

01. Title: 6-Minute Walk Test as a Functional Screening Tool for Pulmonary Rehabilitation Referral in Clinically Treated Pulmonary Tuberculosis PatientsAditi Goyal¹¹ Medical Student, RUHS College of Medical Sciences, Jaipur, Rajasthan, India**Background:**

Despite microbiological cure, many pulmonary tuberculosis (TB) patients continue to experience dyspnea, reduced exercise tolerance, and impaired quality of life due to residual lung damage. Although pulmonary rehabilitation (PR) improves outcomes, referrals in post-TB care are largely symptom-based, potentially overlooking patients with subclinical functional impairment. The Six-Minute Walk Test (6MWT) is a simple and low-cost measure of functional exercise capacity; however, its utility as a screening tool for pulmonary rehabilitation referral in clinically treated TB patients remains inadequately explored.

Methodology:

This observational cross-sectional study was conducted at a tertiary care center in Northwest India among clinically treated pulmonary tuberculosis patients aged 18–65 years, at least one month after treatment completion. Participants underwent assessment using the Six-Minute Walk Test (6MWT) according to American Thoracic Society guidelines. Spirometry parameters (FEV₁, FVC, FEV₁/FVC), dyspnea severity using the modified Medical Research Council (mMRC) scale, and health-related quality of life using the St. George's Respiratory Questionnaire (SGRQ) were assessed. Correlations between 6MWD, spirometric indices, dyspnea severity, and SGRQ scores were analyzed. Receiver operating characteristic (ROC) curve analysis was performed to evaluate the discriminatory accuracy of 6MWD for identifying pulmonary rehabilitation need.

Results:

Among 120 clinically treated pulmonary tuberculosis patients, the mean 6-Minute Walk Distance (6MWD) was 334.0 ± 85.0 meters (69.72 ± 15.0% predicted). Mean pre-bronchodilator FEV₁ and FVC were 41.92 ± 12.0% and 62.46 ± 8.6% predicted, respectively. Significant exercise-induced physiological stress was observed during the 6MWT, including reduction in SpO₂ (97.2 ± 1.5% to 93.8 ± 3.2%) and increase in Borg dyspnea score (0.8 ± 0.7 to 3.5 ± 1.4). 6MWD demonstrated significant positive correlations with FEV₁ % predicted ($r=0.56$, $p<0.001$) and FVC % predicted ($r=0.42$, $p<0.001$), while significant negative correlations were observed with mMRC dyspnea score ($r=-0.62$, $p<0.001$) and SGRQ total score ($r=-0.59$, $p<0.001$). ROC analysis demonstrated good discriminatory accuracy of 6MWD for identifying pulmonary rehabilitation need (AUC=0.83, 95% CI: 0.76–0.90), with an optimal cutoff of 345 meters showing 82.4% sensitivity and 75.8% specificity.

Conclusion:

Clinically treated pulmonary tuberculosis patients demonstrated substantial residual functional impairment despite microbiological cure. Reduced functional exercise capacity was observed even among a subset of patients with preserved spirometric parameters, suggesting that spirometry alone may underestimate post-tuberculosis functional limitation. The Six-Minute Walk Test demonstrated significant associations with dyspnea severity and health-related quality of life, while also showing good diagnostic

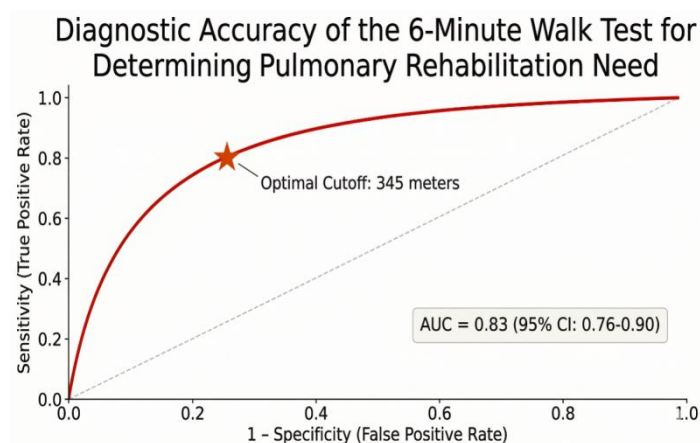
accuracy for identifying patients requiring pulmonary rehabilitation. As a simple, low-cost, and reproducible functional assessment tool, the 6MWT may help guide pulmonary rehabilitation referral in post-tuberculosis care settings.

Key Words:

Tuberculosis; Pulmonary Rehabilitation; Six-Minute Walk Test; Exercise Tolerance; Quality of Life

Figure and table:

Figure 1. Receiver Operating Characteristic (ROC) Curve for Identifying Pulmonary Rehabilitation Need



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