From simple to complex solution to undernutrition

Assessing the impact of agricultural biodiversity on child nutrition in Guatemala

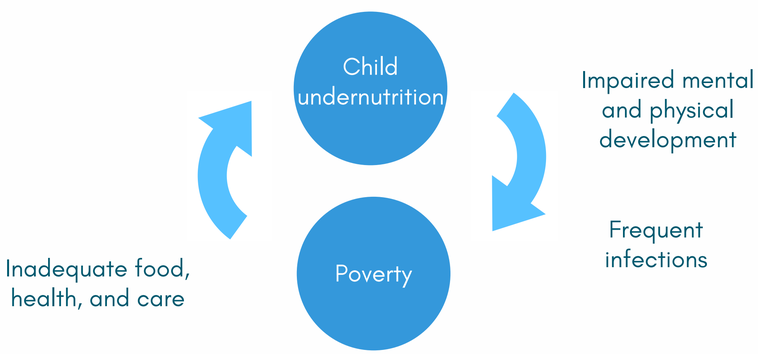
Luna-González, DV, & Sørensen, M (2018). Higher agrobiodiversity is associated with improved dietary diversity, but not child anthropometric status, of Mayan Achí people of Guatemala. *Public health nutrition*, 1-14.

The problem

Undernutrition

11% Global population is UNDERNOURISHED

23% Prevalence of STUNTING



Nutritional interventions

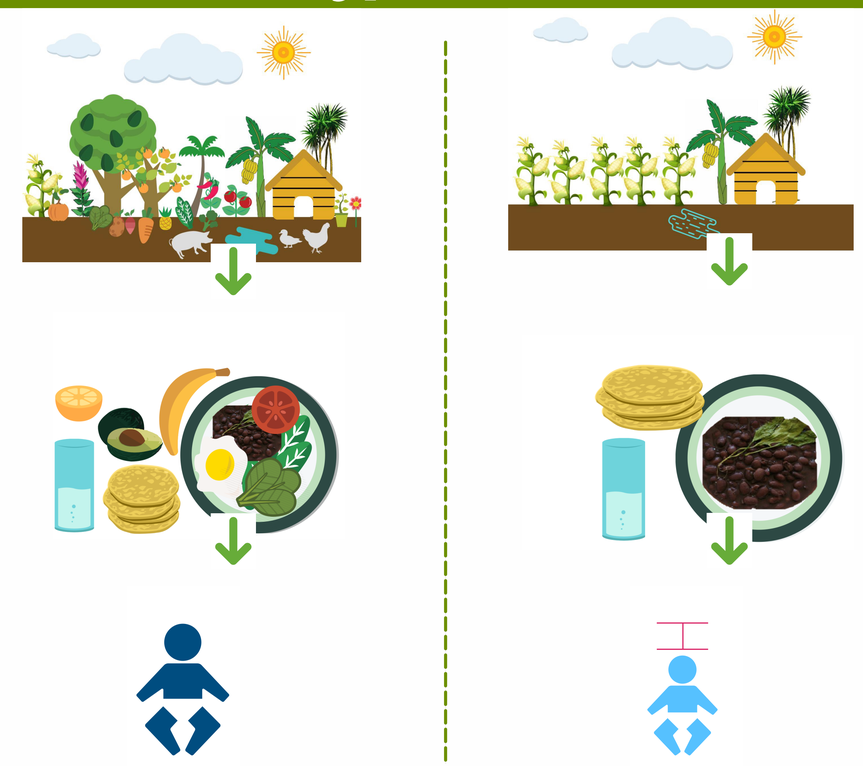
Agricultural interventions (Green Revolution)

"Improve food productivity"

- Nutrition: micronutrient deficiencies, single-nutrient interventions, starchy crops
- Society: increased gender and economic inequalities, dependency on external inputs
- Environment: biodiversity degradation, GHGE, deforestation, freshwater use, nutrients runoff, pollution

Agricultural interventions (Agroecology)

Hypothesis



Methods

Location & population

- 6 rural communities in Guatemala
- March to July of 2016
- 154 children aged 6-60 months
- 80% Mayan Achi people, 60% stunted children
- > 1300 masl, 769 mm rain, temperature 22-39 °C

Demographics

- Household characteristics (# persons, education, age), socio-economic information (housing conditions, assets ownership, WASH conditions, income-generating activities, land ownership).

Agricultural biodiversity

- Direct observation, Botanical Identification of species
- Crop species richness, Animal species richness
- Nutritional Functional Diversity Scores

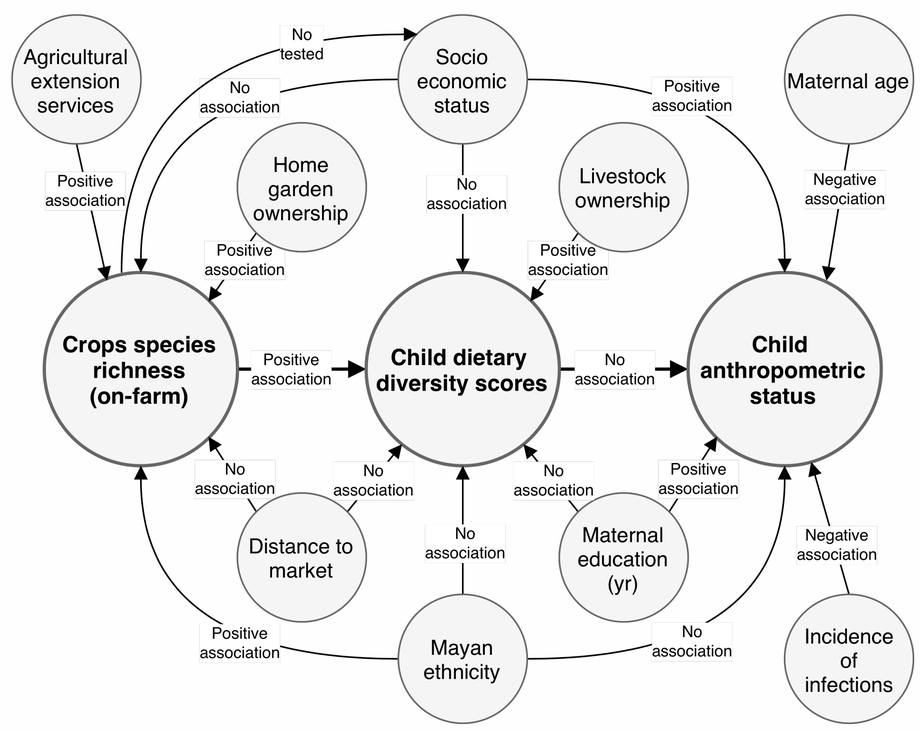
Dietary quality

- 24-hours recall
- Dietary diversity scores
- Food self-sufficiency, Source of food

Child nutritional status

- Length, Height, Weight
- WHO Child growth standards - HAZ, WAZ, WHZ

Results



Conclusions

Agricultural interventions that increase agrobiodiversity of both crops and livestock, for food production, are promising alternatives diversifying diets and increasing nutrient intakes. However, such interventions need to be accompanied with substantial improvements in WASH and housing conditions to reduce child morbidity and thus increase food utilization. In addition, these interventions need to include an important level of focus on family planning, nutritional education, and Indigenous and women's empowerment. We propose that agricultural interventions including all these elements could improve child nutrition through dietary diversification.

Next steps

- Resiliency / Sustainability of Diversified food systems
- Ecosystem services - regulating and supporting
- Soil health

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