

Tackling Childhood Malnutrition:

An investigation of innovative grassroots nutrition interventions around the world

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Background:

In 2008, *The Lancet* published a series entitled "Maternal and Child Undernutrition" that exposed the vast problems of malnutrition in developing countries and catalyzed a string of political and organizational commitments to reduce the burden of worldwide malnutrition; yet this was not enough.¹

Five years later in 2013, *The Lancet* published an entirely updated Maternal and Child Nutrition series that showed that malnutrition in children accounts for even more deaths than was previously realized.² According to the study, malnutrition accounts for 45% of all deaths of children under five years old, and 161 million children continue to suffer from stunted growth globally.^{3,4}

Malnutrition early in a child's life has profound consequences on both physical and cognitive growth and development that continue to impact children throughout their adult lives.^{2,3} Even though the repercussions of malnutrition are so clear, progress in lowering the prevalence has been slow. Large, top down approaches are successful in treating short-term problems, such as acute child malnutrition during the famines across Africa in the 1980s. However, when it comes to long-term issues with multifaceted, social causes and consequences, such as chronic childhood malnutrition, these top down programs often fail to produce sustainable, long standing change. Meanwhile, there is much untapped potential that lies within grassroots nutrition programs that produce long-term results, but lack large-scale impact. Deeper investigation into the models of these grassroots initiatives is needed in order to identify, disseminate, and scale successful programs to broaden their impact, while retaining sustainable outcomes.

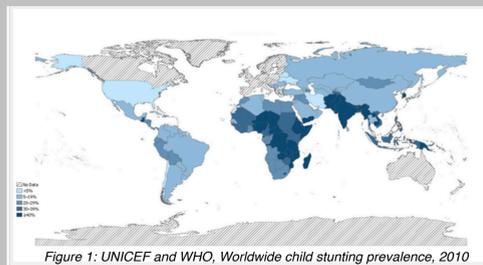


Figure 1: UNICEF and WHO, Worldwide child stunting prevalence, 2010



Photo 1: A health promoter measures a child's upper arm circumference in Kabale, Uganda

Objectives:

This mixed methods study aims to investigate the program models, implementation, and impact of ten innovative nutrition interventions from around the world in order to discover effective grassroots, community based models that produce sustainable results, but lack scale. Once identified, unique programs and strategies can be scaled up to catalyze global progress against childhood stunting.

Methodology:

The study was carried out in 2014 across ten case study sites in Guatemala, Peru, Rwanda, Uganda, Nepal and Cambodia. Fieldwork and interviews were completed in a three to five day time frame at each organization. A comparative, cross regional study design was used, with data collected using interactive interviews and field observation. For the interactive interview, a small number of "key informants" with extensive knowledge about the implementation of the nutrition related programs were hand selected for in-depth interviews. The interviews used a flexible template of questions, unlike the rigid, predetermined structure of the more traditional social survey. The number of interactive interviews at each organization varied, but averaged to be 2.5. A total of 25 interviews were conducted over the study. Data from interviews and fieldwork was consolidated and analyzed using NVivo qualitative data analysis software, Microsoft Excel software, and manually.

Inclusion criteria for the selected case study sites included: 1) must address chronic childhood malnutrition in children under five through nutrition specific or nutrition related programming, 2) must employ innovative models and have demonstrated impact on improving nutritional outcomes in the community, 3) must be community based programs, not top down initiatives from bilateral aid organizations. The selected case study sites encompass a broad range of approaches to tackling childhood malnutrition, and they operate within a diverse array of communities and cultures.

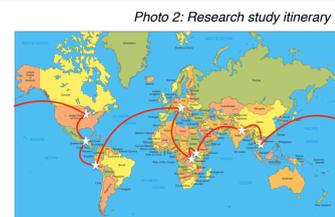


Photo 2: Research study itinerary

Table 1: Key components of multifaceted grassroots nutrition initiatives

		Program Components			
		Nutrition Supplementation	Parental Education	Primary Care Provision	Agricultural Support
Wuqu Kawoq Maya Health Alliance	Guatemala	Monthly provision of eggs, oil, Incaparinas	Group classes	Holistic primary care	
Mayan Families	Guatemala	Daily lunch + snack	Informal lessons		
Sacred Valley Health	Peru		Group classes	First aid, prenatal care	
Future Generations	Peru		Group classes	Holistic primary care	
Feed the World	Peru		Individualized instruction		Crops, livestock
One Acre Fund	Rwanda				Crops
Gardens for Health	Rwanda	High calorie peanut paste	Group classes	Holistic primary care	Crops, livestock
Kigezi Healthcare Foundation (KIHEFO)	Uganda	High calorie peanut paste, TPN	Individualized instruction	Inpatient care	Crops, livestock
Himalayan Healthcare	Nepal	High calorie peanut paste	Individualized instruction	Holistic primary care	
Build Your Future Today	Cambodia	Daily lunch	Group classes		

Results:

Wuqu Kawoq | Maya Health Alliance, Tecpán, Guatemala: Implements a holistic nutrition program for children 0-3 years that is comprised of three main components: 1) monthly nutrition supplements, including eggs, oil, Incaparinas, and black beans, 2) individualized primary care, including deworming medicine and growth monitoring, and 3) group education classes for caregivers, focused on nutrition and hygiene.

Mayan Families, Panajachel, Guatemala: Implements Preschool Nutritional Centers for children aged 3-5 years that have three components: 1) daily provision of multivitamins, along with a nutritionally balanced, vitamin rich lunch and snack, 2) regular anti-parasite treatment, and 3) monthly growth monitoring.

Sacred Valley Health, Ollantaytambo, Peru: Implements a community health worker (promotoras de salud) program. Each promotora: 1) attends monthly trainings on health promotion and first aid, run in conjunction with government clinics 2) provides basic first aid care, prenatal counseling, and referrals to local clinics, and 3) runs monthly education sessions on health related topics for community members.

Future Generations, Huánuco, Peru: Implements an outreach program to train and supervise village women as community health agents in partnership with a Local Health Administration Association. The community health agents: 1) carry out community surveys to identify at risk families, 2) conduct monthly home visits to at risk households, 3) promote healthy nutrition and sanitation habits, and 4) make referrals if needed.

Feed the World, Piura, Peru: Implements a multifaceted program at the intersection of health and agriculture that aims to create healthy, self-reliant beneficiaries. Their five-pronged approach toward self-reliance includes: 1) sequential vegetable gardens, 2) education on how to maximize the yield of field crops, 3) instruction in raising small livestock, 4) programs to promote economic independence, 5) lessons in nutrition and hygiene.

One Acre Fund, Rubengera, Rwanda: Implements a 4 part model aiming to make small holder farmers more prosperous. The model includes: 1) farm inputs, such as seeds and fertilizer, on credit, 2) delivery directly to the farm, 3) training on effective and efficient agricultural techniques, and 4) market facilitation for harvest sales.

Gardens for Health, Ndera, Rwanda: Implements a comprehensive agriculturally focused nutrition program across 18 health centers. Their approach includes: 1) collaborating with health centers to provide clinical treatment, 2) targeted agriculture support, including education on proper planting techniques and seed packages, 3) group lessons for mothers in health and nutrition topics, 4) advocacy for policies beneficial to child nutrition.

Kigezi Healthcare Foundation, Kabale, Uganda: Implements three key programs to improve child nutrition. The mutually reinforcing programs include: 1) a Nutrition Rehabilitation Center, which is an inpatient unit for acutely malnourished children, 2) a Sustainable Agriculture Demonstration Site, used for sustainable agriculture education, and 3) a rabbit breeding and training center for families of malnourished children.

Himalayan Healthcare, Kathmandu, Nepal: Implements a clinically based nutrition outreach program through established community hospitals and medical outreach efforts. The program has three key components: 1) free medical care, including consultations and deworming medication, 2) nutrition supplements, especially calorie dense peanut paste and multi vitamins, 3) individualized maternal education.

Build Your Future Today, Siem Reap, Cambodia: Implements a nutrition food feeding program for children under 5 years old using community chefs. Community chefs are trained to prepare healthy meals using local ingredients from organic vegetable gardens, which are served daily to families in the program. Chefs also share their knowledge of food preparation and nutrition with mothers.

Discussion:

The study revealed a deeper understanding of many multi pronged approaches to addressing childhood malnutrition. Multiple qualitative variables in the implementation of nutrition interventions were found to be positively correlated with impact. These findings have interesting policy implications, including:

Focus on Agricultural Approaches: Nutrition interventions that focus on agricultural solutions appear to produce the most sustainable, cost effective, and high impact results. Although it may be tempting to discount agricultural solutions in more arid, infertile places, the results of organizations like Feed the World in the deserts of Peru demand a reevaluation. Agriculturally focused nutrition programs should be further studied and considered in new contexts.

Target Infants and Pregnant Mothers: Young children show systematically better nutrition outcomes. Data across programs showed improved outcomes to be highly correlated with children under two years old. In fact, the most sustainable outcomes appear to occur when families are enrolled in the program when the mother is pregnant with her first child. Programs should consider new ways to modify enrollment procedures to target pregnant women and new mothers. Shifting the focus to be on prevention instead of treatment of malnutrition, will help avoid the necessity for supplemental foods and costly clinical interventions later on.

Facilitate Group Education Classes: Group education classes appear to provide not only economies of scale, but also work to form cohesive support groups that influence behavior change long after the end of the program. Education classes equip mothers with important lessons about health, nutrition, and agriculture, while a group setting works to decrease the average cost per participant. Nutrition programs that currently offer individualized education curriculums should consider how they can optimize their model to operate in groups, saving staff time and encouraging community wide support for advantageous behavior changes.

Prioritize Government Partnership: Government partnerships help to ensure program sustainability across the board. Collaborating with the government allows organizations to work in tandem on nationwide nutrition initiatives, often times garnering additional knowledge, resources, and expertise. Nutrition programs should continue to develop innovative and impactful models relevant to their local communities, and then use government partnerships to achieve the scale necessary for universal nutritional health.

This study also uncovered numerous challenges facing the field of nutrition, including:

- 1) Vast variability in the efficacy of nutrition innovations
- 2) Little cohesion in monitoring and evaluation indicators among programs
- 3) Difficulty finding sustainable, apolitical funding sources.

Conclusion:

- Nutrition programs and policies should prioritize agricultural approaches, should target infants and pregnant mothers, should facilitate group education classes, and should pursue government partnerships when possible.
- The results highlight the importance of using small scale, community approaches to achieve large scale impact when designing policies and large scale initiatives in order to ensure sustainable, high impact results.
- Further research into what variables of program implementation facilitate effective scaling is needed.

References:

1. Horton, Richard. "Maternal and Child Undernutrition: An Urgent Opportunity." *The Lancet* 371.9608 (2008): 179. Print.
2. Black, Robert E., et al. "Maternal and child undernutrition: global and regional exposures and health consequences." *The Lancet* 371.9608 (2008): 243-260.
3. Horton, Richard, and Selina Lo. "Nutrition: a quintessential sustainable development goal." *The Lancet* (2013).
4. "Executive Summary of *The Lancet* Maternal and Child Nutrition Series." *The Lancet* (2013).
5. Tran, Mark. "Malnutrition Identified as Root Cause of 3.1 Million Deaths among Children." *The Guardian*. N.p., 5 June 2013. Web. 25 Nov. 2013.
6. Dubé, Laurette, Prabhu Pingali, and Patrick Webb. "Paths of convergence for agriculture, health, and wealth." *Proceedings of the National Academy of Sciences* 109.31 (2012): 12294-12301.
7. Pelletier, David L., et al. "The effects of malnutrition on child mortality in developing countries." *Bulletin of the World Health Organization* 73.4 (1995): 443.
8. Alderman, Harold, John Hoddinott, and Bill Kinsey. "Long term consequences of early childhood malnutrition." *Oxford Economic Papers* 58.3 (2006): 450-474.
9. Collins, Steve, et al. "Management of severe acute malnutrition in children." *The Lancet* 368.9551 (2006): 1992-2000.
10. Black, Robert E., Saul S. Morris, and Jennifer Bryce. "Where and why are 10 million children dying every year?" *The Lancet* 361.9376 (2003): 2226-2234.

Photo 3: A child in Xela, Guatemala

