

Systematic Review and Meta-Analysis of Food-Based Interventions for Recovery from Moderate Acute Malnutrition

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Background and Objectives:

In 2011, an estimated 40 million children worldwide had moderate acute malnutrition (MAM), defined as weight-for-height between -3 and -2 z-scores of the median of the WHO child growth standards, without edema (WHO, 2006). Children with MAM are at an increased risk of increased morbidity and mortality and poor cognitive development (Black, 2008). Children with MAM have an increased need for energy and essential nutrients beyond the nutritional requirements of non-malnourished children. Specially formulated foods can complement the diet and provide additional nutrients. These can include fortified blended foods (FBF) such as corn-soy blend, and lipid-based nutrient supplements (LNS) such as ready to use foods like Plumpy'Nut. Scientific evidence and consensus on the comparative effectiveness of these supplementary foods for recovery from MAM in children remains unclear (WHO, 2012). Our objective was to examine, through systematic review, the comparative effectiveness of lipid-based nutrient supplements (LNS) versus fortified blended foods (FBF) in treatment of moderate acute malnutrition (MAM), and effects on growth in young children.

Methods:

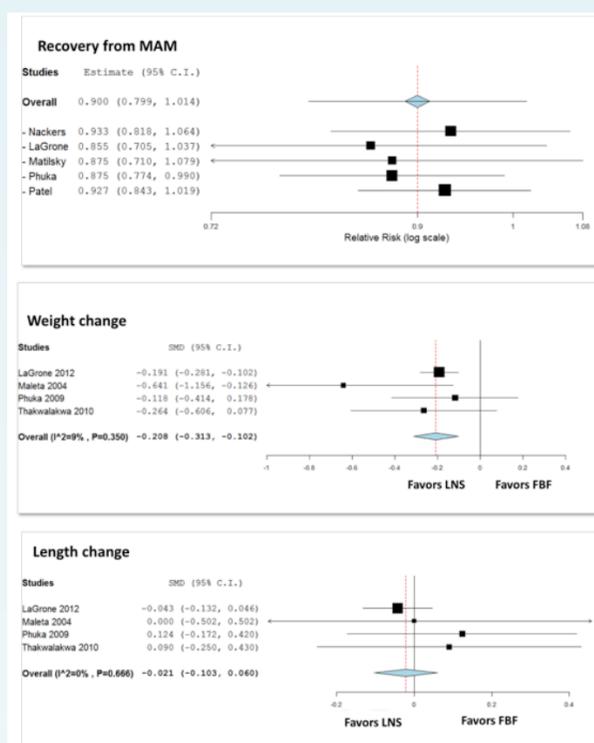
Data sources: All published articles identified through MEDLINE®, and the Cochrane Central Register of Controlled Trials, from inception to July 2012.

Study selection: Two reviewers independently selected studies on the basis of predetermined eligibility criteria. We considered any comparative studies of children with moderate acute malnutrition aged below 5 years. Based on the food constituents, we broadly categorized interventions into FBF and LNS with additional intervention groups differentiated by addition of dairy and micronutrients. The primary outcome of interest was recovery from moderate malnutrition. Other outcomes included continuous HAZ, WHZ, and weight and length measurements.

Data extraction: One reviewer abstracted article information into predesigned extraction forms; a second reviewer checked information for accuracy. A standardized protocol was used to extract details on designs, interventions, outcomes, and methodological issues.

Results:

- Thirty four out of 12,453 screened articles were accepted, after a two-step process of double independent abstract and full text screening. Interventions ranged 8 to 16 wks in duration.
- Meta-analysis of 5 comparable studies showed a 10% lesser recovery rate from MAM in children treated with FBF as compared with LNS (RR=0.9, 95% CI 0.8,1.01.; 79.6% LNS vs 77.5% FBF). This indicates that for every 48 children that were treated with FBF rather than LNS, one less child recovered from moderate malnutrition.
- Weight gain was significantly higher in children treated with LNS compared with FBF (standardized mean difference = -0.21; 95%CI -0.31,-0.1; n=4 studies).
- Height gain was larger in children treated with FBF (standardized mean difference =-0.02; 95%CI -0.1-0.06; n=4 studies) but this difference was not significant.



Conclusions:

LNS was associated with a higher rate of recovery from MAM and faster weight gain when compared with FBF supplementation in children under 5 with MAM. Height gain was not significantly different between the supplement groups. The studies in this analysis were heterogeneous leading to dilution of comparative effect. More comparable studies are needed which include measures of body composition, longer term follow up and analysis of cost-effectiveness.

References:

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Keywords:

Moderate acute malnutrition, LNS, FBF, therapeutic foods, children, systematic review