Section: Psychiatry

Research

# PSYCHIATRIC MORBIDITY IN PULMONARY TUBERCULOSIS

**M Srikanth Reddy[1], P Krishna Chaitanya[2], Sathish Dande[3]**

[1]Associate Professor of Psychiatry, Government Medical College, Siddipet, Telangana, India.
[2]Assistant Professor of Psychiatry, Government Medical College, Siddipet, Telangana, India.
[3]Consultant Psychiatrist, District Mental Health Programme, Siricilla, Telangana, India.

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Corresponding Author:
**Dr. Sathish Dande,**
Email: drsathishdande@gmail.com
ORCID: 0000-0001-9334-7211

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## Abstract

**Background:** As the overall rate of TB stays high in some groups, more and more people are learning about psychiatric comorbidity, especially depression, and its role in how the disease progresses. The paper tries to look at how psychiatric comorbidity affects the natural history of tuberculosis as a whole. To find out what causes tuberculosis patients to stop taking their medications, with a focus on psychopathology as a major barrier to treatment adherence, **Materials and Methods:** we did a systematic review of the literature on epidemiological data and past medical reviews from a historical point of view, and then we thought about the relationship between psychiatric disorders and tuberculosis from a theoretical point of view. **Result:** Studies that showed high rates of psychiatric comorbidity, especially depression, as well as specific psychological reactions and disease perceptions, as well as reviews that said psychiatric complications were side effects of anti-TB drugs. **Conclusion:** Data about the reasons why TB patients don't take their medications as prescribed showed that better management of comorbid conditions, especially depression, could improve adherence rates and help control tuberculosis, but more research is needed to figure out the best way to deal with these problems among these patients.

## INTRODUCTION

Tuberculosis (TB) is a chronic, infectious, multisystemic disease caused by the mycobacterium tuberculosis. It is one of the leading causes of death around the world. The World Health Organization (WHO) says that almost a third of the world's population, or 2 billion people, have latent TB. About 8 million people get this disease every year, and about 3 million die from it. More than 95% of those who die from it are from developing countries.[1,2,3] In 2005, Africa had the highest rates per capita (28% of all TB cases), and Bangladesh, China, India, Indonesia, Pakistan, and the Philippines had the most new cases (50%). Since 1985, there has been a rise in TB, mostly among homeless people, people with HIV, people who have used drugs or alcohol in the past, and people who moved from a country where TB is common.[4,5] Many people who get psychiatric services have one or more of these risk factors, so TB may be more common in this group than in others. On the other hand, psychiatric illness can happen after TB infection, and mood disorders seem to be more common in TB patients than in people with other medical conditions.[6] The World Health Organization's (WHO) goal of controlling tuberculosis has not been reached. This failure has been attributed to a number of things, such as not putting enough emphasis on the human side of tuberculosis control, which includes not taking medications as prescribed, which leads to multidrug resistance and failure of treatment. The goal of this study is to find out what causes tuberculosis patients to not take their medicine, with a focus on psychopathology as a major reason they don't take their medicine.[7] Literature shows that psychiatric comorbidities before and after the onset of tuberculosis, psychological issues like stigma, isolation, sense of social support, helplessness, and other psychological reactions to the disclosure of the diagnosis, as well as side effects of medications, all make it harder for people to stick with their treatment.[8]

On the other hand, studies show that people with drug-resistant tuberculosis have a high rate of psychiatric comorbidity, and the rate of depression is strongly linked to the severity and length of the disease. There are many different ways that mental disorders and tuberculosis can cause each other. Severe mental disorders are linked to a high risk of getting tuberculosis and passing it on, as well as a lower chance of sticking with anti-TB treatment. On the other hand, having tuberculosis raises the risk of having a mental illness at the same time. When these facts are put together with the fact that the


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number of people with tuberculosis is higher in certain groups, especially among people who are more likely to be psychologically distressed than the general population, like homeless people, immigrants, and HIV patients, a full picture emerges, and researchers come to the conclusion that comorbidity must first be found and treated in order to increase the number of people who are cured of psychiatric tuberculosis.[9,10]

**Aims and Objectives**

1. To study the presence of Psychiatric co morbidity in Pulmonary Tuberculosis patients attending Pulmonologist Outpatient Department at KIMS Hospital Narketpally.
2. To assess depression and anxiety in these patients.
3. To study the relationship between Psychiatric morbidity and demographic variables.
4. To look for any relationship between Psychiatric morbidity and duration of the illness, incapacitation and Sputum positive status.

## MATERIALS AND METHODS

Patients with established diagnosis of Pulmonary Tuberculosis attending Pulmonology Outpatient department at KIMS Hospital during a specific period between June 2017 to June 2018, who are cooperative and willing to participate in the study.
Number of cases- 100.
Type of study- Observational.

**Method**

After taking informed consent, patients are clinically interviewed and demographic data is collected with the help of a semi-structured intake proforma. Objective data is obtained from a close relative/ attendant to confirm the information details. Patients are subjected to Mini International Neuropsychiatric Interview [MINI] screening, Hamilton Depression Rating Scale [HDRS], Hamilton Anxiety Rating Scale [HARS]. Mental status examination is performed and the diagnosis is made by a Qualified Psychiatrist among the faculty. Patients are requested to come for a follow up after 3 months. Obtained results are tabulated and subjected to relevant analysis to draw any meaningful conclusions.[11]

**Inclusion Criteria**

- Age: 15-55 years.
- Both sexes are included.
- Sample includes patients of Pulmonary Koch's of both Category I and Category II as per Revised National Tuberculosis Control Program (RNTCP).

**RNTCP Categories**

**Category 1**

- New sputum smears positive.
- Sputum smear negative [seriously ill or not seriously ill].
- Extra pulmonary cases [ seriously ill or not seriously ill]

**Category 2**

- Sputum smear positive-relapse cases
- Sputum smear positive-failure cases
- Sputum smear positive-defaulters on treatment

**Exclusion Criteria**

- Concomitant chronic ailments like Diabetes mellitus, Hypertension, Malignancy, HIV and others.
- Patients who are uncooperative and unwilling for the study.

**Tools for Examination**

- A semi structured proforma for the interview and record of information.
- Socio economic status scale by O.P. Agarwal, 2005
- Mental status examination.
- Mini International Neuropsychiatric Interview.(MINI)
- Hamilton Depressive Rating Scale (HDRS)
- Hamilton Anxiety Rating Scale (HARS)

**Socio-Economic Scale**

This is a new scale developed by O.P. Aggarwal, S.K. Bhasin, A.K. Sharma, P. Chhabra, K. Aggarwal, O.P. Rajoura and published in the Indian Journal of Community Medicine Vol.30, no.4, October-December, 2005. This scale was developed for measuring Socio-Economic status of a family for all sections of the society. The scale consists of 22 items. Suitable weightage was given to each item. The maximum aggregate score is 100. Based on the final score, the socio-economic status of the family is divided into six categories.[12,13]

**Table 1: SES Categories**

| Category | Social status | Scale |
|---|---|---|
| I | Upper High | ≥ 76 |
| II | High | 61-75 |
| III | Upper Middle | 46-60 |
| IV | Lower Middle | 31-45 |
| V | Poor | 16-30 |
| Vi | Very poor or below poverty line | ≤ 15 |

MINI International Neuropsychiatric Interview [MINI]: This scale was developed by Sheehan et al in 1998. It was published in Journal of Clinical Psychiatry 1998, 59, (suppl 20), 22-33. It is a simple screening interview to diagnose psychiatric morbidity. It consists of 22 questions with yes or no responses. There are 3 sections or clusters

**Table 2: Sections of MINI International Neuropsychiatric Interview**

| | |
|---|---|
| Section A | Affective disorders |
| Section B | Neurotic and stress related disorders |
| Section C | Psychotic disorders |


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Hamilton Depressive Rating Scale (HDRS): Hamilton depressive rating scale is a structured questionnaire used to assess the severity of depression by the clinicians. Max Hamilton originally published this scale in 1960 and reviewed and evaluated in 1966, 1967, 1969 and 1980. Presently It consists of 24 questions. Each question has 3-5 possible response scores quantifying the symptoms observed in depression such as low mood, insomnia, agitation, anxiety and weight loss.

Hamilton Anxiety Rating Scale (HARS): This is one of the rating scales primarily designed to assess anxiety. It is a 14 item questionnaire covering anxiety, cognitive and somatic features. Scoring points range from 0–4.

**Table 3: Hamilton depressive rating scale**

| | | |
|---|---|---|
| Scoring | 0-7 | Normal |
| | 8-13 | Mild depression |
| | 14-18 | Moderate depression |
| | 19-22 | Severe depression |
| | ≥ 23 | Very severe depression |

**Table 4: Hamilton Anxiety Rating Scale (HARS)**

| | | |
|---|---|---|
| Scoring | <17 | Mild |
| | 18-24 | Mild to moderate |
| | 25-30 | Moderate to severe |
| | >30 | Very severe |

## RESULTS

**Table 5: N=100 Age Distribution**

| Sr. No | Age group in years | Number of subjects males (%) | Females (%) |
|---|---|---|---|
| 1 | 15 – 25 | 9 (10.8) | (29.4) |
| 2 | 26 – 35 | 23 (27.7) | 5 (29.4) |
| 3 | 36- 45 | 29 (34.9) | 3 (17.6) |
| 4 | 46-55 | 22 (26.5) | 4 (23.5) |

Majority of the subjects are in between ages 35-45

**Table 6: N=100 Sex Distribution**

| Sr. No | SEX | NUMBER OF SUBJECTS [n] | Total |
|---|---|---|---|
| 1 | Male | 83 | 83 (83%) |
| 2 | Female | 17 | 17 (17%) |

Majority of the subjects are males.

**Psychiatric morbidity:**

**Table 7: N=100 MINI [Section-A] Affective Disorders**

| Sr. No | Scores | Number of cases Males (%) | Females (%) |
|---|---|---|---|
| 1 | < 2 [mild] | 10 (10%) | 7 (7%) |
| 2 | 2–4 [moderate] | 67 (67%) | 9 (9%) |
| 3 | 4–6 [severe] | 6 (6%) | 1 (1%) |

76% of the subjects are having MINI- A scores between 2-4 [moderate]

**Table 8: N=100 MINI [Section- B] Neurotic and Stress Related Disorders**

| Sr. No | Scores | Number of cases Males (%) | Females (%) |
|---|---|---|---|
| 1 | 0-2 [mild] | 42 (42%) | 9 (9%) |
| 2 | 3–5 [moderate] | 36 (36%) | 6 (6%) |
| 3 | 6-9 [severe] | 5 (5%) | 2 (2%) |

Majority of the subjects are having MINI B from 0-2

**Table 9: N=100 MINI [Section–C] Psychotic Disorders**

| Sr .No | Scores | Number of cases Males (%) | Females (%) |
|---|---|---|---|
| 1 | 0 [nil] | 83 (83%) | 17 (17%) |
| 2 | 1 to 4 [moderate] | 0 | 0 |
| 3 | 5 to 7 [severe] | 0 | 0 |

None of the subjects are having significant MINI-C scores.

**Table 10: N=100 Hamilton Depression Rating Scale**

| Sr. No | HDRS Scores | Number of subjects Males (%) | Females (%) |
|---|---|---|---|
| 1 | 0–7 [normal] | 12 (12%) | 2 (2%) |
| 2 | 8–13 [ mild] | 17 (17%) | 7 (7%) |
| 3 | 14-18 [moderate] | 30 (30%) | 5 (5%) |
| 4 | 19-22 [ severe] | 15 (15%) | 2 (2%) |
| 5 | >23 [very severe] | 9 (9%) | 1 (1%) |


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Majority of the subjects are having HDRS scores > 14 [62 %]

**Table 11: N=100 Hamilton Anxiety Rating Scale**

| Sr. No | HARS Scores | Number of cases Males (%) | Females (%) |
|---|---|---|---|
| 1 | <17 [mild] | 53 (53%) | 14 (14%) |
| 2 | 18–24 [moderate] | 25 (25%) | 1 (1%) |
| 3 | 25–30 [ severe ] | 5 (5%) | 2 (2%) |

33 percent of the subjects are having HARS Scores >17

**Tuberculosis history:**

**Table 12: N=100 Duration of Cough**

| Sr. No | Tuberculosis history | Number of subjects Males (%) | Females (%) |
|---|---|---|---|
| 1 | Less than 1 month | 34 (34%) | 1 (1%) |
| 2 | 1 month to 2 months | 14 (14%) | 9 (9%) |
| 3 | 2 months to 6 months | 24 (24%) | 4 (4%) |
| 4 | More than 6 months | 11 (11%) | 3 (3%) |

Majority of the subjects are having cough for less than 1 month.

**Table 13: N=100 Duration of Fever**

| Sr. No | Duration of fever | Number of subjects Males (%) | Females (%) |
|---|---|---|---|
| 1 | 1-2 months | - | 75.00 |
| 2 | 2 to 6 months | 19 | 19.00 |
| 3 | > 6 months | 06 | 6.00 |

Majority of the subjects are having fever from past 1 to 2 months.

**Table 14: N=100 Weight Loss**

| Sr. No | Weight loss | Number of subjects Males (%) | Females (%) |
|---|---|---|---|
| 1 | <5 kg | 40 (40%) | 9 (9%) |
| 2 | >5 Kg | 46 (46%) | 5 (5%) |

Majority of the subjects lost weight more than 5 kg

**Table 15: N=100 Investigations**

| Type of test | Number of subjects Males (%) | Females [%] |
|---|---|---|
| Sputum for AFB positive | 62 (62%) | 16 (16%) |
| Chest x-ray positive | 12 (12%) | 1 (1%) |
| Both positive | 9 (9%) | 1 (1%) |

75 % of the subjects are sputum positive and 10 % of the subjects are having significant findings on chest x ray and 65% are having both positive.

People have sometimes thought that the high rate of tuberculosis in people with mental illness meant that tuberculosis may cause mental illness or that people with mental illness are more likely to get tuberculosis.[14,15] Physical and mental illness seem to affect and affect each other, and many studies have looked at the nature and frequency of severe mental disorders that are also physical illnesses. Most of the research in this area has been done on the physical health of people with mental illness, but there have also been studies on the mental health of people with physical illness. Medical illness and chronic disease put a lot of stress on patients. They have to deal with pain, suffering, a lower quality of life, dying too soon, high costs, and emotional trauma in their families. There are many things that can cause mental health problems. Major causes of mental disorders, especially mood and anxiety disorders, are having a medical illness, having a bad reputation, and being treated badly. Most of the time, the more serious a somatic disease is, the more likely it is to be accompanied by mood and/or anxiety symptoms of varying severity.[16] These are problems that happen after the somatic disease has been diagnosed. If these mental health problems aren't treated, the patient is more likely to get sick, which could be fatal. 8.9% to 12.9% of people with chronic diseases will have a mood disorder at some point in their lives, and this number goes up to 5.8% to 9.4% in the first six months. Research from all over the world shows that 20% of people with somatic diseases also have major depression.[17]

For people with pulmonary disease in particular, chronic psychogenic and somatic pain, frequent hospital stays, and dependence on medical and nursing staff can make it hard to do everyday things. This may help explain why people with chronic pulmonary disease are more likely to have depression and anxiety than people with other chronic diseases. Psychiatric disorders and medical illnesses often happen together. This could be because psychiatric disorders are reactions to


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illnesses and treatments, or because they are a direct physiological result of the illness or complications of treatments (INH-induced psychosis). Also, psychiatric disorders can happen at the same time as medical illnesses without being the cause of them, but they can make it harder to diagnose and treat them and can change how they progress.[18]

## DISCUSSION

People not following their treatments has been called the biggest problem in getting rid of tuberculosis. Studies show that up to half of all TB patients don't finish their treatment, which can lead to longer periods of infection, drug resistance, relapses, and even death.[19] WHO defines "treatment default" (also called "nonadherence") as treatment that has been stopped for two months in a row. It is well known that 30% of patients who are self-treating stop the therapy in the first two or three months. Since 1991, different methods have been used to make sure that people take their medications as prescribed. These methods include Directly Observed Therapy Short Course (DOTS), medication monitors, and legal action (such as involuntary detention for persistently nonadherent patients as a last resort). These methods have led to cure rates of more than 80% and helped people with tuberculosis regain their abilities to live during regular checkups. At the same time, it helps find vulnerabilities and needs that can be addressed during the process so that they can be overcome. This shows the need for actions within a multidisciplinary team, according to the biopsychosocial model of health and illness, where adherence is thought of as a process, not of forcing, but of exchanging and meeting, one that uses an understanding of the context of a patient's life as a trigger to meet social and health needs. Psychopathology has been found to be one reason why people with chest conditions don't stick with their treatments.[20] Psychiatric patients are at risk of getting TB because they are often homeless or live in unstable housing and don't have enough food or security. They also often don't follow their treatment because of the same problems.[21] People who have problems with drugs, HIV, mental illness, intellectual disability, and are often homeless or don't have enough housing are at a much higher risk of getting latent TB infection and developing active TB disease. This may be because of a number of problems that make people more likely to get tuberculosis, such as not having enough food, shelter, or money; living in a substandard or overcrowded shelter; being forced to move from a shelter; having a health problem already (like hepatitis C or a weak immune system); structural and attitude barriers to good health care; and problems in the corrections system (like overcrowded prisons) (e.g., lack of identification to access health care during first few months). These problems also make it more likely that people who live in these situations won't stick with their TB treatment. In an earlier study of people with tuberculosis, it was found that 30.2% of them had mental disorders that could be diagnosed, but the clinic staff didn't notice any of them. This lack of knowledge can lead to negative, pessimistic, or "blame the victim" messages to TB patients, which can make them even more suspicious and make treatment harder.[22,23] People often say that psychotherapeutic care for TB patients needs to be based on a nonjudgmental, no-blame attitude [275] and more power sharing with TB patients. There are also specific ways to help, such as teaching people how to spot mental illness, giving them training in psychotherapeutic techniques, and helping them improve their communication skills. TB is a chronic illness, and research on chronic illnesses has shown that poor adherence is often caused by psychological factors, especially depression, and how the patient thinks about their illness. To increase the rate of adherence, health care workers who take care of these patients should be more suspicious of possible psychopathology and use the consultation/liaison psychiatric services that are available. Treating psychological problems in people with tuberculosis may make it much more likely that they will stick with their treatment.[24]

Studies have shown that DOTS programmes are more likely to be successful at controlling TB if they include interventions to improve the diagnosis of alcohol and drug abuse and treat it at the same time as TB. Also, DOTS-Plus Guidelines say that for MDR-TB patients, all healthcare workers treating drug-resistant TB should work closely with psychiatric services because these patients have a high baseline rate of depression and anxiety, which is often related to their TB. All studies show that psychopathology, especially depression, is a major factor in whether or not tuberculosis patients stick with their treatment.[25] Because depression is so common among tuberculosis patients, it needs to be managed well to improve treatment adherence and the overall quality of life of these patients.[26] Based on the results of these studies, healthcare programmes should take a more holistic approach and include mental health services in order to provide pretreatment psychiatric assessment and necessary intervention and, in the long run, lower the number of people who drop out of programmes to control tuberculosis. Awareness of adherence is a complex behavioural issue that is affected by many things. Right now, it is hard to find effective solutions because we don't know enough about the things that make it hard to stick with treatment and the things that help people stick with it. There isn't enough information about how much each of these factors correlates with psychopathology and leads to nonadherence. Prospective cohort studies that look at the cause-and-effect relationship between risk factors and psychopathology could help answer these questions. Also, studies that focus on the


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human dimension and the subjective experiences of health care consumers may be able to give information about how patients feel about staying on their TB treatment. This information could be used to help promote treatment and make interventions that are more patient-centered.[27] Lastly, randomized control trials need to be done to look at the effects of pharmacological and psychological interventions that are changed to deal not only with depression but also with issues like treatment adherence and how people see their illness.[28]

## CONCLUSION

Tuberculosis is still the most common infectious disease that kills people around the world. Studies show that people with tuberculosis have high rates of depression and anxiety. This is likely due to social stigma, lack of social support, and the physiological effects of a long-term illness. The paper combines information about how these psychosocial factors make it hard to stick to drug regimens and stresses how important it is to pay attention to mental health needs to make sure that treatment works. Depression was linked to how long someone was sick and how bad their illness was.

## REFERENCES


1. Pachi A, Bratis D, Moussas G, Tselebis A. Psychiatric morbidity and other factors affecting treatment adherence in pulmonary tuberculosis patients. Tuberc Res Treat. 2013;2013:489865. doi: 10.1155/2013/489865.
2. Kumar K, Kumar A, Chandra P, Kansal HM. A study of prevalence of depression and anxiety in patients suffering from tuberculosis. J Family Med Prim Care. 2016;5(1):150-3. doi: 10.4103/2249-4863.184641.
3. Singh L, Pardal PK, Prakash J. Psychiatric morbidity in patients of pulmonary tuberculosis-an observational study. Ind Psychiatry J. 2015;24(2):168-71. doi: 10.4103/0972-6748.181722.
4. Mathai PJ, Ravindran P, Joshi P, Sundaram P. Psychiatric morbidity in pulmonary tuberculosis-a clinical study. Indian J Psychiatry. 1981;23(1):66-8.
5. Chandrashekar TR, Pinto DA, Katte R, Hungund BR, Joshi AV. A Study of Psychiatric Morbidity Among Patients Suffering from Pulmonary Tuberculosis. Medico-Legal Update. 2012;12(2):26-29.
6. Dubo S. Psychiatric study of children with pulmonary tuberculosis. Am J Orthopsychiatry. 1950;20(3):520.
7. Pedersen C, Kolmos HJ, Nielsen JO. Tuberculosis and the HIV pandemic. Risk of nosocomial tuberculosis infection. Ugeskr Laeger. 1997;159(9):1233-8.
8. Kamholz SL. Resurgence of tuberculosis: the perspective a dozen years later. J Assoc Acad Minor Phys. 1996;7(3):83-6.
9. Sikjær MG, Løkke A, Hilberg O. The influence of psychiatric disorders on the course of lung cancer, chronic obstructive pulmonary disease and tuberculosis. Respir Med. 2018;135:35-41. doi: 10.1016/j.rmed.2017.12.012.
10. Kuha S, Moilanen P, Kampman R. The effect of social class on psychiatric psychological evaluations in patients with pulmonary tuberculosis. Acta Psychiatr Scand. 1975;51(4):249-56. doi: 10.1111/j.1600-0447.1975.tb11091.x.
11. Aydin IO, Uluşahin A. Depression, anxiety comorbidity, and disability in tuberculosis and chronic obstructive pulmonary disease patients: applicability of GHQ-12. Gen Hosp Psychiatry. 2001;23(2):77-83. doi: 10.1016/s0163-8343(01)00116-5.
12. Silk SA. The problem of pulmonary tuberculosis in a psychiatric hospital. Am J Psychiatry. 1919;75(3):393-406.
13. Zeenreich A, Gochstein B, Grinshpoon A, Miron M, Rosenman J, Ben-Dov I. Recurrent tuberculosis in a psychiatric hospital, recurrent outbreaks during 1987-1996. Harefuah. 1998;134(3):168-72.
14. Tasaka M, Koeda E, Takahashi C, Ota M. A tuberculosis outbreak in a psychiatric hospital: Kanagawa, Japan, 2012. Epidemiol Infect. 2020;148:e7. doi: 10.1017/S0950268819002206.
15. Aghanwa HS, Erhabor GE. Demographic/socioeconomic factors in mental disorders associated with tuberculosis in southwest Nigeria. J Psychosom Res. 1998;45(4):353-60. doi: 10.1016/s0022-3999(98)00006-3.
16. Moran MG. Psychiatric aspects of tuberculosis. Adv Psychosom Med. 1985;14:109-18. doi: 10.1159/000411840.
17. Wang XB, Li XL, Zhang Q, Zhang J, Chen HY, Xu WY, et al. A Survey of Anxiety and Depressive Symptoms in Pulmonary Tuberculosis Patients With and Without Tracheobronchial Tuberculosis. Front Psychiatry. 2018;9:308. doi: 10.3389/fpsyt.2018.00308.
18. Doherty AM, Kelly J, McDonald C, O'Dywer AM, Keane J, Cooney J. A review of the interplay between tuberculosis and mental health. Gen Hosp Psychiatry. 2013;35(4):398-406. doi: 10.1016/j.genhosppsych.2013.03.018.
19. CLOSE HP. The use of electroshock therapy in treating psychiatric patients with associated pulmonary tuberculosis. Am J Psychiatry. 1949;106(5):352-7. doi: 10.1176/ajp.106.5.352.
20. Behera C, Krishna K, Singh HR. Antitubercular drug-induced violent suicide of a hospitalised patient. BMJ Case Rep. 2014;2014:bcr2013201469. doi: 10.1136/bcr-2013-201469.
21. Vega P, Sweetland A, Acha J, Castillo H, Guerra D, Smith Fawzi MC, et al. Psychiatric issues in the management of patients with multidrug-resistant tuberculosis. Int J Tuberc Lung Dis. 2004;8(6):749-59.
22. Aghanwa HS, Erhabor GE. Specific psychiatric morbidity among patients with chronic obstructive pulmonary disease in a Nigerian general hospital. J Psychosom Res. 2001;50(4):179-83. doi: 10.1016/s0022-3999(00)00206-3.
23. Hashemi SH, Mamani M, Omidi SJ, Ghaleiha A, Nadi E. Screening for tuberculosis among patients with chronic psychiatric disorders in Hamedan. Arch Clin Infect Dis. 2009;4(1):31-4.
24. Lewis WC, Calden G, Thurston JR, Gilson WE. Psychiatric and neurological reactions to cycloserine in the treatment of tuberculosis. Dis Chest. 1957;32(2):172-82. doi: 10.1378/chest.32.2.172.
25. Pachi A, Bratis D, Moussas G, Tselebis A. Psychiatric morbidity and other factors affecting treatment adherence in pulmonary tuberculosis patients. Tuberc Res Treat. 2013;2013:489865. doi: 10.1155/2013/489865.
26. Friedman LN, Sullivan GM, Bevilaqua RP, Loscos R. Tuberculosis screening in alcoholics and drug addicts. Am Rev Respir Dis. 1987;136(5):1188-92. doi: 10.1164/ajrccm/136.5.1188.
27. McQuistion HL, Colson P, Yankowitz R, Susser E. Tuberculosis infection among people with severe mental illness. Psychiatr Serv. 1997;48(6):833-5. doi: 10.1176/ps.48.6.833.
28. Fisher RA, Teller E. Clinical experience with ataractic therapy in tuberculous psychiatric patients. Dis Chest. 1959;35(2):134-9. doi: 10.1378/chest.35.2.134.




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