st October 2019 to 31st March 2020. The questionnaire was distributed among the diagnosed cases of ILD who presented in outpatient department of DHQ Sahiwal after taking informed consent. The depression scoring was done in them according to Beck depression inventory II. Frequency distribution statistics and inferential statistics were done by using Statistical Package for Social Sciences (SPSS) version 20. P-value < 0.05 was taken as statistically significant.

Results: Depression was graded into four types according to Beck depression inventory II scoring system. Depression levels of minimal, mild, severe and extremely severe were found to have frequencies of 42.90, 14.30, 31.40 and 11.4% respectively. Depression was more prevalent in females (77.14%). Sixty two percent of severely depressed had rural background. Three fourth (75%) of severely depressed patients were from lower class group. Half of the severely depressed patients were suffering from hypertension. One fourth had ischemic heart disease. Illiteracy dominated in severely depressed where 3/4th of the participants had not received any education. Our study found statistically significant result of Beck score with socioeconomic groups (P = 0.037). High statistically significant result was also found when Beck scoring was associated with co-morbidities (P = 0.001).

Conclusions: The increased frequency of depression in the patients of ILD was associated with many demographic factors. The development of improved methods for the assessment of ILD and its co-morbidities could have profound effects on the quality of life and expected survival of ILD patients.

KEYWORDS: Depression, Beck Score, Interstitial lung disease, Co-morbidity.

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INTRODUCTION

Interstitial lung disease (ILD) represents a specific group of rare disorders that includes more than two hundred entities affecting pulmonary interstitium and causing inflammation and fibrosis. It is mostly associated with chronic course, poor prognosis and high mortality.¹

For instance, in idiopathic pulmonary fibrosis (IPF), the expected average survival is 3-5 years without treatment, and is usually associated with different chronic co-morbidities.²

Interstitial lung disease (ILD) is the 40th major cause of worldwide deaths and the mortality rate has increased up to 52% in the last 10 years.³

Current therapies have proved limited effect in halting the progression of disease. Recent studies have found that an effective approach to improve Bio-psychological health and quality of life in patients with interstitial lung disease has proved fruitful in managing various symptoms.⁴

Special attention is given to the alarmingly high risk of co-morbidities in interstitial lung disease. In one study by Kreuter et al.⁵ It was found that 88% of 272 Idiopathic pulmonary fibrosis patients had at least single comorbidity, while 70% of the patients were having two or more comorbidities.

The more common co-morbidities are pulmonary hypertension, ischemic heart disease, lung cancer, emphysema/Chronic obstructive pulmonary disease (COPD), gastro-esophageal reflux disease (GERD), sleep apnea and depression.^{6,7}

Like other chronic illnesses, patients with pulmonary disorders also have increased risk of psychiatric problems, especially depression and anxiety. The course of illness profoundly affects patient's physical, vocational and mental functioning, usually persistent, correlated with increased exacerbation rates, poor compliance and sometimes increased mortality thereby management of pulmonary conditions becomes even challenging.¹⁰⁻¹³

Depression is not associated with survival in patients of interstitial lung disease, but is regarded as a major determinant of health related quality of life in patients with interstitial pulmonary fibrosis (IPF).^{14,15} There may be both psychological and physical explanations to it, one hypothesis being;

hypoxia renders brain damage that may lead to depression and suicide.¹⁵

Several studies have shown prevalence of depression from 24.3% to 49.2%. The severity of depression is proportionate to that of interstitial lung disease which is similar to chronic obstructive pulmonary disease (COPD).^{10,16,17,18}

Interstitial lung disease has various etiologies. The nature of illness is chronic and it has diverse effects on the overall life of patients and their caregivers. International guidelines recommend multidisciplinary approach for its holistic management.¹⁵

This study is aimed at determining the prevalence of depression and characterizes the association of depression with selected clinical variables in patients with interstitial lung disease.

METHODS

This questionnaire based cross-sectional study was carried out at the Department of Pulmonology, DHQ Hospital Sahiwal from 1st Oct 2019 to 31st March 2020 for duration of six month. The study was approved from the institutional Ethical Review Board vide Letter No. 12/ME/SLMC/SWL. The questionnaire was distributed among the diagnosed cases of interstitial lung disease who presented in outpatient department of DHQ Sahiwal after taking informed consent. The depression scoring was done in them according to Beck depression inventory II. Frequency distribution statistics and inferential statistics were done by using SPSS-20 version. Fisher's Exact test was applied for P-value estimation. P-value < 0.05 was taken as statistically significant.

RESULTS

Female predominance was evident (77.1%). Age distribution of study population was almost equal among both genders but the participants belonging to more than 65 years were slightly dominating with percentage of 37.1%. A total of 54.3% of study participants belonged to the rural residence. As the literacy status of the study population was divided into four groups, 62.9% were illiterate, 20% had primary level education while participants from secondary level of education and higher education and above were having equal percentage (8.6%

each). Majority belonged to lower class of socioeconomic group (51.4%). The frequency distribution of different co-morbid diseases in patients suffering from interstitial lung diseases was also calculated. Patients with diabetes mellitus as a co-morbidity were making the majority (27.1%) while those suffering from hypertension and ischemic heart diseases were having equal frequency distributions (17.1% each).

Depression was graded into four types according to Beck depression inventory II scoring system. Depression levels of minimal, mild, severe and extremely severe were found to have frequencies of 42.90, 14.30, 31.40 and 11.4% respectively. Depression was more prevalent in females (77.14%). The 62.5% of severely depressed patients had rural background. Three fourth (75%) of severely depressed patients were from lower class group. Half of the severely depressed patients were suffering from hypertension. One fourth had ischemic heart disease. Illiteracy dominated in severely depressed where 3/4th of the participants had not received any education. This study found statistically significant result of Beck score with socioeconomic groups ($P = 0.037$). High statistical significance was also found when Beck scoring was associated with co-morbidities ($P = 0.001$).

DISCUSSION

Depression is one of the most common psychiatric disorders and is one of the main causes of disability worldwide. Certain demographics and social circumstances are well proved to be risk factors for depression e.g. gender, social class, educational achievements and income level.¹⁹

In this study, female participants were more than male participants. More than two thirds (77.1%) of all the patients were female. This study demonstrated that females were more common than males among the studied ILD patients (77.1% vs. 22.9%) which is in accordance with the previously reported study.¹⁷ While studies from Ryerson et al. showed that males were more than females.^{10,20}

Among all the participants, almost two thirds (62.9%) were illiterate, half of them (51.4%) belonged to conservative class, three fourth (75.72%) were more than 50 years old. Almost one

fourth (24.3%) had no co-morbidity. Diabetes mellitus was most frequent (27.1%). Among the interstitial lung disease, idiopathic pulmonary fibrosis and hypertension were most prevalent being 37.1% and 24.3% respectively. This is in accordance with the previous studies where one or more co-morbidities were found with ILD.^{1,5,15}

Less than a half (42.9%) scored minimal on depression scale. Thus, the results of these studies are in accordance with the previous studies that depression is frequently associated with interstitial lung disease.^{7,11,13,15,16,17,19,21,22}

A total of 11.4% of all the patients had severe symptoms of depression, Almost one third (1/3) of patients had moderate depression whereas 14.3% had mild depression. Almost similar results were reported by Ryerson et al. who established that, prevalence of depression in patients with ILD was 23% and 21%, correspondingly. This study had similar sequence of severity of depression.^{10,20}

In this study, females had more depressive symptoms than their male counterparts which affirms previous report.¹⁰

Among patients with severe depression, females were found to be three times more in number (62.5%) than male participants (37.5%) which is in accordance with previous study.¹⁷

There should be more psychosocial assessment to explore this correlation of gender with depression.

This study found statistically significant result of Beck score with socioeconomic groups ($P = 0.037$). High statistical significant result was also found when Beck scoring was associated with comorbidities ($P = 0.001$). As mentioned earlier, Depression in ILD is very frequent, runs a chronic course, and strongly and independently correlated with physical and psychological functioning. This depression, if present at start of the treatment, is much likely to stay during the follow ups, thus will maintain difficulty for the treatment and favorable prognosis. Therefore there should be routine to screen for identifying all medical and psychological co morbidities in patients with ILD.¹⁰

No study is published yet to describe the mechanism of increased prevalence of depression in ILD, however several studies have highlighted association of dyspnea in ILD patients with depression.^{15,16,22}

CONCLUSION

The increased frequency of depression in the patients of ILD is associated with many demographic factors. It is mandatory that timely identification and management of co-morbidities may be carried out for better outcome and quality of life of patients with this disease.

LIMITATIONS OF THE STUDY

The sample size was less, hence further prospective studies are required to investigate the effects of psychological interventions on quality of life and determine the prognostic significance of depression in patients with ILD.

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CONFLICT OF INTEREST

None to declare.

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None to disclose.

REFERENCES

- Margaritopoulos G, Kokosi M, Wells A. Diagnosing complications and co-morbidities of fibrotic interstitial lung disease. *Expert Rev Respir Med.* 2019; 13 (7): 645-58.
- Kreuter M, Swigris J, Pittrow D, Geier S, Klotsche J, Prasse A, et al. Health related quality of life in patients with idiopathic pulmonary fibrosis in clinical practice: insights-IPF registry. *Respir Res.* 2017; 18 (1): 127-31.
- Bajwah S, Davies J, Tanash H, Currow D, Oluyase A, Ekström M. Safety of benzodiazepines and opioids in interstitial lung disease: a national prospective study. *Eur Respir J.* 2018; 52 (6): 1801278.
- Zhou Y, Mak Y. Psycho-physiological associates of dyspnea in hospitalized patients with interstitial lung diseases: a cross-sectional study. *Int J Environ Res Public Health.* 2017; 14 (10): 1277.
- Kreuter M, Ehlers-Tenenbaum S, Palmowski K, Bruhwylter J, Oltmanns U, Muley T et al. Impact of co-morbidities on mortality in patients with idiopathic pulmonary fibrosis. *Plos One.* 2016; 11 (3): e0151425.
- Torrisi S, Vancheri A, Pavone M, Sambataro G, Palmucci S, Vancheri C. Co-morbidities of IPF: How do they impact on prognosis. *JPPT.* 2018; 53 (4): 6-11.
- Margaritopoulos GA, Antoniou KM, Wells AU. Co-morbidities in interstitial lung diseases. *Eur Respir Rev.* 2017; 26 (143): 160027.
- World Health Organization. 2017. Depression and other common mental disorders global health estimates. Available online at: https://www.who.int/mental_health/management/depression/prevalence_global_health_estimates/en/ [Last accessed on June 12, 2020].
- Ryerson CJ, Arean PA, Berkeley J, Carrieri-Kohlman VL, Pantilat SZ, Landefeld CS, et al. Depression is a common and chronic comorbidity in patients with interstitial lung disease. *Respirology.* 2012; 17 (3): 525-32.
- Pumar M, Roll M, Fung P, Rolls T, Walsh J, Bowman R, et al. Cognitive behavioral therapy (CBT) for patients with chronic lung disease and psychological comorbidities undergoing pulmonary rehabilitation. *J Thorac Dis.* 2019; 11 (S17): S2238-S2253.
- Tay T, Hew M. Comorbid “treatable traits” in difficult asthma: Current evidence and clinical evaluation. *Allergy.* 2017; 73 (7): 1369-82.
- Carvajalino S, Reigada C, Johnson MJ, Dzingina M, Bajwah S. Symptom prevalence of patients with fibrotic interstitial lung disease: a systematic literature review. *BMC Pulm Med.* 2018; 18 (1): 78-80.
- Glaspole IN, Chapman SA, Cooper WA, Ellis SJ, Goh NS, Hopkins PM, et al. Health-related quality of life in idiopathic pulmonary fibrosis: Data from the Australian IPF Registry. *Respirology.* 2017; 22 (5): 950-6.
- Alfaro TM, Robalo Cordeiro C. Comorbidity in idiopathic pulmonary fibrosis – what can biomarkers tell us? *Ther Adv Respir Dis.* 2020; 14 (1): 1753466620910092.
- Lee Y, Choi S, Lee Y, Cho Y, Yoon H, Lee J et al. Clinical impact of depression and anxiety in patients with idiopathic pulmonary fibrosis. *Plos One.* 2017; 12 (9) :e0184300.
- Akhtar AA, Ali MA, Smith RP. Depression in patients with idiopathic pulmonary fibrosis. *Chron Respir Dis.* 2013; 10 (3): 127-33.
- Amin A, Zedan M, Halima K, Ismail A. Depression in patients with idiopathic pulmonary fibrosis. *Al-Azhar Assiut Med J.* 2014; 12 (4): 195-211.

18. Alvarez-Galvez J, Rojas-Garcia A. Measuring the impact of multiple discrimination on depression in Europe. *JBMC Public Health*. 2019; 32 (1): 419:35.
19. Ryerson CJ, Berkeley J, Carrieri-Kohlman VL. Depression and functional status are strongly associated with dyspnea in interstitial lung disease. *Chest*. 2011; 139 (3): 609–16.
20. Hur SA, Guler SA, Khalil N, Camp PG, Guenette JA, Ryerson CJ. Impact of psychological deficits and pain on physical activity of patients with ILD. *Lung*. 2019; 197 (4): 415-25.
21. Holland AE, Fiore JF, Bell EC, Goh N, Westall G, Symons K, et al. Dyspnoea and co-morbidity contribute to anxiety and depression in ILD. *Respirology*. 2014; 19 (4): 1215-21.

Author's Contribution

MM: Supervision and revising it critically for important intellectual content.

MW: Help in biostatics and data analysis.

HSA: Write-up of the article.

AZJ, MR: Analysis and interpretation.

MJI: Conception and design of work, results compiling.

ALL AUTHORS: Approval of the final version of the manuscript to be published.