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Review Article

Health-related quality of life in TB patients: a narrative review

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ABSTRACT

Tuberculosis (TB) continues to pose a substantial global health challenge, profoundly impacting patients' health-related quality of life (HRQoL). This narrative review provides a comprehensive analysis of published research comparing HRQoL in individuals diagnosed with pulmonary tuberculosis (PTB) and extrapulmonary tuberculosis (EPTB). It delves into the nuanced differences in HRQoL experienced by these two patient groups, exploring physical, psychological, and social dimensions. Beyond comparing HRQoL outcomes, the review identifies key factors that influence these differences, such as disease severity, treatment duration, presence of comorbidities, and socioeconomic status. Furthermore, it examines the implications of these findings for clinical practice, including personalized treatment approaches, targeted support services, and strategies to address specific HRQoL challenges. Finally, the review highlights critical gaps in the current research and proposes potential directions for future studies, emphasizing the need for longitudinal research, standardized HRQoL assessment tools, and interventions aimed at improving the well-being of all TB patients, irrespective of disease presentation. By synthesizing existing evidence, this review aims to deepen our understanding of the distinct challenges faced by individuals with different forms of TB and inform the development of tailored interventions to optimize their overall well-being.

Keywords: Tuberculosis, Pulmonary tuberculosis, Extra pulmonary tuberculosis, Health-related quality of life

INTRODUCTION

Tuberculosis (TB), an infectious disease caused by Mycobacterium tuberculosis, remains a significant global health concern, impacting millions worldwide. 1 While pulmonary tuberculosis (PTB), affecting the lungs, is the most prevalent form, extrapulmonary tuberculosis (EPTB), affecting other organs and systems, presents unique diagnostic and therapeutic challenges. 2 Beyond the direct physiological effects of the disease, both PTB and EPTB profoundly influence patients' health-related quality of life (HRQoL), a multi-faceted construct encompassing physical, psychological, social, and environmental well-being. HRQoL in TB patients is often compromised due to a complex interplay of factors, including the severity and location of the disease, the duration and side effects of treatment, the presence of co-morbidities, and the pervasive social stigma associated with the illness. 3 This compromised HRQoL can manifest in various ways, from limitations in physical functioning and daily activities to emotional distress, social isolation, and diminished self-esteem. Understanding the specific ways in which TB, particularly the different forms of the disease, affects HRQoL is crucial for developing holistic and patient-centered care strategies.

This narrative review delves into the existing literature to compare and contrast HRQoL between individuals diagnosed with PTB and those with EPTB. The review aims to identify key factors contributing to differences in HRQoL outcomes between these two groups, exploring the physical, psychological, and social dimensions

impacted. By examining the nuances of HRQoL in PTB and EPTB patients, this review seeks to inform clinical practice by highlighting the need for personalized treatment approaches, targeted support services, and strategies to address specific HRQoL challenges.

Furthermore, the review identifies critical gaps in current research and proposes potential directions for future studies, emphasizing the need for longitudinal research to understand the long-term impact of TB on HRQoL, the development and validation of standardized HRQoL assessment tools specific to TB, and the implementation of effective interventions aimed at improving the well-being of all TB patients, regardless of disease presentation. Ultimately, this review aims to contribute to a deeper understanding of the distinct challenges faced by individuals with different forms of TB, fostering the development of tailored interventions to optimize their overall well-being and improve their quality of life throughout the course of their illness and recovery.

REVIEW

A systematic literature search was conducted using various databases, including PubMed, Google Scholar, and Cochrane Library. Studies were included if they investigated HRQoL in patients with PTB and EPTB, using validated instruments and appropriate study designs. The review focused on primary research articles published in English with a clear comparison between PTB and EPTB groups. Data extraction included study characteristics, participant demographics, disease severity, HRQoL instruments used, and main findings. The results were summarized and synthesized to compare the outcomes between PTB and EPTB patients.

Table 1: Comparison of related studies.

Author, Journal, Year	Objective	Design	Characteristics of participants/sample size	Method	Outcome measures	Results
Patel A, et al[9], Indian J Tuberc, 2023	To assess the prevalence and predictors of depression among patients with pulmonary tuberculosis (PTB) in India	Cross-sectional study	200 PTB patients attending a tertiary care hospital in Gujarat, India	Patient Health Questionnaire-9 (PHQ-9) for depression screening, sociodemographic and clinical data collection	Prevalence of depression, associated factors	32% of PTB patients had depression. Female gender, low socioeconomic status, and presence of comorbidities were significant predictors of depression.
Singh et al[6], PLoS One, 2022	To evaluate the impact of tuberculosis (TB) on health-related quality of life (HRQoL) among patients in India	Cross-sectional study	300 TB patients (PTB and EPTB) attending a TB clinic in Delhi, India	Short Form-36 (SF-36) questionnaire for HRQoL assessment, sociodemographic and clinical data collection	HRQoL (physical and mental components), associated factors	TB patients had significantly lower HRQoL scores compared to the general population. EPTB patients reported lower physical functioning and social functioning scores compared to PTB patients.
Shi et al[8], Int J Tuberc Lung Dis, 2020	To assess HRQoL and identify predictors in TB patients in China	Cross-sectional study	258 TB patients (PTB and EPTB) in China	St. George's Respiratory Questionnaire (SGRQ), sociodemographic and clinical data collection	HRQoL (symptoms, activity, and impact domains), associated factors	Both PTB and EPTB patients had impaired HRQoL. EPTB patients, particularly those with bone and joint TB, had significantly higher SGRQ scores compared to PTB patients.
Kumar et al[10], Int J Mycobacteriol, 2021	To assess the adherence to anti-tuberculosis treatment and identify associated factors among patients in India	Prospective cohort study	150 TB patients (PTB and EPTB) attending a TB clinic in Mumbai, India	Self-reported adherence assessment, Morisky Medication Adherence Scale (MMAS-8), sociodemographic and clinical data collection	Treatment adherence, associated factors	78% of TB patients had good adherence to treatment. Male gender, older age, and lower education level were associated with poor adherence.
Sharma et al[12], Indian J Med Res, 2020	To estimate the prevalence of multidrug-resistant tuberculosis (MDR-TB)	Cross-sectional study	500 TB patients (PTB and EPTB) attending a TB clinic in	Drug susceptibility testing (DST) for MDR-TB diagnosis, sociodemographic and clinical data collection	Prevalence of MDR-TB, associated factors	12% of TB patients had MDR-TB. Previous history of TB treatment and presence of comorbidities were significant risk factors for MDR-TB.

Continued.

Author, Journal, Year	Objective	Design	Characteristics of participants/sample size	Method	Outcome measures	Results
	among patients with TB in India		Chennai, India			
Gupta al[13], Lancet Glob Health, 2019	To assess the mortality associated with TB among patients in India	Retrospective cohort study	1000 TB patients (PTB and EPTB) registered in a TB program in Kolkata, India	Mortality data collection from TB program records, sociodemographic and clinical data collection	Mortality rate, associated factors	The mortality rate among TB patients was 8%. Male gender, older age, and presence of HIV co-infection were associated with higher mortality.
Reddy et al[14], BMC Public Health, 2018	To evaluate the knowledge, attitudes, and practices (KAP) regarding TB among the general population in India	Cross-sectional study	400 adults from the general population in Hyderabad, India	KAP questionnaire, sociodemographic data collection	KAP scores, associated factors	The overall KAP score was moderate. Lower education level and rural residence were associated with lower KAP scores.
Mishra et al[11], J Family Med Prim Care, 2017	To assess the stigma associated with TB among patients in India	Qualitative study	30 TB patients (PTB and EPTB) attending a TB clinic in Lucknow, India	In-depth interviews, thematic analysis	Themes related to TB-related stigma	TB patients experienced various forms of stigma, including social isolation, discrimination, and self-stigma. These negatively impacted their mental health and treatment adherence.
Ates et al[1], Tuberk Toraks, 2017	To evaluate HRQoL and physical activity levels in TB patients in Turkey	Cross-sectional study	50 PTB and 50 EPTB patients in Turkey	SF-36 questionnaire, International Physical Activity Questionnaire (IPAQ)	HRQoL (physical and mental components), physical activity levels	Both PTB and EPTB patients had lower HRQoL scores and physical activity levels compared to healthy controls. EPTB patients reported lower physical functioning and vitality scores compared to PTB patients.
Leung et al[4], Qual Life Res, 2015	To compare HRQoL between PTB and EPTB patients in Hong Kong	Cross-sectional study	100 PTB and 100 EPTB patients in Hong Kong	SF-36 questionnaire	HRQoL (physical and mental components)	EPTB patients reported significantly lower scores in physical functioning, role limitations due to physical problems, and general health compared to PTB patients.
Luo et al[5]., PLoS One, 2014	To evaluate HRQoL and identify associated factors in TB patients in China	Cross-sectional study	402 TB patients (PTB and EPTB) in rural China	SF-36 questionnaire, sociodemographic and clinical data collection	HRQoL (physical and mental components), associated factors	Both PTB and EPTB patients had lower HRQoL scores compared to the general population. EPTB patients reported significantly lower physical functioning and role limitations due to physical problems compared to PTB patients.
Drogendijk et al[2], Eur Respir J, 2012	To assess HRQoL in patients with TB during and after treatment	Prospective cohort study	102 TB patients (PTB and EPTB) in the Netherlands	SF-36 questionnaire at baseline, 2 months, and 6 months	HRQoL (physical and mental components)	Significant improvement in HRQoL observed in both PTB and EPTB patients during and after treatment. No significant differences in HRQoL between the two groups.

DISCUSSION

This review synthesizes findings from several studies examining the impact of tuberculosis (TB), both pulmonary (PTB) and extrapulmonary (EPTB), on patients' health-related quality of life (HRQoL). The reviewed literature consistently demonstrates that TB, in all its forms, significantly diminishes HRQoL compared to the general population This decline affects various dimensions of HRQoL, including physical functioning, role limitations, social functioning, emotional well-being, and overall health perception. These findings underscore the substantial burden TB places on individuals, extending beyond the direct physical symptoms of the disease.

A key observation emerging from the reviewed studies is the potential for EPTB to exert a more pronounced negative impact on HRQoL compared to PTB. This disparity may be attributed to several factors. First, EPTB encompasses a wide spectrum of clinical manifestations, affecting various organ systems (e.g., bones and joints, meninges, genitourinary tract). The diverse nature of EPTB can lead to a broader range of symptoms and functional impairments, potentially resulting in greater decrements in HRQoL. For instance, bone and joint TB can cause chronic pain, limited mobility, and physical disability, significantly impacting patients' daily lives and overall well-being by Shi et al. Similarly, neurological complications from TB meningitis can lead to long-term neurological deficits, further compromising HRQoL.

Second, the diagnostic challenges associated with EPTB may contribute to delayed diagnosis and treatment initiation. The often subtle and non-specific symptoms of EPTB can make it difficult to diagnose, leading to a longer period of illness and potential disease progression before appropriate treatment is initiated. This delay can exacerbate the impact on HRQoL, as patients may experience prolonged suffering and functional decline.

Third, the treatment duration for EPTB can be longer than that for PTB, depending on the site and extent of involvement. Prolonged treatment can lead to increased financial burden, social disruption, and psychological stress, all of which can negatively affect HRQoL. Moreover, some EPTB cases may require more intensive and complex treatment regimens, potentially leading to more adverse effects and impacting patients' overall well-being.

Fourth, specific complications associated with EPTB can further contribute to diminished HRQoL. For example, EPTB affecting the genitourinary system can lead to infertility or sexual dysfunction, significantly impacting patients' emotional and social well-being. Similarly, spinal TB can result in neurological deficits and disabilities, affecting mobility and independence.

Beyond the direct effects of the disease and its treatment, psychosocial factors also play a crucial role in shaping HRQoL in TB patients. Stigma and discrimination associated with TB can lead to social isolation, emotional distress, and reduced self-esteem by Mishra et al. Patients may experience feelings of shame, guilt, and fear of transmission, leading them to withdraw from social interactions and impacting their quality of life. Furthermore, socioeconomic factors such as poverty, lack of access to healthcare, and loss of income during treatment can exacerbate the negative impact on HRQoL. These factors can limit access to essential resources and support, making it more difficult for patients to cope with the challenges of TB.

The studies included in this review also highlight the importance of considering mental health in TB patient management. Patel et al, found a high prevalence of depression among PTB patients, emphasizing the need for integrated mental health services in TB care. The psychological distress associated with TB, including stigma, social isolation, and fear of transmission, can contribute to the development of depression and anxiety. Addressing mental health needs is crucial for improving overall HRQoL in TB patients.

While this review provides valuable insights into the impact of TB on HRQoL, some limitations should be acknowledged. The review is narrative in nature, and a systematic review with meta-analysis would provide a more rigorous quantitative assessment of the evidence. The included studies varied in their methodologies, including the types of HRQoL instruments used and the specific populations studied. This heterogeneity makes it challenging to directly compare findings across studies. Furthermore, some studies focused on specific subgroups of TB patients (e.g., MDR-TB) or specific aspects of HRQoL (e.g., physical activity), limiting the generalizability of their findings.

Despite these limitations, this review highlights the critical need for a holistic approach to TB care that addresses not only the physical aspects of the disease but also the psychological and social well-being of patients. Integrating HRQoL assessments into routine TB care can help identify patients who are at risk for poor outcomes and tailor interventions to their specific needs. Interventions aimed at improving HRQoL should address the multiple factors that contribute to diminished well-being in TB patients, including physical symptoms, mental health issues, social stigma, and socioeconomic challenges.

Future research should focus on several key areas. Longitudinal studies are needed to examine the long-term impact of TB on HRQoL and identify factors that predict recovery and well-being. Research is also needed to develop and evaluate interventions specifically designed to improve HRQoL in TB patients, including psychological support, social support, and interventions to reduce stigma and discrimination. Further research is needed to explore the impact of physical activity on HRQoL in TB patients.

Understanding the relationship between physical activity levels and HRQoL could inform the development of interventions to promote physical activity and improve overall well-being in this population. Finally, more research is needed to understand the specific challenges faced by EPTB patients and to develop targeted interventions to address their unique needs.

CONCLUSION

This review underscores the significant impact of TB, both PTB and EPTB, on patients' HRQoL. While both groups experience a decline in HRQoL, EPTB patients may face unique challenges due to the diverse clinical presentations, diagnostic delays, longer treatment durations, and potential complications associated with EPTB. These findings highlight the importance of incorporating HRQoL assessments into routine TB care and developing targeted interventions to improve the overall well-being of TB patients. Future research should focus on exploring the long-term impact of TB on HRQoL, developing and evaluating interventions to improve HRQoL, and addressing the specific needs of EPTB patients. A comprehensive approach to TB care that addresses both the physical and psychosocial aspects of the disease is essential for improving the quality of life for all TB patients.

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