



Evaluating the Effectiveness of a Community-Based Directly Observed Therapy Supporter Network for Tuberculosis Treatment in Khartoum, Sudan: A Mixed-Methods Study

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Abstract

Tuberculosis (TB) remains a significant public health challenge in Sudan. Health system constraints often limit the implementation of facility-based directly observed therapy (DOT). Community-based DOT supporter networks are a proposed alternative, but evidence of their effectiveness in this context is scarce. This study evaluated the effectiveness of a community-based DOT supporter network for TB treatment in Khartoum, Sudan. Its objectives were to assess treatment success rates, identify operational strengths and weaknesses, and understand patient and supporter experiences. A convergent parallel mixed-methods design was employed. The quantitative component was a retrospective cohort study analysing treatment outcomes for patients enrolled in the network. The qualitative component involved semi-structured interviews with a purposive sample of patients, DOT supporters, and clinic staff. Quantitative data were analysed descriptively, while qualitative data underwent thematic analysis. The treatment success rate among patients in the network was 87%, exceeding the national average. Qualitative analysis revealed three key themes: the critical importance of supporter empathy and flexibility, logistical challenges related to transportation and stigma, and improved treatment literacy among patients. The community-based DOT supporter network was an effective model for supporting TB treatment in Khartoum, achieving high treatment success. Its success was underpinned by the relational aspects of care, though systemic barriers persisted. Programme managers should invest in supporter training that emphasises interpersonal skills and

counselling. Policy makers should consider formalising and scaling the network model, integrating mechanisms to address transport costs and mitigate stigma. tuberculosis, directly observed therapy, community health workers, treatment adherence, Sudan, mixed methods This study provides empirical evidence on the operational realities and outcomes of a community-based DOT model in a low-resource setting.

Keywords: *Directly Observed Therapy, Community-Based Interventions, Tuberculosis Treatment, Sub-Saharan Africa, Mixed-Methods Research, Programme Evaluation, Public Health*

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