

The necessity of psychological interventions to improve compliance with Tuberculosis treatment and reduce psychological distress

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ABSTRACT

Context: One of the major obstacles in treating TB is the patient's nonadherence to the treatment regimen resulting in prolonged disease transmission and development of resistance to anti-TB drugs. An individual's mental health affects his/her adaptation to the disease. Mental health issues and TB both are inextricably connected and research into this area will provide an opportunity to develop a more holistic model of TB treatment and prevention. **Aims:** The aim of this study is to investigate the prevalence of mental health issues in patients with TB and its influence on individual perception of well-being with an emphasis on psychopathology as a major obstacle to treatment adherence. Research into this area will provide an opportunity to develop a more holistic model of TB treatment and prevention. **Settings and Design:** Primary data were collected with the help of ASHA workers, and primary survey-based study was designed. **Methods and Material:** A total of 249 diagnosed Tuberculosis cases were included in the study. A digitalized version of the PGIHQ-1 questionnaire was made and used to separate the psychiatric population from the normal group. Asha workers were trained to use the digital version on tablets. **Statistical Analysis Used:** Using Microsoft Excel, Graphic Tables, and correlation were done using SPSS Statistics. **Results:** Mental health issues were found in diagnosed TB cases, which required further evaluations. Along with mental health issues, limited resources, gender, limited education, lack of proper knowledge about the disease, having responsibilities (Marital status), locality were found to be the important factors that complicate TB outcomes, hence should be taken into consideration while imparting psychological interventions. **Conclusion:** Mental health issues complicate TB outcome and hence need to be properly addressed, and thorough psychoeducation, psychological first aid (listen, protect, connect, model& teach), and timely intervention in the form of proper diagnosis and specific treatment and rehabilitation are needed.

Keywords: Anxiety and mood disorders, comorbidity, depression, medicine resistant tuberculosis, tuberculosis

Key Messages: There is a necessity of Psychological Interventions for Patients with Tuberculosis Group-based psychotherapy and support groups should be provided to all TB patients not just to MDR-TB patients to arrest further transmission and proper integration of TB patients in the society. The implementation of psychological interventions

and applications needs to be adapted, scaled, and geographically distributed in this country.

Introduction

Tuberculosis (TB) continues to be a great concern of the global disease burden, infecting one-third of the World population worldwide, especially among the disadvantaged populations. Currently, 10 million got affected by TB worldwide, out of which five hundred thousand were medicine (rifampicin)

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resistant, 1.3 million were infected with HIV, and 300,000 died without HIV.^[1] India contributes 27% of the global burden with an estimated 27.5 lakhs patients as per the Global TB report 2018. Approximately 58,347 MDR/RR TB cases were diagnosed.^[2] One of the major obstacles in treating TB is the patient's nonadherence to the treatment regimen resulting in prolonged disease transmission and development of resistance to anti-TB drugs. An individual's mental health affects his adaptation to the disease, though it is a well-known fact that mental health issues and TB both are inseparably connected. National TB programs have to actively address them as comorbidities that affect individual ability to deal with TB. Mental disorders like anxiety, depression, or mood disorders. Substance abuse is associated with a high risk of TB acquisition, transmission, and nonadherence of treatment due to poor self-care, poor nutrition, diabetes, HIV infections (unsafe sex practices). Conversely, diagnosis with TB increases the risk of psychiatric comorbidity. TB due to its chronicity affects life physically, psychologically, and economically. It can result in physiological problems (weakness, psychogenic somatic pains, breathlessness, decreased libido, and weight loss), perception of being infected or source of infection, social stigma, and decreased social interaction, prolonged hospitalization resulting in job loss, worthlessness, and hopelessness. In Delhi, about 60% of TB patients experienced immense stigma concealed the diagnosis from family members and friends.^[3] Distress and anxiety were observed in about 50% of the TB patients and 9% of them contemplated suicide in south India.^[4] Purohit *et al.* found that approximately 54% of patients had suffered from depression in hospitalized TB patient.^[5] It was related to the severity and duration of TB. Bhatia *et al.* found that 78% of the TB patient from OPD in GTB hospital had comorbid psychiatric problems.^[6] In an Ethiopian study, 57% of the patient had probable depression (Ambaw *et al.*, 2017).^[7] Duko *et al.* reported depression in 43.4% and anxiety in 41.5% of TB patients in Ethiopia.^[8] In another study of Zambia, the prevalence of major depression was 11.3%, anxiety disorder 30.8% suicidality 34.8%, and panic disorder 4.1% (Vanden Helvel *et al.*, 2013).^[9] Several anti-TB medications such as cycloserine may precipitate more forms of mental illness including major depression, anxiety, and psychosis.^[10]

The reverse is also true, people with mental health disorders are also susceptible to TB (Singh *et al.* 2015).^[11] Studies report a high prevalence rate of psychiatric comorbidity among patients with drug-resistant TB. In Korea, the risk of TB among patients with depression was more than twice as high as it was among individuals with no mental health problems and TB incidence was higher for patients with severe depression (Hossen and Burble, 2017).^[12] In Taiwan, prevalence of TB was 1.6 times higher in patients with mental health disorder and the rate of risk of getting TB in schizophrenia was 1.52 times higher than in those without mental health (Kuo *et al.*, 2013).^[13] Depression and other mental disorders are related to poor quality of life, delays in diagnosis, and treatment of TB, nonadherence to medication leading to drug resistance and death.^[14] TB and other infectious

diseases might lead to premature deaths in people with severe mental illnesses (schizophrenia, bipolar disorder, and severe depression).^[15] There are four to eight times increased risk of death in this population as compared to the general population.^[16]

TB and mental disorders are more likely to arise in people who are psychologically distressed rather than the general population such as poor people, homeless, immigrants, people with substance abuse, and HIV.

Mental health is generally not being adequately addressed in National TB programs. Improved understanding and tackling of mental disorders in TB and vice versa could strengthen the impact of TB and mental health programs.^[17] Improve understanding and integrated mental health treatment could reduce costs, increase the quality of care and life of patients, and ultimately save lives.

Subjects and Methods

The study was performed on 249 cases who were diagnosed with TB by government hospitals. Patients of age group between 18 and 60 years from both genders, from all communities from all socio-demographic background and willing to participate, were included in the study. Patients with a previous history of psychiatric disorders were also excluded from the study. PGIHQN-1 questionnaire was used in the study. This test consists of 38 items divided into A (physical distress) and B (psychological distress) sections. It has high internal consistency, reliability, and validity. It has high discriminatory power to separate the psychiatric population from the normal group. A high score usually indicates a greater chance of developing psychiatric symptoms, reflecting a need for early psychiatric help and follow-up care. This test can be used as a preliminary test to identify the patient in need of psychiatric help so that they can be further evaluated and referred for further psychiatric help. Asha health workers, responsible for delivering the medication to the patients, collected the data. A digitalized version of the test was made and shared with each worker. The workers were then trained on how to collect the data and the correct practices to follow. Then, over a period of 2 months, the Asha workers, when they would go to deliver the medication and check on the patients, would conduct the test. A total of 249 patients (121 female and 128 male) were selected for the study. Ethical clearance for the study was obtained from the Mental Research Society (Regd.), New Delhi.

Results

Analysis of the data revealed that out of 249 patients, 47 patients (19%) [Figure 1a and 1b] were found to be distressed (physically distressed (12%) [Figure 2a and 2b] + psychologically distressed (26%) [Figure 3a and 3b] who needed further evaluations and psychological interventions. Psychological health and physical health positive correlations were found to be significant at a 1% level of significance [Table 1] showed that good physical health endorses good psychological health. Earlier

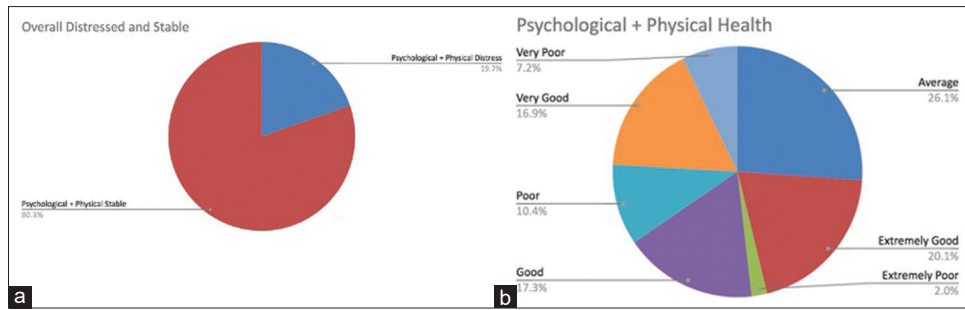


Figure 1: (a) Psychological + Physical health distribution of TB patients. (b): Psychological + Physical health distribution: classification into poor, very poor, extremely poor, good, very good, extremely good, average

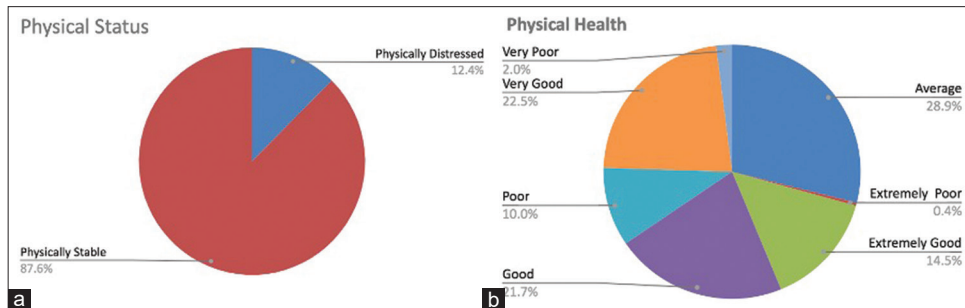


Figure 2: (a): Classification of physical health status. (b): Classification of physical health status into poor, very poor, extremely poor, good, very good, extremely good (EG), average (A)

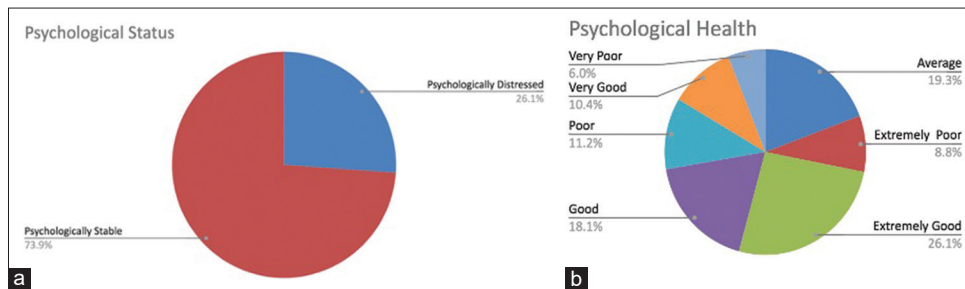


Figure 3: (a): Classification of psychological health status. (b): Classification of psychological health status into poor, very poor, extremely poor, good, very good, extremely good, average

Table 1: Correlation of psychological health and physical health with other variables

	PH + PH [#]	Physical Health	Age	Sex	Education	Occupation	Marital Status	Locality
PH + PH [#]	1.00	.460**	0.04	.144*	-0.06	-0.10	-0.06	.254**
Physical Health	.460**	1.00	0.00	.144*	.125*	0.11	-0.06	0.10
Age	0.04	0.00	1.00	.174**	-.492**	0.08	.491**	0.10
Sex	.144*	.144*	.174**	1.00	-0.02	.478**	-0.05	-0.05
Education	-0.06	.125*	-.492**	-0.02	1.00	-0.03	-.395**	-0.08
Occupation	-0.10	0.11	0.08	.478**	-0.03	1.00	-0.04	-0.10
Marital Status	-0.06	-0.06	.491**	-0.05	-.395**	-0.04	1.00	0.04
Locality	.254**	0.10	0.10	-0.05	-0.08	-0.10	0.04	1.00

** Correlation is significant at the 0.01 level (two-tailed). * Correlation is significant at the 0.05 level (two-tailed). # Psychological health and physical health

studies in which GHQ-12 was used as a preliminary screening tool also found depression and anxiety in TB patients.^[18,19]

The study also revealed that 70% of the patients who were physically distressed require further interventions compared to 24% of the patients of good physical health [Figure 4].

The study found that 33% of the female patients were more distressed, requiring further psychological interventions as compared to 18% the male patients [Figure 5]. Males were found to have relatively good psychological and physical health than females. A recent review also revealed that women were more prone to depression, while men were more likely to

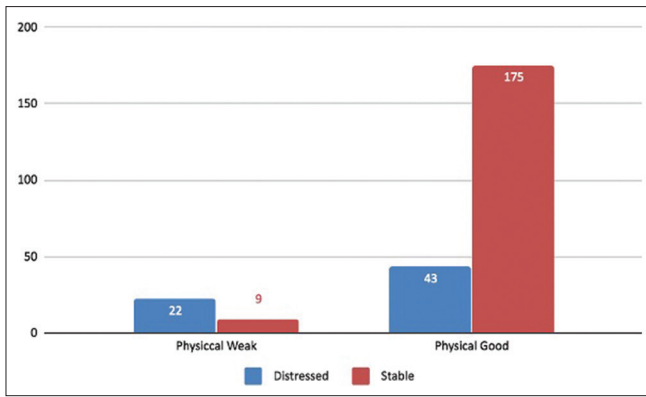


Figure 4: Physical health wise percentage distribution of overall distressed and stable TB patients

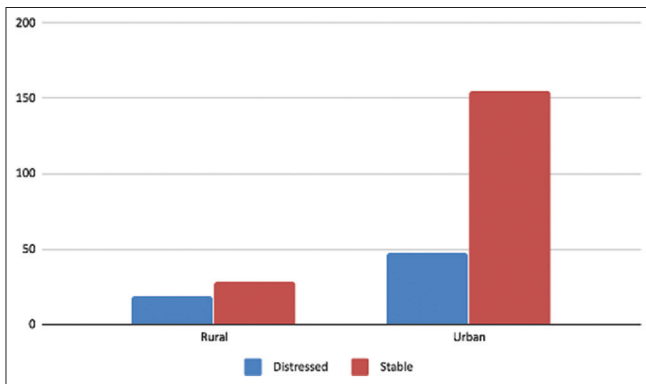


Figure 6: Locality wise percentage distribution of overall distressed and stable TB patients

engage in harmful alcohol use and treatment nonadherence. Besides gender, poverty, lower level of education, and older age groups were other vulnerable factors affecting TB outcomes.^[20]

The study also revealed that 39% of rural patients were in need of further interventions as compared to 23% urban population in this study [Figure 6]. The locality also matters: the urban population was found significantly correlated with good physiological and physical health as compared to rural patients [Table 1].

In total, 27% of unemployed patients were found to be more distressed compared to 25% of the employed patient [Figure 7].

Typically, 32% of the patients who were educated up to 10th standard require further intervention compared to the 21% of illiterate people and 24% of those who were educated above the 10th standard [Figure 8].

Married people (30%) were found to be more distressed than unmarried people (24%) [Figure 9].

In this study, patients in the age group 20–40 (28%) were found to be more distressed than people in the age group 40–60 (25%)

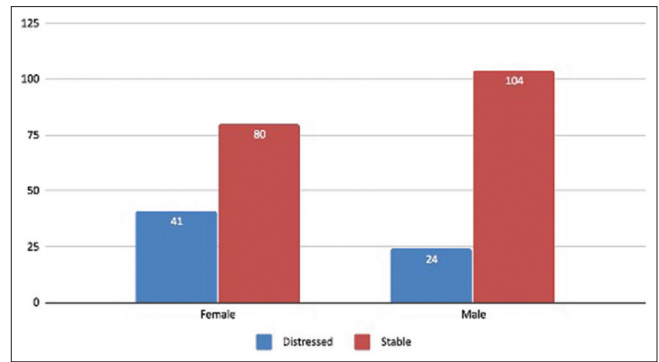


Figure 5: Gender wise percentage distribution of overall distressed and stable TB patients

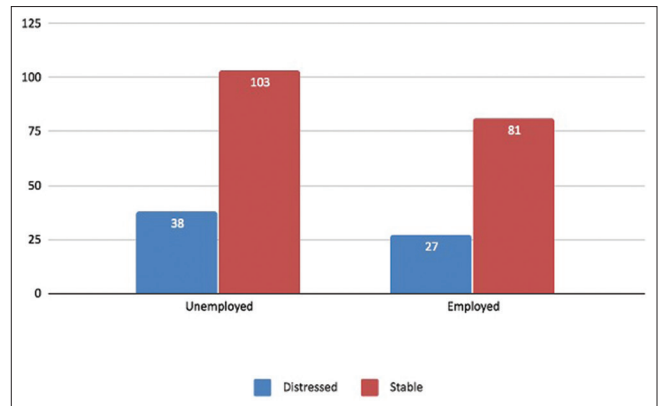


Figure 7: Employment status wise percentage distribution of week and good

and the age group <20 (23%) [Figure 10]. Earlier studies also found out that adults were more susceptible to depression as they were more concerned about losing their jobs, being a burden on their family rather than a bread earner.^[19] Bhatia *et al.* found out that they feel more anxious due to their decreased libido.^[6]

Discussion

There is a substantial interaction between TB and mental health, which should be addressed. Mental health has a direct bearing on patient’s well-being, patient’s behavior, and disease outcomes. It affects their help-seeking behavior, delays in seeking treatment, irregularity in taking medicines or nonadherence resulting in prolonging transmission or developing medicine resistant TB, and overall epidemic. Experts worldwide acknowledge that poor adherence is a behavioral problem.^[21] Depression and substance abuse affect self-care and increases nonadherence and overall outcome of the disease. On the other hand, a TB diagnosis can lead to shock, anxiety, and elevated psychological stress. People suffering from TB are almost at a fourfold increased risk of experiencing depressive episodes.^[22] One study found that TB patient with high level of psychological distress was more likely to die during treatment than those with a lower level.^[23] Besides common challenges like poverty, low level of education, age group, gender dimension in mental health issues should also be taken care of in TB programs.^[20] Programs should be more

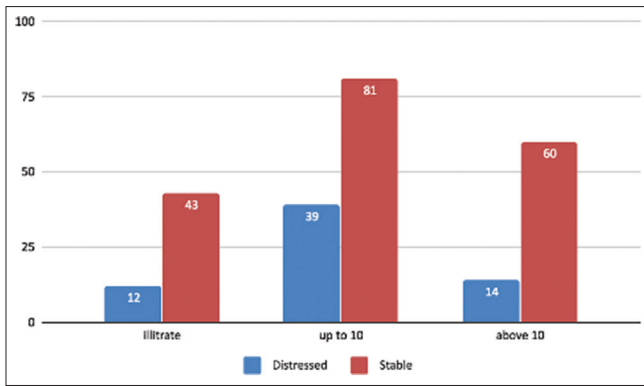


Figure 8: Education-wise percentage distribution of weak and good

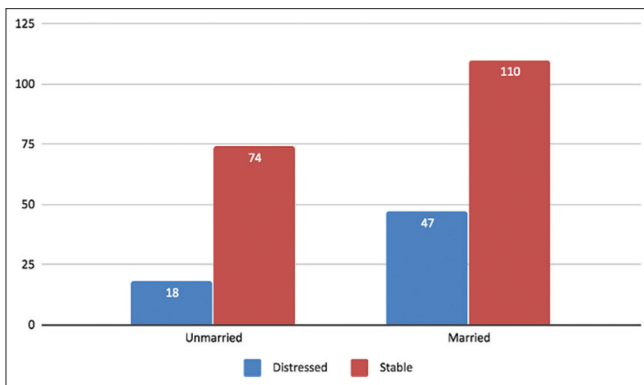


Figure 9: Marital status wise percentage distribution of weak and goods

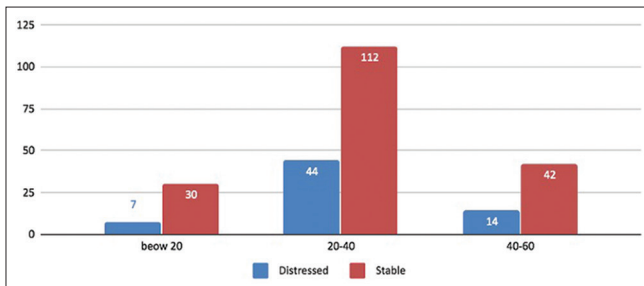


Figure 10: Age-wise percentage distribution

person centered. Rather than simply providing information about diagnosis patient and patient families should be psycho-educated thoroughly about the nature of the disease and required mental frame and life skills so that the mental toll of the disease should be minimized. An extensive review of the effects of psychological interventions on adherence to medication suggested that improvement in compliance toward medication was observed when psychological aspects such as depression were better managed in TB patients.^[24] Group-based psychological support showed improvement in MDR_TB outcomes in Peru,^[25] education and psychological intervention improved treatment adherence in Ethiopia,^[26] and TB clubs were helpful in reducing stigma and overall treatment outcomes among TB patients.^[27] The compliance to medication was found to be improved in MDR_TB patients in East Kazakhstan.^[28] A programmatic psychological intervention improved this treatment compliance,

outcome, and levels of CD4 + T lymphocytes suggesting that besides changing the mental attitude, physiological responses can also be improved due to such interventions.^[29] Psychotherapy in TB patient decreased dysfunctional beliefs and increased the hope to get well soon and lead a happy life with concomitant compliance to treatment.^[30] In Indian context, compliance to medication was significantly improved in Indian TB patients who underwent multiple psychological sessions.^[31]

Kerala government’s community-based support group model in addressing these psychological issues is quite successful. The Saksham Pravah project is another initiative that provides home-based counseling to MDR_TB patients, but these initiatives are limited to very few states and limited to MDR_TB, though there is a pressing need to address issues in all TB patients to improve adherence and thus preventing further development of MDR-TB. Interventions for TB should go beyond providing pharmaceutical help and adherence counseling, appropriate. Psycho-education or psychological first aid (listen, protect, connect, model, and teach), timely intervention in the form of proper diagnosis and required treatment, and rehabilitation is needed.

Mental health diagnosis, treatment, and stigma reduction need to be designed carefully. Any association between TB and mental health needs to be addressed carefully in a way that does not increase existing social stigmas. The distinction between the initial shocks of a TB diagnosis should be differentiated from formally diagnosed anxiety. Mental health issues are more prominent in the initial diagnostic phase and later in the treatment phase due to long period of treatment resulting in joblessness and worthlessness. Many researchers found that before diagnosis patients experience insomnia, restlessness, irritability, fear of death, decreased appetite, and interactions with others due to apprehensions about the diagnosis. Patients show some sense of relief after the diagnosis but soon become depressed about the nature of the disease, long treatment, complications, and prognosis. Families also report intermittent episodes of aggression and irritability. Emotional maturity and education level were found to be important factors for adaptation to treatment.^[19] Therefore, a more person-centric approach is needed and families should be counseled properly to be a part of the treatment team. Poverty, gender, limited education, lack of proper knowledge about the disease, and resource constraint health system complicates the TB disease trajectory. In a resource-limited health care system, more locally appropriate approaches should be adapted, nonspecialists should be trained to deliver basic psychological first aid under expert supervision as is done by a treatment support group in Kerala, and further intense psychotherapy and pharmaceutical intervention may be limited for acute and chronic cases or whose symptoms can be attributed to psychiatric side effects associated with anti-TB medications. Group-based cognitive behavior therapy developed by Dr. Pratt was found to be an important factor in an earlier TB program’s success in Boston.^[32] Hence group-based psychotherapy and support groups should be provided to all TB patients not just

to MDR-TB patients to arrest further transmission and proper integration of TB patients in the society.

Primary care physicians should ensure that psychological evaluations of TB patients are done and a person-centric approach is adopted and the patients and their families are psycho-educated and counseled properly as part of the treatment protocol. Furthermore, primary care physicians should ensure that their patients participate in group-based psychotherapy and attend support groups meetings.

Conclusion

Mental health issues impact TB outcome and hence patients need to be properly evaluated for mental health issues. These issues need to be addressed through psychoeducation, psychological first aid, and timely intervention in the form of proper diagnosis and specific treatment and rehabilitation. Moreover, mental health diagnosis, treatment, and stigma reduction need to be designed carefully in a way that does not increase existing social stigmas. A person-centric approach is needed and families should be counseled properly to effectively support the patient and be a part of the treatment team.

In a resource constraint system, health workers and volunteers should be trained by professionals to deliver basic psychological first aid and they should ensure that group-based psychotherapy and support groups is provided to all TB patients so that further transmission of the diseases is controlled properly. These implementations need to be adapted, scaled, and geographically distributed to integrate TB patients into Society and to ensure a TB free India.

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Conflicts of interest

There are no conflicts of interest.

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