Workplace interventions to overcome stigma and depression in patients with Multiple drug-resistant tuberculosis (MDR TB)

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ABSTRACT

**Introduction**: MDR-TB is an infectious disease that can cause death and stigma for those infected. MDR-TB patients with depression are at risk for LTFU, which will worsen their condition and strengthen the stigma they receive.

**Case report**: A 52-year-old female psychiatric interview and assessment using the Beck Depression Inventory (BDI) found that BDI score of 4 (no depression), and the patient adhered to TB treatment. She was found to be laid off, and an assessment using the BDI to detect depression in the patient found potential stigma in the patient, such as being laid off from work, prohibited from teaching face-to-face, and shunned by colleagues. Interventions given were prescribing Fluoxetine 20 mg per day and Clonazepam 10 mg per day, a brief intervention using the FRAMES technique, psychoeducation about disease and drug effects and the duration of treatment, and an office visit. A worksite intervention was performed by the patient’s husband. Antituberculosis drugs were monitored by both a pulmonologist and a psychiatrist. Her work-related problems were resolved through interventions at the school with psychoeducation about drug-resistant tuberculosis, the transmission method, the duration of treatment, and the side effects of the treatment. The results of the last sputum examination after one month of treatment showed drug resistance, and the patient was advised to undergo 18 months of treatment. The patient could finally work offline with fewer responsibilities after getting negative laboratory test results twice in a row.

**Conclusion**: Work-related psychosocial interventions are required to address rejection at work, which results in depression and nonadherence to treatment. Liaison services with social interventions at work in drug-resistant tuberculosis-infected patients are necessary to improve their quality of life and maintain their treatment adherence.

**Keywords**: Stigma, Depression, MDR-TB, FRAMES.


INTRODUCTION

TB is a social disease that causes great emotional distress, family alienation, and social isolation. It is also recognized as a stigmatizing disease. In a study on 350 MDR-TB patients who have been declared successful in treatment but lost to follow-up (LTFU) from MDR-TB treatment and received old regimens with injectable drugs from 2017 to March 2021 in Surabaya and surrounding areas of East Java, Indonesia, there were 165 LTFU patients with depression at the basis of unacceptable or low self-esteem perceptions. MDR-TB requires long-term management and has neuropsychiatric side effects that influence the adherence to and the success of treatment. Various biological, social, and psychological factors influence the success of therapy and medication adherence, as well as the chronicity, the anti-tuberculosis drug resistance condition, and the spread of TB.

A 52-year-old female patient, a private elementary school teacher for 28 years, consulted with a psychiatrist about poor baseline drug MDR-TB treatment. The patient had a history of TB in 2016 and 2018 at another hospital but experienced a recurrence with symptoms of cough and hemoptysis. No one in the patient’s family had contracted the TB disease.

The patient felt tired easily, unable to or needed more effort from others in doing things for the last two months. The patient seemed pessimistic about her future and considered herself a failure because her disease recurred and she had to undergo treatment for 20 months. Still, she did not receive any special compensation from the foundation where she worked, whose principal asked her to resign so she would not infect other teachers. The patient felt that she was facing an unfair situation and a bleak future. The patient had a wish to die, but no attempt

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Table 1. Interviews with the FRAMES technique were conducted to explore perceptions and stigma related to Drug-Resistant Tuberculosis and provide reinsurance and psychoeducation.

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<td>In your opinion, why did you get infected with this disease?</td>
<td>I think, because I eat unhealthy food. I have undergone TB treatment twice but still not fully cured. None of my family has been infected with such a disease; only I. Sometimes I think I just want to die and wonder why I had to be infected with this disease and not get better. I sometimes think life is unfair; I was even asked to resign from work (started crying). Is it because I often get angry at my husband that I get sick?</td>
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<tr>
<td>I understand how hard it is for you to be in this situation (empathy). Do you want to know what Drug-Resistant Tuberculosis is?</td>
<td>Yes. Drug-Resistant Tuberculosis is a disease that attacks the lungs and organs outside the lungs caused by bacteria that can be transmitted through coughing or talking to infected individuals within less than two meters and without face and nose protection (feedback). You are starting to develop drug-resistance TB. You have a risk factor, namely diabetes, which makes it easier for TB germs to attach to your lung cells. You need to undergo routine and lengthy treatment that is different from the previous treatment because the you develops drug resistance. Your current treatment also takes time and requires repeated sputum examinations to ensure the success of the treatment. TB drugs have side effects, including dizziness, nausea, and weakness (menu). You have to take medicine regularly and maintain a nutritious diet to increase your endurance (responsibility).</td>
</tr>
<tr>
<td>Thanks for the explanation.</td>
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*Note: Doctor (D) and Patient (P)*

had been made to do so. The patient's appetite had decreased since a year ago, but she experienced no sleep disturbance, although she sometimes woke up easily due to coughing at night. The patient did not disclose his condition to his fellow teachers or the school, even though she had received treatment in 2016 and 2018. The patient asked her husband to tell the school that she had been diagnosed with TB for the first time. The patient was afraid to disclose her condition, fearing being shunned by her fellow teachers at school because the patient thought that people assumed that TB is highly contagious. In addition, the patient was worried that the school would not allow her to teach again because she assumed this disease was highly contagious and could infect her fellow teachers and students. For the last two weeks, the patient has experienced an uneasy feeling because she did not attend the morning prayers at the school. The patient thought that the disease was transmitted through food and considered this a divine punishment because she was being too talkative and often angry at her husband. During the interview regarding her work, the patient cried.

From her social life, it is known that she likes to cook, even though she has never done it again since 2016. She loves her family very much, and she also likes to cook, but she has never done it again in the last two months because her body is too weak to do so. Family is the most important thing in the patient's life, and she fulfilled her family's needs with her salary as a teacher. The patient has two dependent children, and her husband, who was the liaison between her and the foundation where she worked, has retired and has no income. The patient is a disciplined, conscientious, and clean-freak person. The patient also has a history of type 2 diabetes mellitus and was planned for insulin therapy. According to a psychiatric examination, for the last two months, the patient had been tired easily when doing daily activities and needed help doing so. She felt pessimistic and thought she had a bleak future because her long treatment had hampered her work at school and made her ask to resign. She also had a decreased appetite and wanted to die.

Based on a physical examination, the patient weighed 51 kg, was 165 cm tall, had a body mass index of 18.7, and looked weak and anemic. A chest X-ray indicated right and left suprahilar fibro-infiltrates. A dexamethasone suppression test with a Molecular Rapid Test showed rifampicin resistance. In addition, the sensitivity test found isoniazid and pyrazinamide resistance, and a line probe assay examination, a sputum microscopic examination and a culture showed positive results. The patient's vital signs were within normal limits. The ophthalmologic and cardiologic exams showed values within the normal range.

On the psychiatric/psychological examination, She looked depressed and anxious. She is preoccupied with her physical complaints, the work problem anticipating losing her job, pessimistic thoughts, desperation, and suicidal ideation. The patient was in the bargaining and depression phases of Kessler-Ross. BDI score = 32 (severe depression)

The patient was diagnosed with adjustment disorder with depression reaction. This patient was administered 20 mg of fluoxetine in the morning and 10 mg of clobazam at night. The psychiatric intervention was...
performed by establishing rapport with patients, showing empathy, ventilating all complaints, suggesting the importance of TB treatment to make her follow the doctor’s directions, as well as providing reassurance by giving her hope and convincing her that treatment by a pulmonary specialist has a high success rate. Psychoeducation was carried out regarding MDR-TB (causes, symptoms, spread, treatment, and side effects of treatment). When receiving information from the TB medication supervisor (Pengawas Minum Obat, or PMO), her husband did not forward the information because he was afraid the patient would be disappointed because she thought that taking a prolonged treatment would interfere with her work performance and risk losing her job. The patient and her family consider her job a crucial source of income to provide for their daily needs, which can support the patient’s recovery. Office visit by the patient’s husband to educate the colleagues and supervisor about her illness.

Communication was carried out with a pulmonary specialist regarding the patient’s psychosocial stressors due to the potential of losing her job and the stigma she received due to hiding the status of the disease: feelings of fear of being shunned by other people, feelings of guilt for having MDR-TB, stigma from the community because of the school’s fear of transmission, her condition that requires psychopharmaceuticals and assistance for neuropsychiatric side effects of MDR-TB, and the effects of interactions with psychopharmaceuticals. This treatment was discussed with a pulmonary specialist regarding the interaction between psychopharmaceuticals and MDR-TB, which aggravates and causes depression.

The patient’s treatment began with a short regimen of therapy (Clofazimin 100 mg, Pyrazinamide 1500mg, Ethambutol 1200 mg, Levofloxacin 1000mg, Isoniazid 600mg, and Ethionamid 750mg), and a month later, the patient was hospitalized due to drug side effects. After two months, due to clinical considerations of the patient and drug side effects (Ethionamid with gastrointestinal side effects), the short regimen therapy was changed to individual therapy (Bedaquiline 400 mg, Pyrazinamide 1500mg, Etambutol 1200 mg, and Levofloxacin 1000mg). After four months, the results of a microscopic examination and sputum culture showed negative conversion. The treatment regimen was changed to five medicines. The patient’s clinical condition was generally good; she experienced minimal drug side effects, which could be overcome by setting the right time for taking the drug. The patient’s adherence was very good because she underwent routine treatment and examinations. Nausea has been treated with lansoprazole and anemia with vitamin B complex.

BDI score of 4 (no depression), and the patient adhered to TB treatment. The patient received support from her closest family when taking medication and was accompanied by a TB medication supervisor. The patient felt relieved after sharing her fear of TB. Being understood about the difficulties regarding her work and medication schedules and the importance of regular medication would break down the TB stigma attached to her and make her more aware and motivated to take regular treatment. Psychoeducation regarding TB transmission methods changed perceptions. She previously thought that this disease was transmitted through food, and she understood how masks and physical distance could reduce the risk of transmitting it to others.

After four months, the patient’s sputum examination showed negative results. The patient had returned to work with fewer responsibilities, experienced minimal side effects, and no longer had the desire to end her life.

After an office visit by her husband during her treatment, the school gave her the opportunity to be replaced by another fellow teacher when closing afternoon lessons. After four months, the patient’s sputum examination showed negative results. The patient had returned to work offline using a mask and was temporarily given lighter responsibilities to manage the library. The patient has currently been reassigned to face-to-face teaching.

The team of doctors agreed to change the therapy regimen from a short therapy regimen to individual therapy by monitoring the physical conditions of the patient and the drug side effects she experienced and holding scheduled case conferences in case of conditions that required communication between all the team of doctors.

**DISCUSSION**

Perceptions regarding TB transmission are the main cause of stigmatization. Lack of knowledge about the TB transmission routes contributes to TB stigma, which can lead to individual isolation. TB coinfection with HIV, due to HIV being transferred to a person infected with TB, is another cause of TB stigma, including perceptions of TB that correlate to malnutrition, poverty, and low social status. TB stigma occurs because the community where the infected individuals live believes that they have done something wrong so that they deserve to be infected. The judgment reflects the belief that TB is a divine punishment and a personal moral failure. People infected with TB consider themselves at risk of social stigma and economic consequences. When individuals die from TB, fear of TB stigma can lead families to hide the cause of the death from other family members and the community, even when this information is beneficial for TB screening. TB stigma also results in shame or guilt, leading to the self-isolation of individuals infected with TB.2,10 Stigma hinders TB screening efforts in TB patients’ homes, causing a delay for individuals to receive treatment and less treatment adherence.1-6

Several interventions have been introduced to reduce TB stigma, and no studies have assessed whether reducing TB stigma affects TB morbidity or mortality. Although the study of Rajeswari et al. found that perceptions of TB stigma did not change in a surveyed population of TB-infected individuals in southern India after the completion of a DOT program with a psychoeducation component, the study of Liefooghe et al. found that TB-positive patients in Pakistan who received counseling to strengthen the perception of self-efficacy of those who are negatively affected by the TB stigma had a 13% lower rate of treatment failure compared to those who did not receive counseling. Several approaches have been taken to overcome TB stigma, including conducting psychoeducation, changing behaviors, providing support in treatment,
forming TB peer groups/clubs, and encouraging TB-infected individuals to keep working.\textsuperscript{2,11,12}

The biopsychosocial model of TB and depression is complex. From a biological perspective, depression develops in TB-infected individuals through neuroinflammatory pathways that cause a decrease in the main precursor serotonin (tryptophan) due to proinflammatory cytokines, which is similar to the development of depression in patients with diabetes mellitus and mental disorders associated with diabetes mellitus.\textsuperscript{1,13,14}

From a social perspective, depression in TB-infected individuals develops from economic conditions that cause people to be more exposed to stress and TB stigma due to the fear of being diagnosed with TB and the risk of social isolation. Stigma stems from the community and the patient himself due to cultural beliefs and poverty attached to TB-infected patients.\textsuperscript{15,16} Depression in TB-infected patients also develops from treatment with Cycloserine. Depression can hinder the success of TB treatment due to poor self-care, which affects nutrition and immunity, impaired concentration and cognitive abilities, which affect adherence to taking medication (missed doses), and the inability to express the psychological symptoms they experienced.\textsuperscript{17}

The use of interventions that increase patient motivation to continue taking treatment using a brief motivational intervention with the FRAMES (Table 1) approach has proven effective in cases of patients who need behavior changes to get the best results in treatment.\textsuperscript{18}

**CONCLUSIONS**

Syndemic interactions between TB patients and depression, along with various other factors such as stigma, require liaison management. Interventions with psychoeducation in the workplace related to stigma and fear of infection have provided opportunities for TB-infected patients to keep their jobs. Comprehensive management has a positive impact on the success of therapy and the rarely effective TB treatments and can prevent TB epidemics.