Learning from the implementation of the Child Nutrition Program

This is a summary of the following paper: *DeLacey E, Tann C, Smythe T et al (2022) Learning from the Implementation of the Child Nutrition Program: A Mixed Methods Evaluation of Process. Children, 9, 12, 1965.* **https://doi.org/10.3390/children9121965**

Holt International launched the Child Nutrition Program (CNP) in 2012 to combat malnutrition risks in its global programmes. The programme operates in community-based settings, foster care systems, and health care and institutional based care facilities. It targets vulnerable children including orphans and abandoned children, many of whom have significant disabilities. The CNP aims to enhance nutrition and feeding practices for vulnerable children via training, resources, and support to caregivers and facilities, using a 'training of trainers' approach. This study retrospectively analyses CNP implementation in Mongolia and the Philippines, aiming to identify key learnings through a mixed methods evaluation.

The CNP spans 8 countries, with 68 sites serving over 7,500 children in total. Mongolia and the Philippines were selected for analysis due to a combination of logistics and data availability. The study utilised primary and secondary data. Participants were selected for key informant interviews (KIIs) via purposive sampling (one per site and per country programme). Secondary data was collected during routine programme audits between 2016 and 2020 and included Knowledge Attitude and Practice Surveys (KAPS) and nutrition and feeding pre-/post-training tests completed by staff from all levels at CNP sites.

Analysis of nutrition and feeding tests in both Mongolia and the Philippines indicated statistically significant ($p < 0.0001$) improvement following training. While KAPS showed changes in desired practices after training, there were no statistically significant differences ($p=0.67$) in post-training outcomes. Thematic analysis of KIIs highlighted the essential components for programme implementation and effectiveness, including strong leadership, buy-in, secure funding, reliable supply chains, training, and adequate staffing. Overall, findings supported the importance of ongoing support, frequent participatory training, and reinforcement for caregivers to achieve sustained behaviour change and desired outcomes.

This study contributes to the limited evidence on nutrition and feeding programme implementation. The study utilised a convenience sampling approach and remote interview format, both of which are efficient methods but may introduce bias. The principal investigator's involvement, though providing insight, could influence the findings. Analysis limitations include independent test samples and smaller sample sizes, both impacting the interpretation of the results. The routine nature and unknown validity of KAPS and pre-/post-training tests warrant further examination. The study did not involve other important stakeholders, such as children, caregivers, community members, families, or government partners in KIIs, presenting another key limitation.

Nevertheless, the CNP's implementation in Mongolia and the Philippines offers insight for comparable interventions in other settings, emphasising the importance of addressing barriers and fostering strong partnerships. Key factors for success include local government engagement, secure funding, adequate staffing, continuous training, robust support systems, and efficient supply chains. As malnutrition remains a significant challenge, the authors suggest programmes like the CNP should be prioritised. Using scaling frameworks in future research on CNP can increase understanding on how similar programmes can be scaled up globally to reach more vulnerable children.

Ghana: Sustained growth effects of early lipid-based nutrient supplements

This is a summary of the following paper: *Bentil H, Adu-Afarwuah S, Prado E et al. (2023) Sustained effects of small-quantity lipid-based nutrient supplements provided during the first 1000 days on child growth at 9–11 y in a randomized controlled trial in Ghana. The American Journal of Clinical Nutrition, 119, 2, 425–432.* **https://doi.org/10.1016/j.ajcnut.2023.10.033**

Nutritional supplementation during the first 1,000 days has proven effective in preventing child undernutrition. In 2009–2014, a trial in Ghana enrolled 1,320 pregnant women ≤20 weeks of gestation and randomly assigned them to three groups. The first group received Iron-folic acid (IFA) during pregnancy and a placebo at six months postpartum. The second, multiple micronutrient supplements (MMS) during pregnancy and six months postpartum. The third, small-quantity lipid-based nutrient supplements (SQ-LNS) during pregnancy and six months postpartum, with SQ-LNS for their children (aged from 6–18 months).

In this article, surviving children were followed up and re-enrolled from the original trial, at ages 9–11 years. This study analysed findings in two groups: SQ-LNS vs a control group (comprised of the original IFA and MMS groups). Height-for-age z-score (HAZ), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were primarily assessed. Secondary outcomes included body mass index-for-age z-score, mid-upper arm circumference (MUAC), triceps skinfold, waist-to-height ratio, blood pressure, and overweight, obesity, and stunting prevalence.

At follow-up, measurements were obtained from 966 children (331 SQ-LNS, 635 control). Baseline characteristics, except household asset score (higher in controls, $p=0.02$), were similar. Mean HAZ did not differ significantly ($p=0.06$) between SQ-LNS (-0.04, SD=0.96) and control groups (-0.16, SD=0.99). No group differences were found in other outcomes. Both groups approximated the WHO median for HAZ, with a 2% prevalence of stunted children. Overweight and obesity prevalence in the SQ-LNS group was 10.9% and 3.9%, respectively, with few having high blood pressure (0% systolic, 1% diastolic). There were near identical results in the controls.

However, the authors found an interaction of the intervention with child sex (p-interaction = 0.075) and maternal pre-pregnancy body mass index (BMI) (p-interaction = 0.007). In girls, the SQ-LNS group had a higher HAZ than controls (0.08 vs. -0.16; P = 0.01). There was no difference in boys. Among mothers with pre-pregnancy BMI<25 kg/m2, the SQ-LNS group had a higher HAZ (-0.04 vs. -0.29; P = 0.004). For BMI ≥25 kg/m2, no significant differences were observed.

The study's strengths were a randomised design and large sample size. Limitations arise from children lost to follow-up, whose mothers differed in parity – which may affect our interpretation. The study population (from a specific region in Ghana) also prevents us from extrapolating these findings. Nonetheless, the semiurban areas observed encompass characteristics of both rural and urban settings – enhancing relevance to both contexts. Overall, the findings reveal that providing SQ-LNS during the 1,000-day window promotes long-term linear growth in girls and those with non-overweight/obese mothers. Further investigation is warranted to understand the differential response between girls and boys to SQ-LNS in terms of growth.

Comments from the editors

These are intriguing results showing increased linear growth in girls and children born to mothers with a lower pre-pregnancy BMI. This paper features an excellent original trial design and a rare opportunity to follow up longer-term linear growth (ages 9–11 years) for the children involved. At this stage, the mechanisms are unclear and warrant further investigation. Over time, as the evidence builds, we look forward to learning the public health significance of the effect sizes and their programming implications.