The effect of dietary supplementation on the change in body composition of young Malian children with MAM

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Objective: To compare the effect of four dietary supplements for the treatment of moderate AM (MAM) on the change in body composition.

Methods: 289 Malian children 6-35 months of age with non-edematous MAM were randomized in clusters to receive 1 of 4 supplements, which provided 500 kcal/day for 12 weeks: 1) Supplementary Plumpy (SP); 2) Corn Soy Blend ++ (CSB++); 3) Misola (MI); 4) Locally milled flours plus sugar, oil, and micronutrient powder (LMF). Body composition was assessed at baseline and at the end of the 12 week intervention using deuterium oxide dilution and Fourier Transform Infrared Spectroscopy.

Results: At baseline, the mean ± SD age, mid-upper arm circumference (MUAC), weight-for-length Z-score (WLZ), body weight, total body water (TBW), fat-mass (FM), and percent FM (%FM) across all subjects was 14.8 ± 7.2 months, 12.1± 0.5 cm, -2.20 ± 0.66, 7.03 ± 1.12 kg, 3.94 ± 0.76 kg, and 29.0 ± 6.32 %, respectively. At 12 weeks, the adjusted increases of 1.23 kg in weight and 1.15 cm in MUAC were greatest in the SP group. FM increased by 0.35 kg, 0.29 kg, 0.25 kg, and 0.41 kg ($p=0.02$) among children in the SP, CSB++, MI, and LMF groups, respectively; however, the change in %FM did not differ between groups ($p=0.13$). Gains in MUAC, body weight, TBW, FM, and %FM were greater in children who recovered from MAM vs. those who did not recover ($p<0.0001$).

Conclusion: Body composition assessment provides additional insight into the type of tissue accrued during recovery from MAM.