



"QUALITY OF LIFE AND PSYCHOSOCIAL WELL-BEING IN INDIVIDUALS WITH HIV-TB CO-INFECTION: INSIGHTS FROM A CROSS-SECTIONAL STUDY IN INDIA"

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ABSTRACT

Introduction: The co-infection of Human Immunodeficiency Virus (HIV) and Tuberculosis (TB) presents a significant public health challenge in India. This paper investigates the quality of life (QOL) and psychosocial factors affecting individuals with HIV alone and those with HIV-TB co-infection. **Material & Methods:** This cross-sectional study was conducted in an ART clinic at L.L.R.M. Medical College, Uttar Pradesh, India. Participants were divided into two groups: HIV patients without TB and HIV-TB co-infected patients. Data were collected through a semi-structured questionnaire and the WHOQOL-HIV Instrument. **Results:** HIV-TB co-infected patients had lower CD4 counts, indicating greater immune suppression. Both groups reported dissatisfaction with daily tasks, depression, sleep issues, decision-making challenges, and concerns about relationships, finances, and stigma. Individuals with co-infection faced additional burdens of loneliness, thoughts of suicide, and worries about affecting their family line. Self-blame and stigma were prevalent across both groups. The study underscores the need for comprehensive psychosocial support in addition to medical care for individuals with HIV and HIV-TB co-infection. Limitations include the cross-sectional design and regional focus. **Conclusions:** This study highlights the importance of addressing neurocognitive impairment and psychosocial well-being in individuals with HIV and HIV-TB co-infection. Comprehensive interventions should consider both medical and psychosocial factors to enhance the overall quality of life for these populations.

KEYWORDS : Beck's Depression Inventory Scale, human deficiency virus, Quality of life, Social Support, Stigma.**INTRODUCTION**

Human immunodeficiency virus (HIV) infection and the resulting acquired immunodeficiency syndrome (AIDS) constitute a significant public health challenge in India. According to projections for 2021, India is home to an estimated 2.4 million individuals living with HIV/AIDS, with an adult prevalence rate of 0.21% during that year (1). Alarming, the year also witnessed nearly 400,000 deaths attributed to the combination of HIV and tuberculosis (TB) (2). In the global context, TB stands as a leading cause of mortality among those living with HIV, further exacerbating the health burden. The intricate interplay between untreated HIV and TB can precipitate a swift decline in health, often culminating in an AIDS diagnosis for individuals experiencing this dual infection. The convergence of these diseases presents a formidable challenge marked by distinctive diagnostic and treatment complexities, straining the healthcare systems of affected nations. Acknowledging this crisis, the Government of India took a significant stride by introducing free antiretroviral therapy (ART) in 2003 to mitigate the impact of HIV.

Mycobacterium tuberculosis, the bacterium responsible for TB, forms an ominous partnership with HIV, leading to a hastened deterioration of the immune system (3). Left untreated, this synergy between the two pathogens can escalate mortality rates. The toll of TB is not limited to physical health; it also inflicts emotional anguish, contributing to suboptimal illness and treatment outcomes (4). Thus, a comprehensive understanding of the factors that influence the quality of life (QOL) becomes imperative for devising strategies to enhance well-being (5). While research on HIV patients has been conducted globally, there remains a dearth of studies delving into the QOL of individuals confronting the dual burden of HIV and TB co-infection. This scarcity is particularly pronounced in the Indian context. Against this backdrop, our study takes a focused approach, comparing the QOL of HIV-infected patients with and without active TB. Additionally, we endeavor to pinpoint the factors that contribute to the diminished QOL observed among those afflicted with HIV-TB co-infection. Our investigation aims to shed light on these crucial aspects, thereby contributing to the broader understanding of the challenges faced by individuals grappling with dual infections.

MATERIALS AND METHODS

We conducted a cross-sectional study involving individuals living with HIV, both those with and without tuberculosis (TB). Our study took place at the ART services within the Department of Medicine at L.L.R.M. Medical College in Meerut, Uttar Pradesh, India. The study

population was divided into two distinct groups: the first group comprised HIV patients without TB, while the second group consisted of patients who had co-infection of both HIV and TB.

For our research, we established specific inclusion and exclusion criteria. The study included all individuals above the age of 21 who were diagnosed as HIV-positive at the Integrated Counselling and Testing Centre. Inclusion also extended to HIV patients without TB receiving care at the ART Centers of the Department of Medicine at L.L.R.M. Medical College. Excluded from the study were patients who were not willing to participate, those below the age of 21, inpatients, individuals with AIDS-defining conditions other than TB, patients with chronic illnesses such as hypertension and diabetes mellitus, and subjects experiencing AIDS-related dementia complex.

The study, conducted over a two-month period, utilized a semi-structured questionnaire to collect clinic-demographic data. We also employed the World Health Organization Quality of Life (WHOQOL)-HIV Instrument to assess participants' quality of life. Ethical clearance was obtained from the Institutional Ethics Committee. All HIV patients, whether or not they had active TB, were informed about the study. Those who expressed willingness to participate provided their consent and completed the questionnaire.

The assessment of quality of life was conducted through face-to-face interviews utilizing the short version of the WHOQOL Instrument tailored for HIV clients. The questionnaire featured a five-point Likert scale for each item, ranging from 1 indicating low or negative perceptions to 5 indicating high or positive perceptions. This instrument encompassed six domains: physical health, psychological well-being, social relationships, environmental health, level of independence, and spiritual health.

The physical health domain inquired about aspects like the presence of pain, energy levels, and sleep quality. The psychological domain explored both negative and positive feelings, self-esteem, and cognitive processes. Social relationships were evaluated through questions about social support, personal relationships, and sexual activity. The level of independence encompassed questions about mobility, work capacity, and daily activities. The environmental domain encompassed financial matters, home and physical environment, availability of transportation, physical safety and security, and participation in leisure activities. Lastly, the spirituality domain delved into topics such as thoughts about death, forgiveness,

blame, and concerns about the future.

We gathered clinical information and demographic data through patient interviews. Additionally, data regarding the latest CD4 counts and WHO stages of the patients were extracted from medical records within the ART centers.

Data analysis and statistics

Data were analyzed using the GraphPad Prism software. Domain scores in the WHOQOL-HIV were scaled in a positive direction with a higher score denoting good QoL. Negative questions such as pain and discomfort were recorded so that higher scores reflect better QOL.

RESULTS

One-hundred HIV patients participated in the study, of which 50 (50%) were HIV-infected patients without TB and 50 (50%) were HIV-TB co-infected patients. All the co-infected patients were having smear-positive pulmonary TB and were in the first 3 months of the antitubercular treatment.

The median age of enrolled HIV-infected patients without TB was 30 years [Interquartile range (IQR): 26-35 years] and the median age of HIV-TB co-infected was 32 years (IQR: 27-39 years). Patients having HIV-TB co-infection were more likely to have a lower CD4 lymphocyte count as compared to HIV-infected patients without TB ($P = 0.005$). The clinical and demographic details are shown in Table 1.

Characteristics	HIV Infected (N=50)	HIV-TB (N=50)
Age (in years)	30(25.5-35.2)	32(26.7-39.2)
WHO Immunological stage n (%)		
Stage I	—	—
Stage II	11(22%)	7 (14%)
Stage III	25 (50%)	13 (26%)
Stage IV	14 (28%)	30 (60%)
Cd4 count (cells/ μ L)	296(160-345)	165(83-238)

We developed a questionnaire comprised of fourteen questions, adapted from the World Health Organization Quality of Life (WHOQOL) assessment, to evaluate neurocognitive impairment in both HIV-infected and HIV-TB co-infected patients.

In the group of individuals with HIV infection, 42% expressed dissatisfaction with their ability to fulfill daily tasks, while 58% reported moderate to complete satisfaction in this regard. Notably, 52% of HIV-infected patients reported experiencing moderate to severe depression. Sleep dissatisfaction was noted in 50% of cases, and almost 42% faced challenges in making decisions for everyday issues.

Moreover, 42% reported dissatisfaction with their sexual life. Emotional struggles were evident as 50% felt loneliness, 68% expressed dissatisfaction with life, and thoughts of suicide were reported. In the realm of relationships, 70% reported unhealthy family dynamics.

A significant portion, 50%, relied moderately to heavily on medication for daily functioning. Financial concerns were present in nearly 66% of cases, while 56% felt discriminated against due to their health status. Furthermore, 48% were dissatisfied with their energy levels for daily activities, and 56% worried about their family's well-being after their demise. Interestingly, self-blame was reported by 58% for their HIV infection, with 50% expressing concerns about their HIV status impacting their family lineage and future generations (Figure 1).

In the HIV-TB co-infected group, 56% expressed dissatisfaction with daily tasks, while 44% reported moderate to complete satisfaction. A considerable proportion, 52%, reported feelings of depression or hopelessness. Sleep satisfaction was reported by 58%. Almost 54% faced difficulties in decision-making for daily matters, while 50% were dissatisfied with their sexual life. Within this group, 72% experienced feelings of loneliness, and 70% expressed dissatisfaction with life, alongside thoughts of suicide.

Family relationships were strained for 60%. Financial worries affected nearly 64%, and 58% felt discriminated against due to their health condition. Concerning HIV infection, 52% placed blame on themselves, while 72% were anxious about their HIV status impacting their family's future.

In terms of physical capacity, 50% reported dissatisfaction with their energy levels for daily activities, and 64% worried about their family's posthumous well-being. Moderate to complete reliance on medication was reported by 52% (Figure 2).

These findings underscore the significant challenges faced by both HIV and HIV-TB co-infected patients in various aspects of their lives, emphasizing the need for comprehensive support strategies.

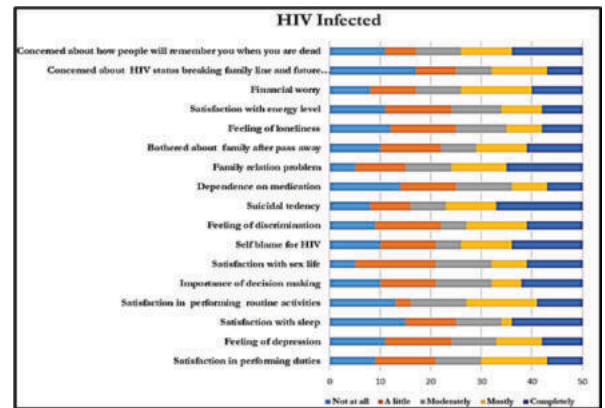


Figure 1: Responses to WHOQOL questionnaire of HIV infected patients

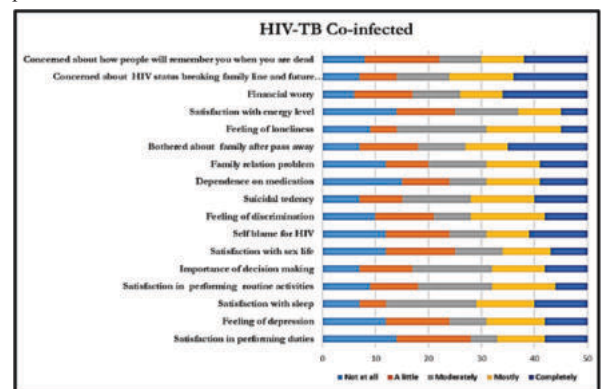


Figure 2: Responses to WHOQOL questionnaire of HIV-TB co-infected patients

DISCUSSION

The present study aimed to assess the neurocognitive impairment and psychosocial well-being of individuals living with HIV, both with and without TB co-infection. The findings revealed significant insights into the experiences of these populations, shedding light on various aspects of their daily lives and emotional states.

The demographic characteristics of the study participants highlighted that the enrolled HIV-infected patients without TB and HIV-TB co-infected patients were evenly distributed in terms of numbers. This balanced representation allowed for a comprehensive comparison between the two groups. The median age of the participants in both groups was consistent with previous research on HIV-infected populations, demonstrating the relevance of the study's findings to the broader context of HIV healthcare.

One notable observation was the stark contrast in CD4 lymphocyte counts between the two groups. Patients with HIV-TB co-infection exhibited significantly lower CD4 counts compared to those with HIV infection alone. This result aligns with existing knowledge that TB infection can exacerbate the immune suppression seen in HIV-infected individuals, potentially leading to more rapid disease progression (6,7).

The assessment of neurocognitive impairment and psychosocial factors through a questionnaire provided valuable insights into the psychological well-being of the participants. In the group of HIV-infected patients, a substantial proportion reported dissatisfaction with various aspects of their lives. These included difficulties in carrying out duties, depressive symptoms, sleep disturbances, decision-making challenges, and concerns about relationships, financial status, and

social discrimination. These findings underscore the complex interplay between HIV infection and mental health issues, highlighting the need for comprehensive psychosocial support for this population as recommended in previous studies (8-10).

Comparatively, the HIV-TB co-infected group displayed similar trends in dissatisfaction across multiple domains, including carrying out duties, sleep quality, decision-making, and sexual satisfaction. Additionally, a significant portion of these individuals reported feelings of loneliness, thoughts of suicide, and concerns about their health status affecting their family line. These findings emphasize the substantial emotional burden faced by individuals grappling with both HIV and TB, suggesting that the co-occurrence of these diseases amplifies psychological distress in concordance with other studies (10-12).

The high percentage of participants in both groups who blamed themselves for their infection and expressed concerns about their health status affecting their family line and future generations suggests a profound sense of guilt and social stigma. These feelings may contribute to the psychological strain experienced by these individuals and could potentially hinder their ability to cope with their health conditions (12).

It's important to note that this study has several limitations. The cross-sectional design prevents the establishment of causal relationships between neurocognitive impairment and psychosocial factors. Additionally, the study focused solely on a specific geographic region and may not be fully representative of all HIV and HIV-TB co-infected populations.

CONCLUSIONS

This study underscores the critical importance of addressing neurocognitive impairment and psychosocial well-being in individuals living with HIV and HIV-TB co-infection. The findings highlight the multifaceted challenges faced by these individuals, including mental health struggles, societal discrimination, and concerns about family and future generations. Health interventions for these populations should not only focus on medical aspects but also incorporate comprehensive psychological and social support to improve their overall quality of life.

Competing interests

All other authors declare no competing interests.

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Disclaimer

Ethics approval and consent to participate

This study was approved by the Institutional Ethics Committee.

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