

Post-discharge body composition outcomes for children treated for severe and moderate acute malnutrition using ready-to-use therapeutic food

Introduction: Moderate acute malnutrition (MAM) affects 36 million children worldwide and results in increased risk of illness, reduced physical and mental development, and death. International guidelines for managing MAM are currently limited. Understanding the effects of MAM and MAM treatment on body composition is essential for informing the creation of guidelines which are sensitive to the growing “double burden” of malnutrition in low-income countries.

Methods: Nested within a non-inferiority cluster-randomised trial, this study aimed to quantify differences in body composition, 4-months post-treatment, between those treated with a novel, simplified “combined protocol” and those treated with the standard protocol. The combined protocol provides ready-to-use therapeutic food (RUTF) for both severe acute malnutrition (SAM) and MAM. The standard protocol comprises RUTF for SAM cases and ready-to-use supplementary food (RUSF) for MAM cases. Body composition was assessed through bioelectrical impedance analysis (BIA) and skinfold thicknesses. Data was analysed using simple linear regression.

Results: These are preliminary results at the recruitment half-way point. Full results will be available by December 2018. So far 291 children have been recruited (66% female; median age 18 months; age range 11 - 52 months), 171 in control clinics and 120 in intervention clinics. Valid, repeatable BIA readings are available for 275 children. No significant unadjusted differences in BIA outcomes (raw impedance values and phase angles) nor skinfold thickness outcomes (tricep, subscapular and skinfold thickness ratio (tricep:subscap)) were found between acutely malnourished children treated with the combined protocol vs the standard protocol (Table 1). Nor were any significant difference seen between children admitted with SAM and those admitted with MAM by 4-months post-discharge. When comparing MAM cases only (n=187), there was no unadjusted significant differences in raw BIA outcomes nor subscapular skinfold thickness, however MAM cases treated with RUTF had significantly larger tricep skinfold thickness than those treated with RUSF (mean difference: 0.80cm, 95%CI 0.27 to 1.33, p=0.003). Subcutaneous fat levels remained low in all groups (tricep skinfold thickness z-scores -0.6 and -0.9 for MAM treated with RUTF and MAM treated with RUSF respectively).

Conclusion: Based on preliminary, unadjusted analyses, the simplified combined protocol for acute malnutrition was non-inferior to the standard protocol with regard to body composition outcomes at 4-months post-discharge. MAM children treated with the RUTF-only combined protocol appear to have similar lean mass levels as indicated by BIA and similar core body fat levels indicated by subscapular skinfold thickness. However, MAM children treated with RUTF may have more peripheral subcutaneous fat indicated by tricep skinfold thickness. All children remained with subcutaneous fat levels below the WHO global norm (z-score 0), hence there is no evidence of excessive fat gain by 4-months post malnutrition treatment. Future follow-up is needed to explore longer term outcomes.

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