

# Health Related Quality Of Life Among Patients With Pulmonary Tuberculosis

Packialakshmi K<sup>1</sup>, Hema V H<sup>2</sup>, C V Senthil Nathan<sup>3</sup>, S Yayathee<sup>4</sup>

<sup>1</sup>Ph.D Scholar, Faculty Of Nursing, Dr.M.G.R. Educational And Research Institute, Chennai. Email: praimathi24@gmail.com

<sup>2</sup>Principal, Faculty Of Nursing, Dr.M.G.R. Educational And Research Institute, Chennai.

<sup>3</sup>Principal, Faculty Of Physiotherapy, Dr.M.G.R. Educational And Research Institute, Chennai.

<sup>4</sup>Chief Nursing Officer, Dr. Rela Institute And Medical Centre, Chrompet, Chennai

**\*Corresponding Author:**

Packialakshmi K, Ph.D Scholar, Faculty Of Nursing, Dr. M.G.R. Educational And Research Institute, Chennai.  
Email: praimathi24@gmail.com

**Abstract:**

Pulmonary tuberculosis is one of the major global health concerns in high burden countries like India which is contributing to over one-fourth of all new cases each year (WHO, Global Report 2025). This makes it even more important to have strong steps in place to stop the disease from spreading. Pulmonary Tuberculosis (PTB) affects patients' physical, psychological and social functioning. This study aimed to assess the health-related quality of life among PTB patients. The 108 samples were selected using randomly who fulfills the inclusive criteria. SF-12 tool was used to collect data. The tool contains 8 domains. The results showed that reduced physical functioning (PCS raw 2.67±0.70) and moderate mental health (MCS raw 4.03±0.92). Vitality and social functioning were particularly low. The study concluded that PTB substantially reduces quality of life which affect daily activities, independence and overall wellbeing. These challenges highlight the need for holistic care for TB patients beyond the medication.

**Keywords:** Pulmonary Tuberculosis, Quality Of Life, Physical Functioning, Mental Health, Holistic Care.

**How To Cite This Article:** Packialakshmi K, Hema VH, Nathan CVS, Yayathee S. Health related quality of life among patients with pulmonary tuberculosis. *Int J Drug Deliv Technol.* 2026;16(9s): 358-361; Doi: 10.25258/Ijddt.16.9s.35

**Introduction:**

Pulmonary tuberculosis (PTB) continues to pose a major global health concern and remains a primary source of preventable morbidity and mortality, with the greatest burden found in South Asian nations (Chauhan et al., 2023). Beyond its clinical symptoms and microbiological course, PTB substantially impairs patients' physical functioning, emotional resilience, and social involvement, causing a multidimensional burden that extends far beyond the disease itself (Dar et al., 2019; Kim et al., 2021). As frontline providers, nurses and public health professionals are central to recognizing these broader impacts, and validated instruments such as the SF-12 provide an essential framework for assessing health-related quality of life (HRQoL) across both physical and mental health domains (Ware, Kosinski, & Keller, 1996). Recent reviews demonstrate that HRQoL is substantially compromised during active TB, with improvements occurring gradually during treatment; however, many patients continue to experience lingering physical limitations, reduced vitality, emotional stress, and social stigma even after microbiological recovery (Yasobant et al., 2022; Banholzer et al., 2025).

According to recent research, routine HRQoL assessment should be incorporated into TB care pathways in South Asian healthcare settings in order to improve patient-centered management, support early identification of psychosocial needs, and direct rehabilitation strategies that improve overall wellbeing and treatment adherence (Mahalingam et al., 2025). This strategy coincides with nursing and public health priorities that stress holistic care, continuity of support, and the development of optimal quality of life for patients affected by chronic infectious diseases.

**Methods and Materials:**

The purpose of this descriptive design was to evaluate the pulmonary tuberculosis patients' health-related quality of life. The study was done for three months in 2025. This period was set to enable ample time for participant enrollment, data collection, and analysis. The Institutional Ethical Committee granted ethical approval for the project. Permission was acquired from selected TB centre. A total of 108 samples were selected using purposive sampling technique. The data was gathered using the SF-12 form. The measure consists of eight domain scores - Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP), General

## Health Related Quality of Life among patients with Pulmonary Tuberculosis

Health (GH), Vitality (VT), Social Functioning (SF), Role Emotional (RE), and Mental Health (MH)—which we computed as raw sums. Scoring approaches: (1) Domain scores (raw sums); (2) Raw composite Physical component survey (PCS) and Mental Component Survey (MCS) computed as the mean of physical domains (PF, RP, BP, GH) and mental domains (VT, SF, RE, MH), respectively.

### Ethical Approval and Clearance

The study received clearance from the Institutional Ethical Committee of ACS Medical College and Hospital (No.897/2023/IEC/ACSMCH Dt. 05/09/2023). Following the ethical clearance, permission was obtained from the hospital management to conduct the study in Thiruvallur District.

### Results and Analysis:

Majority of the samples 31 (%) were aged from 46-55 yrs, 74 (%) were males, married and residing at urban area, 87 (%) were from nuclear family.

**Table 1** presents descriptive statistics for SF-12 domains. Vitality (VT) and Social Functioning (SF) had the lowest mean values, indicating fatigue and reduced social engagement. PCS and MCS was calculated using the obtained raw score PCS ( $2.67 \pm 0.70$ ) and MCS ( $4.03 \pm 0.92$ ) respectively.

N=108

Item	Mean	SD
Q1	2.05	0.97
Q2	1.52	0.62
Q3	1.56	0.63
Q4	1.34	0.48
Q5	1.3	0.46
Q6	1.14	0.35
Q7	1.26	0.44
Q8	2.57	1.15
Q9	3.33	1.69
Q10	3.8	1.66
Q11	3.94	1.65
Q12	3.72	1.71

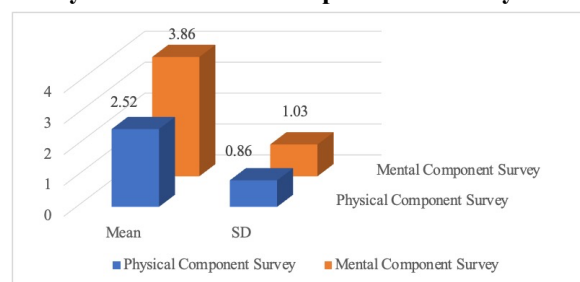
These results are supported by previous studies showing reduced HRQoL in TB patients, particularly for physical domains; longitudinal studies indicate improvements during treatment but persistent deficits for some individuals (Dar et al., 2019; Kim et al., 2021; Mahalingam et al., 2025).

### Table 2: Distribution of mean and standard deviation of Health Related Quality of Life among Patients with Pulmonary Tuberculosis

N=108

Domain	Mean	SD	Min	Max
Physical Functioning (PF)	3.0	1.22	2	6
Role Physical (RP)	2.45	0.75	2	4
Bodily Pain (BP)	2.57	1.15	1	5
General Health (GH)	2.05	0.97	1	5
Vitality (VT)	1.14	0.35	1	2
Social Functioning (SF)	1.26	0.44	1	2
Role Emotional (RE)	7.1	3.05	2	12
Mental Health (MH)	5.94	2.42	2	12

**Fig 1: Distribution of mean and standard deviation of Physical and mental component summary**



The correlation results clearly showed that pulmonary tuberculosis affects many parts of a patient's life at the same time. The strong connections between the physical domains suggest that when one part of physical health is reduced, such as pain (.62,  $p < .001$ ), general health (.65,  $p < .001$ ), or the ability to carry out physical tasks—the others tend to decline as well. This reflects the overall physical strain that TB places on the body.

The moderate links between vitality (.43,  $p < .001$ ), social functioning (.50,  $p < .001$ ), and the physical domains highlight how low energy and fatigue limited everyday activities and reduced social interaction. This supports earlier studies showing that ongoing tiredness is one of the most difficult symptoms for TB patients to manage. The relationship between mental health and physical symptoms also shows that when patients experience pain or poor physical health, they may also face emotional stress or psychological discomfort.

The lack of a strong correlation with the Role Emotional domain suggested that emotional difficulties may not be directly caused by physical symptoms. Instead, these challenges may come from outside factors such as stigma, family expectations, or financial stress.

## Health Related Quality of Life among patients with Pulmonary Tuberculosis

Overall, these findings highlight the opportunity for TB care to focus on the whole person, not only treating the infection but also supporting overall wellbeing. By incorporating physical rehabilitation, strategies to boost energy levels, mental health support, and programs that encourage social connection, TB care can promote a more confident recovery and help patients regain a healthier, more fulfilling life.

There is no significant association with age, gender, marital status, socio economic status and residential area and family type.

### **Discussion:**

This study showed that pulmonary tuberculosis has a considerable negative effect on patients' health-related quality of life, especially in areas such as physical functioning and vitality. These results agree with findings from other recent studies and systematic reviews, which report that HRQoL is often reduced during active TB and improves only partly after treatment (Yasobant et al., 2022; Banholzer et al., 2025). The low levels of social functioning observed in this study are likely related to stigma and social isolation, both of which are known to reduce quality of life and affect treatment adherence in TB patients (South et al., 2023). A strength of this study is the use of a validated HRQoL tool and multiple scoring methods, which provides a more complete understanding of how TB affects patients' well-being. However, the study is limited by the use of a single-site convenience sample, which may reduce generalizability.

The correlation results showed that different aspects of health-related quality of life are closely linked in patients with pulmonary tuberculosis. The strong relationships among the physical domains—such as physical functioning, role limitations, bodily pain, and general health—indicate that when one area of physical health declines, the others are likely to decline as well. This highlights the overall physical burden of TB, where symptoms tend to affect multiple areas at the same time.

Vitality also showed moderate connections with both physical and social functioning. This suggests that low energy and fatigue play an important role in limiting patients' daily activities and social interaction. Fatigue appears to be a key factor that affects both physical and social wellbeing in TB patients.

Social functioning was related to both physical health and mental health, meaning that patients who experience more physical discomfort or emotional stress are also more likely to withdraw socially. This finding reflects the combined effect of symptoms, stigma, and emotional strain on patients' social lives.

Mental health showed moderate correlations with pain, physical functioning, and general health. This indicates that emotional wellbeing is strongly influenced by physical symptoms and overall health status.

Role Emotional, however, showed no significant correlation with other domains. This pattern suggests that emotional role difficulties may be influenced more by external factors—such as stigma, family responsibilities, or economic stress—than by the physical severity of the disease itself.

Overall, these correlations showed that TB affects patients in many connected ways. Understanding these relationships can help guide more holistic care, including physical rehabilitation, support to improve energy levels, mental health

### **Conclusion:**

This study shows that pulmonary tuberculosis has a strong impact on the daily lives of patients. Many participants struggled with low physical strength, reduced energy, and difficulty performing routine activities. Their mental and social well-being were also affected, often due to stress, fatigue, and the stigma linked with TB.

Using the SF-12 questionnaire helped highlight these challenges and provided a clearer picture of how TB affects different areas of health. Even though treatment may improve some aspects, many patients continue to face physical and emotional difficulties.

These findings emphasize the need for more patient-centered TB care. Along with medicines, patients need support such as counselling, nutrition guidance, rehabilitation exercises, and encouragement to stay socially connected. Paying attention to these areas can help improve recovery, treatment adherence, and the overall quality of life of people living with TB.

We also acknowledge and appreciate the continuing efforts of the Government, particularly through national TB programs, free diagnostic services, and treatment initiatives. Government-led strategies such as DOTS, community health outreach, awareness campaigns, and expansion of primary healthcare services have played a crucial role in improving access to care and reducing the burden of TB. Strengthening these initiatives and integrating HRQoL monitoring into routine TB care will further support patients on their path to recovery.

### **References:**

1. World Health Organization. (2025). Global Tuberculosis Report 2025. Geneva.
2. Banholzer, N., et al. (2025). Mental, physical, and respiratory health in people with tuberculosis: a longitudinal analysis. *BMC Medicine*.

## Health Related Quality of Life among patients with Pulmonary Tuberculosis

3. Chauhan, A., et al. (2023). The prevalence of tuberculosis infection in India: systematic review and meta-analysis. *Indian Journal of Medical Research*.
4. Dar, S. A., et al. (2019). A prospective study on quality of life in patients with pulmonary tuberculosis. *Chest*.
5. Kim, S. H., et al. (2021). Health-related quality of life after pulmonary tuberculosis: a nationwide cross-sectional study. *Health and Quality of Life Outcomes*, 19, 233.
6. Mahalingam, V., et al. (2025). Health related quality of life of tuberculosis patients in South India: a longitudinal assessment. *PLOS ONE*.
7. Pyo, E., et al. (2024). Construct validity of the 12-item Short Form Health Survey in Indian adults. *Journal of Clinical Epidemiology*.
8. South, A., et al. (2023). Patients' priorities around drug-resistant tuberculosis: qualitative insights. *Global Public Health*.
9. Stringer, B., et al. (2021). Capturing patient-reported and quality of life outcomes in TB clinical trials: PRACTECAL-PRO. *MSF Science Portal*.
10. Ware, J. E., Kosinski, M., & Keller, S. D. (1996). A 12-Item Short-Form Health Survey: Construction of scales and preliminary tests of reliability and validity. *Medical Care*, 34(3), 220–233.
11. Ware, J. E., Kosinski, M., & Keller, S. D. (1998). SF-12: How to Score the SF-12 Physical and Mental Health Summary Scales. *Quality Metric Incorporated*.