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The effect of energy-protein supplementation on weight, body composition and handgrip strength among pulmonary tuberculosis HIV coinfected patients: randomized controlled trial in Mwanza, Tanzania

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Undernutrition is common among smear-positive tuberculosis (PTB+) patients. Micronutrient supplementation may improve treatment outcomes, but it is unclear whether additional energy-protein would be beneficial. This randomised controlled trial aimed to assess the effect of energy-protein supplementation on weight, body composition and handgrip strength on the background of high micronutrient intake during TB treatment. PTB+ patients coinfected with HIV were allocated one or six daily biscuits for 60 days during TB treatment. Weight, arm fat area, arm muscle area, and handgrip strength were assessed at baseline and two and five months. A total of 377 patients were recruited. There were no effects on any outcome at two months, but energy-protein supplementation was associated with a 1.3 kg (95% CI: -0.1, 2.8) increased handgrip strength gain at five month. However, after two months energy-protein supplementation led to a weight gain of 1.9 kg (95% CI: 0.1, 3.7) among patients with CD4 counts ≥350 cells/μl, but not among patients with low CD4 counts (-0.2 kg; 95% CI: -1.3, 0.8) (*P* for interaction=0.03). Similarly, at five months, energy-protein supplementation led to a 2.3 kg (95% CI: 0.6, 4.1) higher handgrip strength gain among patients with CD4 counts <350 cells/μl, but not in those with high CD4 counts (*P* for interaction=0.04). In conclusion, energy-protein supplementation to PTB+ HIV infected patients had no effects on weight and body composition, but was associated with increased handgrip strength. More research is needed to develop an effective supplement, before it is recommended to TB programmes. This trial was registered at ClinicalTrials.gov as NCT00311298