



Nutrition Society Congress 2024, 2–5 July 2024

Effect of health and agriculture services integration on the nutritional status of 4–6 years old children in rural Ethiopia

G.A Mersha¹, B.T Gutema³, S.D Henauw¹ and S. Abbeddou¹¹Department of Public Health and Primary Care, Ghent University, Belgium²Food Science and Nutrition Research Directorate, Ethiopian Public Health Institute, Ethiopia³School of Public Health, College of Medicine and Health Sciences, Arba Minch University, Arba Minch, Ethiopia

Undernutrition and poverty reduction requires multisectoral interventions including sectors like food and nutrition security, health, education, and food systems^{1,2}. A program aimed at improving child nutritional status through enhanced household food security and promotion of dietary diversity was jointly implemented by health and agriculture extension workers in Ethiopia³. The intervention packages include counselling on infant and young child feeding practices, agricultural production diversity, gardening, water, hygiene and sanitation practices, community group dialogues and media campaigns, were provided for four years⁴. Both the control and the intervention arms continued with standard activities of health and agricultural extension works.

The study aims to evaluate the effect of joint health and agriculture interventions on the nutritional status and dietary intake of 4–6 years old children in agrarian regions of Ethiopia.

The study was a cluster randomized controlled trial. A multi-stage clustered sampling technique was implemented for selecting villages for both the intervention and control arms from the four regions of Ethiopia (Tigray, Amhara, Oromia and Southern Nations, Nationalities and Peoples, SNNPR). Baseline data were collected from 2,531 children aged 0–23 months in 2016. Postintervention data were collected from 1,265 children in 2021, following four years of intervention (or no intervention). Our data analysis includes both baseline and follow-up data. Anthropometric measurements, hemoglobin concentrations, and dietary intakes were collected from children, mothers, and their households. Length/Height-for-age (LAZ/HAZ), weight-for-age (WAZ), and weight-for-height z-scores (WHZ) in standard deviations (SD) were computed following the 2006 WHO Child Growth Standards. The analysis was conducted using a linear regression mixed model, which adjusts for the clustering effects at the regional, district, and kebele levels.

At baseline, there was no significant difference in the prevalence of stunting (29.4%), underweight (17.7%), and wasting (5.9%), while the prevalence of anemia was significantly higher in control arm (35%) compared to the intervention arm (26.2%) p-value (<0.001). The mean children's diet diversity score was 21.5 and 22.4 food groups per week in the control and intervention arms, respectively. After adjusting for covariates, we found no significant mean difference (95% Confidence Interval, 95% CI) in children's HAZ (−0.04 SD, 95% CI: −0.28, 0.20), WAZ by (−0.08 SD, 95% CI −0.25, 0.09), WHZ (−0.08 SD, 95% CI: −0.28, 0.13), hemoglobin concentrations (−0.01 SD, 95% CI −0.22, 0.21), and diet diversity score (−0.03 food groups, 95% CI: −0.22, 0.28) between intervention and control arms.

Joint health and agriculture integrated services have no effect on the reduction of undernutrition in children in agrarian regions of Ethiopia. Causes for no response should be explored and further research with stronger design is required to explore the additional benefits of nutrition-sensitive agriculture in addressing undernutrition.

Acknowledgments

We are grateful to the study participants and the Ethiopian public health institute staff. In addition, our appreciation goes to the health officials from central to community level, health, and agriculture extension workers for facilitating the implementation of the study. Finally, we would like to thank our data collectors and supervisors for their support.

References

1. Duncan E *et al.* (2022) Connecting the food and agriculture sector to nutrition interventions for improved health outcomes. *Food security* **14**(3), 657–675.
2. Ruel MT, Alderman H, and the Maternal and Child Nutrition Study Group (2013) Nutrientsensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *The Lancet* **382**(9891): 536–551.
3. Moss C *et al.* (2018), Sustainable Undernutrition Reduction in Ethiopia (SURE) evaluation study: a protocol to evaluate impact, process and context of a large-scale integrated health and agriculture programme to improve complementary feeding in Ethiopia. *BMJ open* **8**(7): e022028.
4. Mersha GA *et al.* (2017), Linkages between health and agriculture sectors in Ethiopia: a formative research study exploring barriers, facilitators and opportunities for local level coordination to deliver nutritional programmes and services. *BMC Nutrition* **3**(1).