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## Study Status

In Progress

## Sample Size

2,291 caregiver-child pairs

## Research Implemented by IPA

Yes

# The Impact of Growth Charts and Small-Quantity Lipid-Based Nutrient Supplements (SQ-LNS) on Child Growth in Zambia

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Stunting, or being too short for one's age, is a warning signal that a child is at risk of failing to reach their full physical and developmental potential. Stunting is caused by poor nutrition and frequent infections during early life.

The consequences of stunting include impaired brain development, poor educational outcomes, reduced earnings in adulthood, and an increased probability of living in poverty. In Zambia, stunting remains a significant problem, impacting 35 percent of children under the age of five, which is higher than the average within Africa of 31 percent ([UNICEF/WHO/World Bank, 2023](#)).

In collaboration with the Zambian Ministry of Health and IPA, researchers evaluated the impact of home-based growth charts and SQ-LNS—ready-to-eat small packets of paste that provide energy, protein, fats and micronutrients—on child growth, nutrition, and development outcomes.



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## Key Findings

The distribution of small-quantity lipid-based nutrient supplements (SQ-LNS) to families in Zambia led to notable improvements in the health and development of children under five years old.

- The odds of a child being stunted decreased by 37 percent.
- The odds of a child having anemia went down by 26 percent. Children that suffer from anemia are at risk of impaired growth, brain and motor skills development, which lead to reduced productivity and income in adulthood.
- Child development scores, as measured by the Global Scales for Early Development (GSED), increased by 0.28 standard deviations<sup>1</sup>, reflecting positive advancements across cognitive, motor, language, and social-emotional domains.

Growth charts demonstrated some positive impacts on children's health, but they did not improve child growth and were less effective than SQ-LNS alone in improving health and development outcomes.

Combining growth charts and SQ-LNS reduced the odds of anemia and being underweight, but it did not have the same impact as using SQ-LNS alone on child growth and development outcomes.

## Recommendations

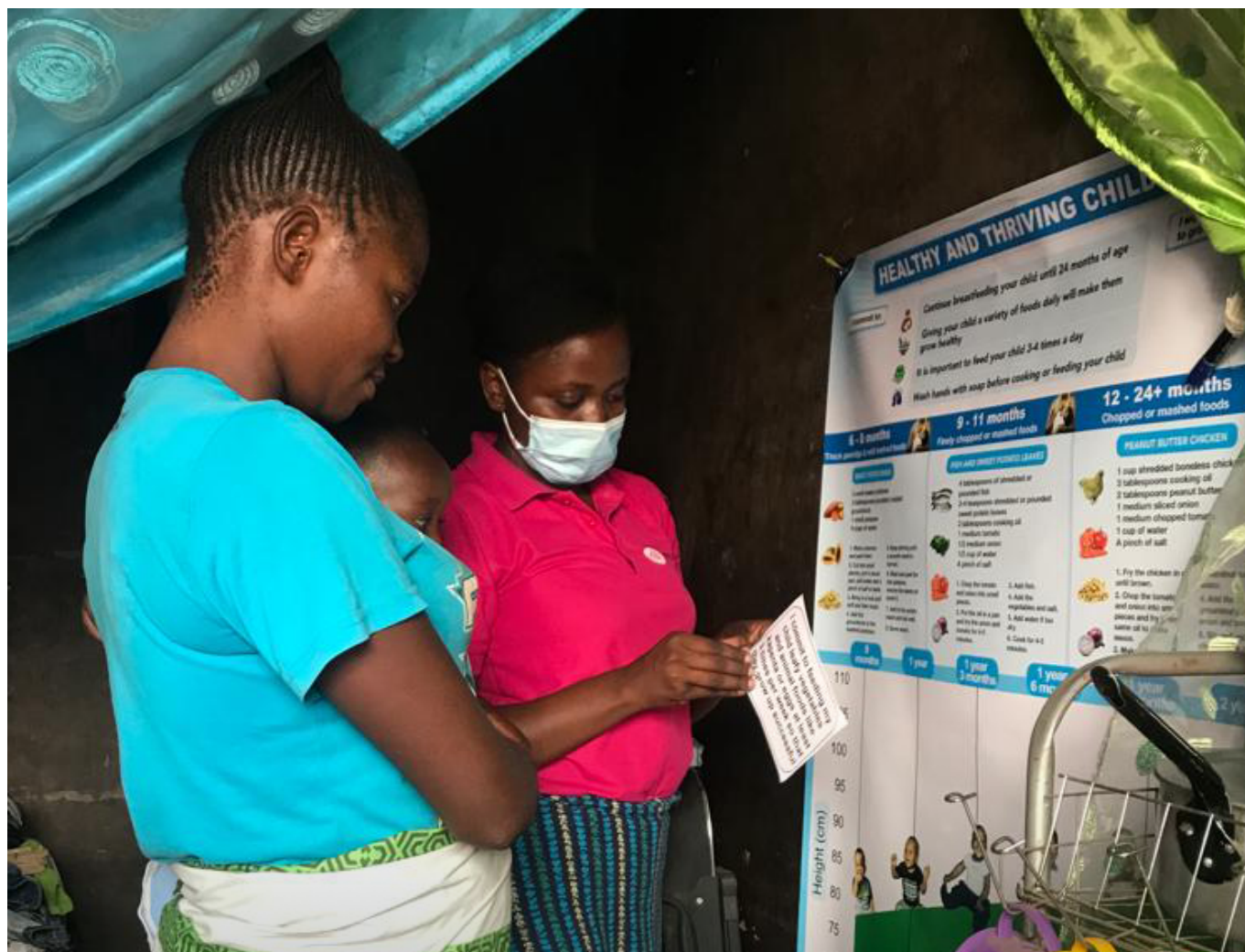
Given that SQ-LNS significantly improved child growth, nutrition, and development outcomes in this study, as well as in several recently published evaluations, IPA recommends their use and scale-up in countries facing high rates of growth faltering and food insecurity. Furthermore, SQ-LNS is recognized as one of IPA's Best Bets—innovations that, according to IPA sector experts and scientific advisors, hold significant promise for making an impact at scale.

IPA advises further research to determine the cost-effectiveness of SQ-LNS supplementation and to understand how impact may vary based on context, duration of supplementation, delivery platform, and co-delivery with other interventions.

Where resources are limited, IPA suggests priority should be given to children with low birth weight or early life growth faltering, as subgroup analysis in this study indicates the SQ-LNS intervention appears to have been particularly impactful among these children.

Despite some positive impacts, IPA does not recommend the use of growth charts to improve child growth and nutrition without further refinement and testing.

# The Impact of Home-based Growth Charts and Nutritional Supplements on Child Stunting in Zambia



A growth chart is installed in a household in Lusaka, Zambia as part of an IPA evaluation measuring the Impact of home-based growth charts and nutritional supplements on child stunting in Zambia. © 2021 Luse Mpoya

**Researchers, in partnership with the Zambian Ministry of Health and IPA, evaluated the impact of growth charts and Small Quantity Lipid-Based Nutrient Supplements (SQ-LNS) on child growth. SQ-LNS significantly improved growth and development, while growth charts offered some benefits but were less effective. Combining both resulted in a reduction in anemia and being underweight, but it did not have the same impact as using SQ-LNS alone.**

Stunting, or being too short for one's age, is a warning signal that a child is at risk of failing to reach their full physical and developmental potential. In Zambia, stunting impacts 35 percent of children under five, which is higher than Africa's 31 percent average.<sup>1</sup> Growth charts may help visualize the link between stunting and children's well-being and enable caregivers to improve health outcomes at home. SQ-LNS—ready-to-eat food supplements—can address nutritional gaps in children's diets that contribute to stunted growth, with evidence from other low- and middle-income countries showing transformative impacts on children's growth and development.<sup>2</sup>

Researchers partnered with IPA and the Zambian Health Ministry to evaluate the impacts of growth chart posters and SQ-LNS on child growth, nutrition, and development outcomes. A total of 2,291 caregivers and their infant children across Choma, Mansa, and Lusaka districts were randomly divided into the following groups:

1. **Growth charts for home use**
2. **Monthly supply of SQ-LNS**
3. **Growth charts and the monthly supply of SQ-LNS**
4. **Comparison group.**

The distribution of SQ-LNS led to notable improvements in the growth, health and development of children under five years old. SQ-LNS reduced stunting by 37 percent and anemia by 26 percent, and enhanced cognitive, motor, language, and social-emotional skills as indicated by a 0.28 standard deviation increase in the Global Scales for Early Development (GSED) scores. While growth charts showed some health improvements, they were not as effective as SQ-LNS in promoting growth and development. The combined use of growth charts and SQ-LNS decreased anemia and underweight but did not match the benefits of SQ-LNS alone on child growth and development outcomes.

## Sources

<sup>1</sup> United Nations Children's Fund (UNICEF), World Health Organization (WHO), International Bank for Reconstruction and Development/The World Bank. Levels and trends in child malnutrition: UNICEF / WHO / World Bank Group Joint Child Malnutrition Estimates: Key findings of the 2023 edition. New York: UNICEF and WHO; 2023. CC BY-NC-SA 3.0 IGO.

<sup>2</sup> Dewey, Kathryn G., K. Ryan Wessells, Charles D. Arnold, Elizabeth L. Prado, Souheila Abbeddou, Seth Adu-Afarwuah, Hasmat Ali et al. "Characteristics that modify the effect of small-quantity lipid-based nutrient supplementation on child growth: an individual participant data meta-analysis of randomized controlled trials." *The American journal of clinical nutrition* 114 (2021): 15S-42S.

## Implementing Partner

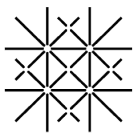


Ministry of  
Health

**Zambia Ministry of Health**

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## Research Partners



University  
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**Boston University**



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