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Depression amongst Patients with Pulmonary Tuberculosis: A Cross-Sectional Study

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A B S T R A C T

Background: Co-morbidity between depression and tuberculosis is widespread and result in an upsurge in the morbidity and mortality.

Objective: To evaluate depression among Pulmonary Tuberculosis Patients.

Methodology: This Cross-Sectional Study was carried out at the Department of Pulmonology and Psychology Mardan Medical Complex/Bacha Khan Medical College, Mardan from January 2018 to August 2020 after taking the approval from the ethical committee of the institute. Using the Rao soft sampling size calculator, the size of the sample that best represented the population of patients with pulmonary TB was calculated. A sample size of 386 was determined to attend 95 % confidence interval with 5% margin of error. The Patient Health Questionnaire-9 (PHQ-9) was the tool utilized to gather data for this study. Following data collection, SPSS version 16 was used to clean, code, and input the data. Mann-Whitney and Kruskal-Wallis non-parametric tests were used to determine how distinct variables differed from one another.

Results: A total of 386 individuals were enrolled in this study out of which 180 (46.63%) were males and 206 (53.36%) were females. To determine the variances among different variables Kruskal-Wallis and Mann-Whitney ($p \geq 0.05$) were accomplished. Significant difference between, duration of treatment ($p=0.01$), phase of treatment ($p=0.03$) and type of treatment ($p=0.001$) were detected. Moderate depression was observed among participants at baseline and had duration of therapy less than a month. However, no significant difference ($p \geq 0.05$) among other demographic variables was detected."

Conclusion: According to the current study, the majority of TB patients had depression of some kind. During the therapy's baseline period, this depression appeared more noticeable. Patients receiving directly observed therapy seemed to be sad because of the increasing cost load and stigma.

Keywords: Tuberculosis; Psychological Issues; Depression

Introduction

Different co-morbidities exist in with Tuberculosis (TB) patients which is one of the main concerns and due to these co-morbidities rate of morbidity and mortality increased among TB patients. One of the main co-morbidities which is found between 11.3% and 80.2% of people getting TB therapy globally is depression which represents a mean weighted incidence of 48.9%. In developing countries, the reported incidence of psychological disorders and depression among TB patients varied from 46% to 80%.¹ Depression is one of the most common mental health disorders, characterized by persistent sadness, loss of interest in previously enjoyable activities, and a range of physical and emotional symptoms that can severely affect quality of life. It is estimated that globally, more than 280 million people experience depression. The co-occurrence of depression and physical illnesses, such as TB, is of significant concern because it can lead to worse health outcomes, increased healthcare costs, and greater social stigma. Patients with TB who are depressed are more reluctant to follow their treatment plans or seek medical attention. Those who receive no therapy may become sources of infection that spreads the disease, while those who receive inconsistent care may develop prescription drugs resistance.^{2,3}

According to a study done in India using the PHQ-9 questionnaire to measure the incidence and degree of depression in tuberculosis patients enrolled in DOTs treatment, over 60% of patients had depression.⁴ In addition, a study carried out in Ethiopia employed the K-10 scale to measure psychological distress in TB patients after one to two months of therapy, and again after six months. Psychological discomfort was a common side effect of therapy for tuberculosis patients, but it was more noticeable at first.⁵ Another study carried out in South Africa found that a substantial percentage of TB patients had psychological symptoms.⁶ In an Indian study, rate of depression in TB patient was 82% and in this study depression was correlated with the disease's severity, course of the illness, and reaction to treatment.⁷ In another study found that patients with TB had psychiatric morbidity, including obsessive compulsive disorder, sadness, anxiety, stress, and hypochondriasis. Patients who were 46 to 60 years old and males were more likely to suffer from mental disease. Additionally, individuals with category IV illnesses and treatment durations longer than three months were more likely to experience mental co-morbidity.⁸

Depression amongst TB patients is not only a concern for patient well-being but also impacts treatment adherence and outcomes. Depressed patients may struggle with motivation to adhere to lengthy treatment regimens, increasing the risk of treatment failure, relapse, and drug resistance. Moreover, depression can impair cognitive

function, decision-making, and social interactions, further complicating the recovery process.

Despite the growing recognition of the co-occurrence of TB and depression, research in this area is still evolving. Factors such as socioeconomic status, cultural attitudes toward mental health, and healthcare accessibility can significantly influence the prevalence and management of depression among TB patients. Understanding the relationship between these two conditions is crucial for developing holistic treatment approaches that address both physical and mental health needs.

Pakistan is ranked fifth among nations with a high TB burden worldwide by the World Health Organization.⁹ Pakistan accounts for 61% of the tuberculosis cases within the Eastern Mediterranean Region, according to WHO.¹⁰ Depression is common among Pakistani tuberculosis patients, and it has been linked to more severe symptoms and a reduced awareness of control over the disease.^{11,12} It has been determined that one of the primary causes of depression is misinformation about TB. Long-term medical care, sickness, and disruptions in life processes were among causes mentioned.^{13,14}

This cross-sectional study aims to investigate the prevalence of depression among patients with pulmonary tuberculosis. By examining this rate, we hope to provide healthcare providers with valuable insights to inform more comprehensive treatment strategies that support both the physical recovery from TB and the mental health needs of patients. Through this research, we aim to emphasize the importance of integrated care models that address the dual challenges of tuberculosis and depression, ultimately contributing to better patient outcomes and quality of life.

Objective

The objective of the study was to evaluate depression among Pulmonary Tuberculosis Patients.

Methodology

This Cross-Sectional Study was carried out at the Department of Pulmonology and Psychology Mardan Medical Complex/Bacha Khan Medical College, Mardan from January 2018 to August 2020 after taking the approval from the ethical committee of the institute. Participants in this study comprised smokers and non-smokers with pulmonary TB who were at least 18 years old, getting self-administered or directly monitored forms of therapy, Intensive, or continuation phases of treatment. This research excluded patients with extra pulmonary or miliary TB, individuals younger than eighteen, and patients with any other significant medical disorders. Using the Rao soft sampling size calculator, the size of the sample that best represented the population of patients

Table 1. Demographic Features of the participants of the study

Indicators		N (%)
Gender	Male	180 (46.63%)
	Female	206 (53.36%)
Status of job	Employed	148 (38.34%)
	Unemployed	117 (30.31%)
	Housekeeper	111 (28.75%)
	Retired	8 (2.0%)
Smoking status	Smokers	88 (22.7%)
	Non smokers	298 (72.20%).
Duration of treatment	Less than one month	113 (29.275%)
	1 to 3 months	132 (34.19%)
	4 to 6 months	104 (26.94%)
	7 to 9 months	18 (4.66%)
	10 to 12 months	13 (3.36%)
	Above 13 months	6 (1.55%)
Phase of treatment	Baseline	111 (28.75%)
	Initial	135 (34.9%)
	Continuous	140 (36.3%)
Type of treatment	Self-administrated	199 (51.55%)
	Directly	87 (22.5%)
	observed therapy	100 (25.90%)

with pulmonary TB was calculated. A sample size of 386 was determined to attend 95 % confidence interval with 5% margin of error. The respondents were chosen using the convenience sample approach because there was no list of TB patients available. Convenience sampling mandates that all respondents who were available at the time of data collection were included. Prospective data was gathered directly from respondents in primary sources. Direct data collection from the respondents at

each healthcare facility was done.

The Patient Health Questionnaire-9 (PHQ-9) was the tool utilized to gather data for this study. The optum (organization) of PHQ-9 had granted written consent for the use of PHQ-9. PHQ-9 scores range from 1 to 27, with a higher score indicating a more severe case of depression. A score of 1–4 represents no depression, a score of 5–9 mild depression, a score of 10–14 moderate depression, a score of 15–19 moderately severe

Table 2. Evaluation of Depression among Pulmonary TB participants

Indicators	Nearly every day	More than half the days	Several days	Not at all
In performing activities little interest or pleasure	24 (6.21%)	108 (27.97%)	146 (37.82%)	108 (27.97%)
Feeling down, unhappy, or desperate	21 (5.44%)	115 (29.79%)	140 (36.266%)	110 (28.49%)
Difficulty falling asleep or sleeping excessively	87 (22.52%)	137 (35.49%)	131 (33.9%)	31 (8.03%)
Feeling tired or having little energy	87 (22.52%)	137 (35.49%)	131 (33.9%)	31 (8.03%)
Reduced appetite or eat too much	4 (1.03%)	58 (15.02%)	138 (35.7%)	186 (48.18)
Feeling evil about yourself- or that you are a disappointment or have let yourself or family down	2 (0.518%)	36 (9.32%)	91 (23.57%)	257 (66.5%)
Trouble about on things, such as study the newspaper or viewing television	4 (1.03%)	15 (3.88%)	116 (30.05%)	251 (65.02%)
Touching or speaking so slowly that other People could have observed. Or the opposite-being so restless that you have been moving around a lot more than usual	6 (1.55%)	9 (2.33%)	46 (11.91%)	325 (84.19%)
Beliefs that you would be better off dead, or of hurting yourself in some way	2 (0.51%)	5 (1.29%)	11 (2.84%)	368 (95.3%)
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of the things at home, or get along with other people?	76 (19.6%)	164 (42.4%)	117 (30.31%)	29 (7.51%)

depression, and a score of 20–27 serous depression. To validate the content of the tools, two focus groups with specialists from hospitals and academics were held at various intervals. In addition, pilot testing was carried out at 10% of the sample size to evaluate the instruments' dependability following data collection. Cronbach's alpha for the PHQ-9 was 0.921, which is acceptable considering 0.68 is the threshold for acceptability.

To prevent study bias, the researchers self-administered the questionnaires and collected them back the same day. Following data collection, SPSS version 16 was used to clean, code, and input the data. The data's normal distribution was examined using histograms using normal curves and the skewness test. Calculations were made using descriptive statistics, which included percentages and frequencies. Mann-Whitney and Kruskal-Wallis non-

parametric tests were used to determine how distinct variables differed from one another.

Results

A total of 386 individuals were enrolled in this study out of which 180(46.63%) were males and 206 (53.36%) were females. Age wise distribution of the participants is shown in Figure 1. Marital status of the study population is given in Figure 2.out of the total participants 66 (17.0%) illiterate a 153(39.6%) were matric 129 (33.41%) were primary and 38 (9.8%) were intermediate passed. according to the status of job employed individuals were 148 (38.34%), unemployed were 117 (30.31%), housekeeper was 111(28.75%) and 8 (2.0%) were retired. The frequency of smokers in the current study was 88

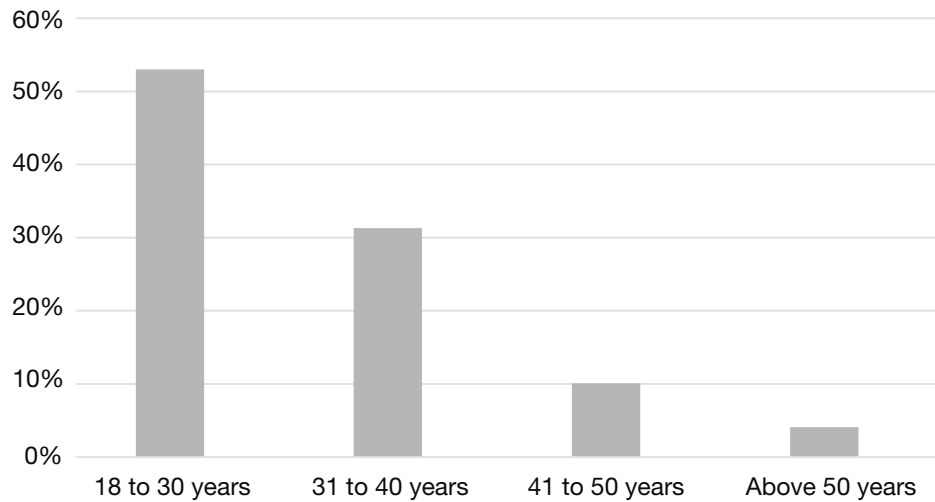


Figure 1. Age wise distribution of the study cases

(22.7%) and non-smoker were 298 (72.20%). Among study cases 331(85.75%) individuals had duration of diseases less than one year a 135(34.9%) had were in initial phase of treatment and 85 (22.0%) were under directly observed treatment as shown in Table 1. Based on the Patient Health Questionnaire-9 (PHQ-9), depression was observed in 215 (55.69%) patients while depression was not observed in 171 (44.31%) patients. Mild depression in our study was observed in 173 (44.82%) patients, moderate depression was observed in

38 (9.84%) patients while severe depression was observed in 6 (1.55%) patients. The results exhibited that individuals felt more than half of the days symptoms of depression as; little interest or pleasure in doing things 108 (27.97%) felt down, unhappy or hopeless 115 (29.79%), difficulties in falling asleep or sleeping excessively 137 (35.49%) felt tired or have little energy 137 (35.49%), had reduced appetite 58 (15.02%), felt evil about themselves 36 (9.32%), had difficulty in focusing on activities 15 (3.88%), acted fidgety 9 (2.33%)

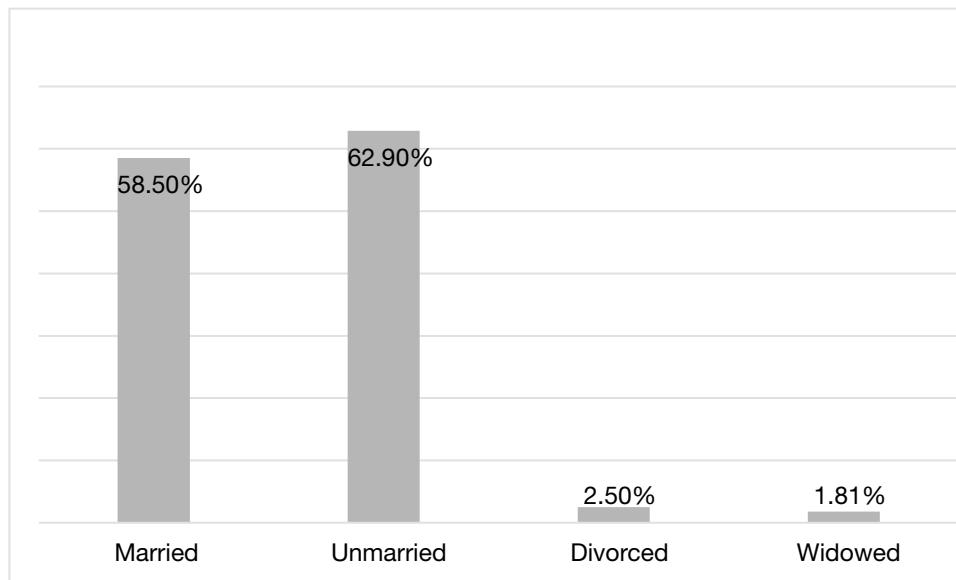


Figure 2. Marital status of the study population

and thought that they would be better off dead 5 (1.29%) more than half the days.

On the other hand, respondents felt more not at all the symptoms of depression as: small interest or pleasure in doing activities 108 (27.97%), felt down, depressed or hopeless 110 (28.49%), trouble falling asleep or sleeping too much 31 (8.03%), felt tired or have little energy 31 (8.03%), had poor appetite 186 (48.18), felt bad about themselves 257 (66.5%), had trouble concentrating on things 251 (65.02%), acted fidgety, 325 (84.19%) and thought that they would be better off dead 368 (95.3%) (Table 2). To determine the variances among different variables Kruskal-Wallis and Mann-Whitney ($p \geq 0.05$) were accomplished. Significant difference between, duration of treatment ($p=0.01$), phase of treatment ($p=0.03$) and type of treatment ($p=0.001$) were detected. Moderate depression was observed among participants at baseline and had duration of therapy less than a month. However, no significant difference ($p \geq 0.05$) among other demographic variables was detected.

Discussion

All over the world, tuberculosis continues to be a serious public health issue that increases mortality and morbidity. Patients with tuberculosis often experience physical, emotional, and social suffering as a result of the illness's infectious nature and prolonged prescription drugs, which can lead to poor clinical outcomes and depression. In our study, a total of 386 individuals were enrolled in this study out of which 180 (46.63%) were males and 206 (53.36%) were females. Out of the total participants 66 (17.0%) illiterate a 153 (39.6%) were matric 129 (33.41%) were primary and 38 (9.8%) were intermediate passed. according to the status of job employed individuals were 148 (38.34%), unemployed were 117 (30.31%), housekeeper was 111 (28.75%) and 8 (2.0%) were retired. The frequency of smokers in the current study was 88 (22.7%) and non-smoker was 298 (77.20%). Among study cases 331 (85.75%) individuals had duration of diseases less than one year a 135 (34.9%) had were in initial phase of treatment and 85 (22.0%) were under directly observed treatment. These findings are in line with the previous study done by Acha et al. who reported almost similar results.¹⁴

The study's findings demonstrated that the majority of the participants had little interest in or enjoyment from doing activities, felt hopeless, melancholy, or gloomy, experienced sleep issues, were exhausted, and had poor appetites for multiple days. Furthermore, the current study's findings showed that individuals receiving therapy during the baseline period had higher levels of depression. This may be because patients experience stress as soon as they hear their diagnosis, and since symptoms are more likely to go away in the first month of treatment, depression is more likely to take hold. Studies

carried out in the UK, Ethiopia, and South Africa revealed comparable outcomes, with TB patients reporting significant levels of psychological discomfort and depression during the initial stages of therapy.^{5,6,16} The current study's findings also showed that patients who were illiterate had higher levels of depression. These results are consistent with Indian research that found individuals that were comparatively aware about the disease and wealthy or had a high income per capita to have significant levels of depression.⁴ Further, the current study's findings showed that TB patients receiving therapy under close observation had comparatively higher levels of depression. This might be the result of DOT patients' regular visits to medical institutions, which could make them more financially and psychologically burdened. According to research done in the USA, DOT may make TB patients feel more stigmatized and burdened financially.¹⁷ Based on the Patient Health Questionnaire-9 (PHQ-9), depression was observed in 215 (55.69%) patients while depression was not observed in 171 (44.31%) patients. Mild depression in our study was observed in 173 (44.82%) patients, moderate depression was observed in 38 (9.84%) patients while severe depression was observed in 6 (1.55%) patients. These findings are in line with the previous study done by Zang K et al, 2019 who reported depression in 55.77% patients with mild depression in 41.5% patients, moderate depression in 9.4% patients and severe depression 4.7% patients.¹⁸

The study's findings are restricted to two Pakistani cities; hence they shouldn't be extrapolated to other regions of the country. Time and budgetary limitations were the study's major problems. Another challenge encountered during data collecting was the respondents' reluctance to express their opinions.

Conclusion

According to the current study, the majority of TB patients had depression of some kind. During the therapy's baseline period, this depression appeared more noticeable. Patients receiving directly observed therapy seemed to be sadder because of the increasing cost load and stigma. For TB patients, counselling and psychotherapy can be quite effective in reducing depression and enhancing drug adherence. To enhance the standard of life and increase adherence to TB treatment, all parties involved must collaborate to pinpoint and address the causes of depression in TB patients.

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