Changes in physical and mental health among TB patients during treatment in Southern Africa

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BACKGROUND

- Tuberculosis (TB) contributes to high morbidity and mortality worldwide.
- TB may also impair people's quality of life (QoL) and physical fitness.
- We studied the change in health-related QoL and functional exercise capacity (cardio-pulmonary function) in TB patients living with and without HIV between treatment start and end.

METHODS

- We recruited people TB aged ≥15 years between Oct. 2022 and July 2023 in 5 ongoing TB cohorts in Zambia, South Africa, Malawi, Mozambique, and Zimbabwe.
- At the start (baseline) and at the end of TB treatment, we measured physical and mental health outcomes using the QoL Short Form Health Survey (SF-12), depression using the Patient Health Questionnaire (PHQ-9), and physical fitness using the 6-min walk test (6MWT).
- We estimated changes in QoL physical (QoL-PCS) and mental (QoL-MCS) t-score component, depression score (PHQ9-S), and 6MWT distance (6MWT-D) between the start and end of TB treatment. We also estimated the association of these changes with baseline characteristics using Bayesian multivariable log-linear regression models and cohort-specific random effects.

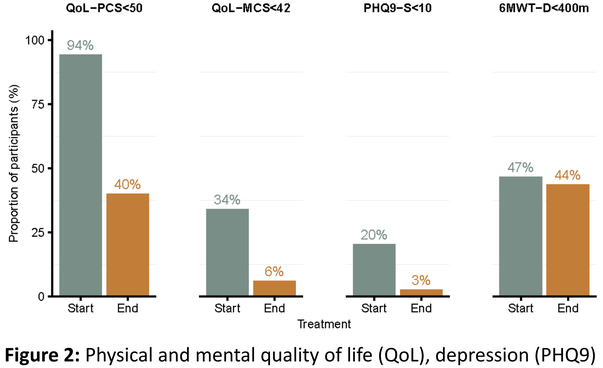
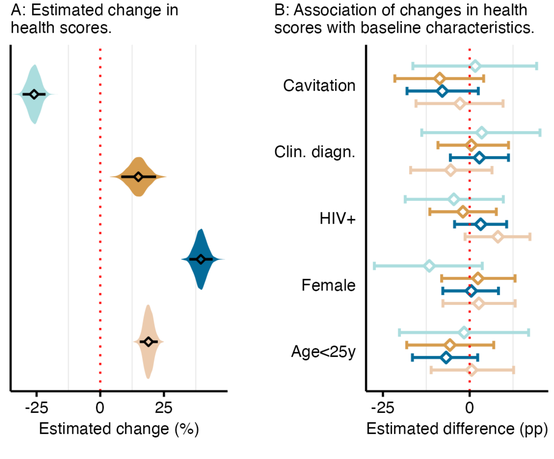


Figure 2: Physical and mental quality of life (QoL), depression (PHQ9) and physical fitness (6MWT) at start versus end of TB treatment using cut.off health scores.

Quality of life and physical fitness were reduced at the start of tuberculosis treatment among patients in Southern Africa, but improved by the end of treatment.

RESULTS

- We included 200 TB patients with at least one outcome at the start and end of treatment. Median age was 36 years (Interquartile Range [IQR]: 28-43 years), 55 (27%) female, 79 (40%) living with HIV, 101 (51%) were clinically diagnosed with TB, 34 (17%) had lung cavitations, and 3 (1%) presented with TB drug resistance.
- At treatment start, overall median QoL-PCS was 37 (IQR 29-43), QoL-MCS was 44 (IQR 39-50), PHQ9-CS was 6 (IQR 3-10), and 6MWT-D was 400m (IQR 332-464). QoL-PCS increased by 39% (95%-Credible Interval [CI] 35-44%), QoL-MCS by 19% (95%-CI 16-22%), 6-MWT-D by 15% (95%-CI 8-22%), and PHQ9-S decreased by 26% (95%-CI 22-31%) (Figure 1A). Similar trends were found when using cut-off health scores (Figure 2).
- Lung cavitations tended to be negatively associated with improvements in QoL-PCS and physical fitness, and female gender tended to be associated with improved PHQ9-S scores (Figure 1B).



Reference: male, <25y, HIV−, clinically undiagnosed, no cavitation.
Violin plots: posterior distribution; medians: dots, lines: 95%-CIs. PP=percentage points.

Figure 1: Changes in health scores and associated factors.

CONCLUSIONS

- QoL and physical fitness were reduced at the start of treatment in South African TB patients but improved by the end of treatment. Recruitment and follow-up visits six months after completion of TB treatment are ongoing.
- More emphasis should be placed on improving clinical management with respect to QoL and mental health aspects during and after TB treatment.
- The longer-term negative impacts of TB on both physical and mental health, and more generally on the quality of life after the end of treatment have been poorly studied.
- In future projects, we intend to identify groups of participants sharing similar trajectories of depressive symptoms, or similar trajectories of quality of life and physical fitness, and to investigate the association between these groups and post-TB lung sequelae or death.

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