

Kang Y, Kim S, Sinamo S, Christian P. **Effectiveness of a community-based nutrition programme to improve child growth in rural Ethiopia: a cluster randomized trial.** *Maternal and Child Nutrition*. 2016 Aug 22. doi: 10.1111/mcn.12349. [Epub ahead of print]

## Introduction

Stunting and underweight continue to be a public health concern in many African countries and interventions are needed to reduce the stunting burden. Improving infant and young child feeding (IYCF) practices has been shown to benefit children's growth in low-income settings (1). Potential strategies include a variety of interventions from nutrition counseling of groups or individuals, mass media campaigns or more comprehensive behavior change communication activities. Educational messages can be delivered by trained community-based health workers or volunteers at family homes, in community centers or at health facilities (2).

Ethiopia's National Nutrition Program includes two types of community-based nutrition intervention programs in poor rural districts: 1) the Essential Nutrition Actions (ENA) program, and 2) Community-based Management of Acute Malnutrition (CMAM). ENA focuses on improving breastfeeding and complementary feeding practices and preventing micronutrient deficiencies, while CMAM covers identification and treatment of acute malnutrition. In addition to these existing governmental programs, World Vision developed a more intensive community-based participatory nutrition promotion (CPNP) program that engaged mothers during 2-week long nutrition sessions. The current issue of *NNA* summarizes an effectiveness trial of the CPNP program, which was recently published by Kang et al. in *Maternal and Child Nutrition* (3).

## Methods

The study was designed as a cluster-randomized effectiveness trial in a rural area of Eastern Ethiopia to compare children's growth in communities that receive CPNP in addition to ENA and CMAM programs versus communities exposed to ENA and CMAM only. A total of 12 clusters were identified for randomization after stratification by socio-economic living environments. Some program aspects of CPNP were derived from the Positive Deviance/Hearth program (4). Implemented activities included 12-day nutrition group sessions which were led by female operators at the village level. Each session was attended by 7-12 child-mother pairs. Mothers contributed foods and firewood and prepared complementary foods; and children were fed during the sessions. Feeding, caring, hygiene and health-seeking messages were discussed with the mothers. Once a session was completed in a village, another session was organized in a neighboring village. All children 6 – 12 months of age living in the intervention or control communities were eligible for participation. The reason for including all children,

independent of their CPNP participation, was that the CPNP program was implemented at the community level and was therefore expected to potentially impact not only active participants but also neighbors, who may have learned about the CPNP lessons indirectly. Children were weighed on the first and the 12<sup>th</sup> day of the session and 1 and 3 months after the last session. Participants had 1-2 follow-up visits by operators during the following 2 weeks.

The ENA focused on nutrition messages to all caregivers of children under 2 years of age through health extension workers or community volunteers. The messages focused on breastfeeding and appropriate complementary feeding practices. The CMAM program focused on severely wasted children, who received Plumpy'Nut until recovery. Both, ENA and CMAM, were implemented in intervention and control communities during the time period that the CPNP was implemented in intervention clusters.

Anthropometric measurements were collected in eligible 6-12 months old children at enrollment, and after 3, 6, 9 and 12 months. At enrollment, mothers were also asked about socio-economic status, food insecurity, drinking water sources, and sanitation facility. Every 3 months, mothers were also asked whether they participated in any of the three interventions.

## Results and Conclusions

Of the 2064 randomly selected children, 914 participated in the control and 876 in the intervention communities. Mean age of children was  $8.7 \pm 1.9$  months. The majority of mothers (83%) were illiterate and the majority of households (>90%) depended on mixed farming. In the CPNP communities, 372 nutrition sessions were held and 3299 mother-child pairs participated. The proportion of children in the intervention communities, who participated in the CPNP program, ranged from 16% at the first visit to 39% at the final visit. In the control communities, 3% of children participated in CPNP.

Children in the intervention communities grew more from ages 6 to 24 months compared to children in the control communities. In particular, the difference in length gain was 0.059 cm/month (95% confidence interval: 0.0.027, 0.0.092;  $P=0.001$ ) and in weight gain 0.031 kg/month (95% CI: 0.019, 0.042;  $P<0.001$ ). Although growth faltering was not prevented in the intervention area, the difference in monthly change in length-for-age z-score between the two communities was 0.021 z-score/month (95% CI: 0.008, 0.034;  $P<0.001$ ). At the end of the 12 months follow up, absolute risk reduction in the prevalences of stunting, wasting and underweight were computed using longitudinal data from enrollment to 12-months follow-up adjusting for differences in the prevalence at enrollment and cluster-level covariates. There was a significantly greater decline in absolute risk of 8.1% (95% CI: 1.1%, 15.1%;  $P=0.02$ ) in stunting prevalence in the intervention communities and a marginally significant decline of 6.3% (95% CI: 0.1%, 12.6%;  $P=0.046$ ) in underweight prevalence, respectively. The prevalence of wasting was not significantly different between the two study areas after 12 months of follow-up.

In summary, these findings of this cluster randomized trial suggested that the addition of a CPNP program to a governmental nutrition public health program was effective in improving child growth and reducing undernutrition among young children living in rural Ethiopia.

## Policy implications

Despite a relatively low participation rate of children who participated in the CPNP activities in the intervention communities, ranging from 16% to 39%, the program found a significant impact on stunting and underweight reduction. These findings contribute to the growing evidence suggesting that the promotion of complementary feeding through different behavioral change communication activities may improve child growth (5).

## NNA Editor's Comments

The present paper is a good example of an implementation research project showing a positive impact on childhood growth. In the assessed public health intervention program, the CPNP activities were added to an already existing nutrition program implemented by the government of Ethiopia, suggesting that multiple nutrition interventions may be required to have an impact on childhood stunting. However, growth faltering was not entirely prevented. In Africa, the reduction of stunting is a public health priority to meet the global target for reducing stunting by 40% in 2025 (6).

The authors suggested that the participatory approach taken in the present intervention may also strengthen the community health system, although this needs to be further explored. It may also be possible that the comprehensive CPNP activities directly addressed gaps in the existing ENA program. It would have been interesting to assess the effectiveness of a second intervention, namely, an improved ENA program. This would have helped public health managers decide whether the conclusion should be to add another nutrition program/service or rather to address the existing, identified gaps.

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