

## Nutritious supplemental foods for pregnant women from food-insecure settings

This is a summary of the following paper: Ciulei M, Smith E, Perumal N et al. (2023) *Nutritious supplemental foods for pregnant women from food insecure settings: Types, nutritional composition, and relationships to health outcomes*. *Current Developments in Nutrition*, 7, 6. <https://www.sciencedirect.com/science/article/pii/S2475299123247678>

Pregnancy is characterised by an increased demand for energy and nutrient intake, with poor nutrition during this period being a contributor to adverse maternal and infant health outcomes. There is growing evidence that the provision of nutritious supplemental foods to undernourished pregnant women can improve birth outcomes. However, comparing and synthesising the evidence base is challenging due to differences in intervention design and products and the use of ambiguous terminology. This study aimed to define balanced energy-protein (BEP) supplements and lipid-based nutrient supplements (LNS) and to review the evidence supporting each by a narrative review of systematic reviews and meta-analyses (SRMAs).

BEP supplements differ from LNS because they provide 25% of energy from protein, while

LNS provides less than 50% of energy from fat (including essential fatty acids). There are three formations of LNS – small-<sup>1</sup>, medium-<sup>2</sup>, and large-<sup>3</sup> quantity LNS. The energy provided by medium- and large-quantity LNS overlaps with some BEP supplements, but the proportion of fat and protein differentiates the two.

This study identified five SRMAs (20 trials) that evaluated the effect of BEP compared with no BEP/control. BEP supplements ranged in calories (118 to 1,017 kilocalories), protein (3 to 50 grams), fat (6 to 57 grams), and micronutrient content. Overall, BEP improved birth weight and reduced the risk of stillbirth and small for gestational age. A total of three SRMAs (five trials) evaluated the effect of LNS compared with iron folic acid (IFA) or multiple micronutrients (MMNs). The LNS interventions comprised small- and large-quantity LNS

that ranged in calories (118 to 746 kilocalories), protein (3 to 21 grams), fat (10 to 53 grams), and micronutrient content. When compared with IFA, LNS increased pregnancy duration, birth weight, and birth length and reduced the risk of small for gestational age and infant stunting. However, no beneficial effect of LNS was identified when compared with MMN.

Despite heterogeneity in the nutritional composition of BEP supplements, which complicates interpretation of results, the evidence suggests that these products may improve birth outcomes in nutritionally at-risk populations. Further research is needed to clarify the most appropriate BEP supplement composition required and which pregnant women would benefit most from interventions. The evidence for LNS compared with IFA is promising but limited. There is a need for more homogenous evidence to clarify whether there is a benefit in providing LNS over MMNs.

<sup>1</sup> Small-quantity LNS provides 20 grams of food per day, including 3 grams (9%) of protein and 10 grams (73%) of fat and is meant to complement food in the diet.

<sup>2</sup> Medium-quantity LNS, also known as ready-to-use supplementary food, has traditionally been used to treat moderate wasting and provides between 45 and 90 grams per day of supplementary food, of which 6 grams (10%) is protein and 16 grams (58%) is fat.

<sup>3</sup> Large-quantity LNS, which is also referred to as ready-to-use therapeutic food, has been used to treat severe wasting in children and provides between 180 and 280 grams per day of supplementary food, of which 15 grams (16%) is protein and 28 grams (67%) is fat.

## Improved wasting recovery with COVID-19 adapted nutrition treatment in South Sudan

This is a summary of the following paper: Lyles E, Banks S, Ramaswamy M et al (2023) *Acute malnutrition recovery rates improve with COVID-19 adapted nutrition treatment protocols in South Sudan: a mixed methods study*. *BMC Nutrition*, 9, 1, 1–9. <https://doi.org/10.1186/s40795-023-00696-y>

Emergency nutrition programme adaptations were implemented globally as part of COVID-19 mitigation strategies. However, the consequences of implementing these protocol changes at scale, particularly in regions facing worsening food security, have not been comprehensively studied. This study describes the impact of COVID-19 on nutrition programming in South Sudan, utilising a mixed-methods approach. The research analysed programme indicators over time by comparing two periods: 'pre-COVID' (January 2019–March 2020) and 'post-COVID' (April 2020–June 2021).

The researchers conducted a desk review and secondary analysis of facility-level data in South Sudan, focusing on severe and moderate wasting cases. Key indicators included wasting admissions (children aged 6–59 months admitted to outpatient therapeutic programmes and targeted supplementary feeding programmes) and wasting programme exit outcomes (children

exiting programmes via recovery, default, death, and non-response – relative to the total number of children in each programme).

The median number of community-based management of acute malnutrition (CMAM) sites in South Sudan increased slightly (+1.85%) during the COVID-19 period. Notably, the analysis of programmatic data from all CMAM reporting sites in South Sudan revealed decreased admissions and improved programme outcomes. For severe wasting, total admissions (-8.2%) and median monthly admissions (-21.8%) both declined during COVID-19, compared to the pre-COVID period. Total moderate wasting admissions increased slightly (+1.1%), while median monthly admissions declined (-6.7%). There were improvements in median monthly recovery rates for both severe (from 92% to 95.7%) and moderate wasting (from 91.5% to 94.3%) across all states. Default and non-recovery rates decreased nationally, while mortality rates remained constant.

It is difficult to attribute declines in admissions to protocol adaptations, as during the pandemic South Sudan experienced concurrent challenges such as flooding, displacement, intensified conflict, and food insecurity, which are all factors that could affect access. States with the largest admission declines also saw reductions in the number of treatment facilities during COVID-19, also suggesting that coverage was a key issue.

The study relies on aggregated facility-level data without individual-level information. This hinders any adjustment for child-level demographic characteristics or nutritional status. Additionally, some sites reported no admissions for extended periods without documentation, which raises the possibility of data inaccuracies. The analysis was also observational, not explanatory, which further limits any interpretation. While the COVID-19 period in this analysis began in April 2020, various protocol revisions occurred at different times and locations beyond this date.

The authors suggest that, in this setting, improved recovery, default, and non-responder rates were observed following the adoption of simplified protocols during the pandemic and that this warrants their continued use. However, given the array of causative and/or confounding factors in this study, any decision on maintaining simplified protocols cannot be based on these findings alone.