

ORIGINAL RESEARCH

Treating Childhood Malnutrition in Rural Haiti: Program Outcomes and Obstacles



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Abstract

BACKGROUND Haiti has the worst malnutrition rate in the Western hemisphere. In October 2010, a cholera epidemic erupted and spread rapidly throughout the country, straining Haiti's already fragile health infrastructure across all levels of care. This study reviews data from an outpatient therapeutic feeding program (OTP) for acute childhood malnutrition at a clinic in rural Haiti with a focus on the effect of the 2010 cholera epidemic on program operations.

METHODS A retrospective chart review was conducted for the complete set of patients who were enrolled in the OTP from its inception in March 2009 through January 2014.

FINDINGS A total of 187 charts were retrieved representing 176 unique patients, of whom 5 were currently enrolled in care. At admission, 96 (51.3%) met criteria for severe acute malnutrition, 88 (47.1%) met criteria for moderate acute malnutrition, and 3 (1.6%) did not meet criteria for acute malnutrition. Of the 182 completed charts, 119 (65.4%) reached their target weight (≥ -1 weight-for-height z-score) by discharge (ie, were "cured"), 43 (23.6%) defaulted, 11 (6.0%) were discharged prematurely, 8 (4.4%) died, and 1 (0.5%) was hospitalized. A total of 11 patients (6.3%) who were initially admitted relapsed after discharge and were later readmitted. Data from 170 complete records (93.4%) were included in a multivariate logistic regression. Severe (vs moderate) acute malnutrition was negatively associated with likelihood of being cured when controlling for other patient- and care-related factors (OR = 0.261, $P = .002$). Average cholera burden was negatively correlated with likelihood of OTP treatment cure when controlling for patient- and care-related variables (OR = 0.859, $P = .002$) but was insignificant when controlling for year.

CONCLUSIONS Results from the study have been used to inform a restructuring of the clinic's acute malnutrition program toward a more community-centered model of management, the context and implications of which are discussed in relation to the existing literature.

KEY WORDS Haiti, malnutrition, outpatient, treatment, RUTF, cholera, outcomes, rural

Funding Sources: Haitian Ministry of Public Health and Population (MSPP), UNICEF, Gerard Foundation, Doris Duke Charitable Foundation, Medical Missionaries.

The authors of this paper have no relationships/conditions/circumstances that present a potential conflict of interest to the content of this manuscript. All authors had access to the data and a role in writing the manuscript.

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INTRODUCTION

Childhood malnutrition is understood “as a state in which physical function of a child from birth to 5 years old is impaired due to either over- or under-nutrition, the latter of which is the result of poor or insufficient nourishment, poor absorption, or poor biological use of nutrients consumed.”¹ The World Health Organization (WHO) defines childhood acute malnutrition, also referred to as wasting, in terms of its severity—severe acute malnutrition (SAM) being a weight-for-height *z*-score (WHZ, calculated in comparison to the WHO’s 2006 growth standards) ≤ -3 and moderate acute malnutrition (MAM) being a WHZ between -2 and -3 standard deviations (SD).² The more recent definition of global acute malnutrition (GAM) combines WHZ with mid-upper arm circumference (MUAC) (SAM: <115 mm; MAM: 115 – 125 mm) and presence of bilateral edema.^{1,3}

Globally, SAM and MAM affect approximately 19 million and 33 million children, respectively.³ The WHO estimates that 35% of the 7.6 million deaths among children younger than 5 years old are nutrition related, with 4.4% specifically caused by SAM.² Children with SAM exhibit mortality rates 10 times higher than well-nourished children.³ This difference in part results from the increased susceptibility of children with acute malnutrition to infectious disease.^{4–7} Malnutrition in 6–18 month olds has particularly far-reaching implications, correlating with lower performance on intelligence tests, poorer educational attainment, and lower future income.^{8,9}

Proper delivery of therapies addressing SAM could alone save 435,000 lives annually.¹⁰ For much of the 20th century, faulty case management, outmoded treatment practices, and ambiguous treatment guidelines contributed to SAM case fatality rates (CFR) of 20%–30%.¹¹ Current SAM treatment guidelines call for inpatient treatment of complicated cases and community-based treatment of uncomplicated SAM, comprising an estimated 80% of cases.^{2,3,10,12} Such protocols can attain CFRs as low as 5%.¹²

This reduction in CFRs and move from inpatient to outpatient treatment for uncomplicated SAM cases was enabled by the formulation of ready-to-use therapeutic foods (RUTF). RUTFs have key advantages, including decreased expense,^{1,13} increased patient adherence,^{3,14,15} and increased ease of preparation and shelf life.^{12,14} Although expert consensus affirms the efficacy of community-based RUTF use to treat

SAM, pooled analyses reveal mixed results.^{3,10} There is some evidence, however, that community-based therapy leads to greater recovery and weight gain compared with standard care.^{3,14} There is neither a formally accepted protocol for treatment of MAM nor a strong evidence base for MAM treatment with RUTFs.^{1,3}

Haiti is a Caribbean nation occupying the western third of the island of Hispaniola with the lowest human development index in the Western Hemisphere. As of 2010, mortality for children younger than 5 was 165 per 1000 live births, with diarrheal disease, perinatal infections, and malnutrition as the leading causes of death.^{16,17} Although improved compared with data from 2005–2006, Haiti’s 2012 Demographic and Health Survey revealed persistently high levels of malnutrition, with stunting, underweight, and wasting prevalences among children younger than 5 of 21.9%, 11.4%, and 5.1%, respectively.¹⁸ In October 2010, Haiti’s first cholera patients were hospitalized in Haiti’s Central Plateau; within a month, cases were reported across the country.^{19,20} The early outbreak was defined by a high CFR (7.0%) as a result of many factors, including poor preparedness, inadequate supplies, and deficient communication.²¹ By the end of 2013, cholera had claimed more than 8531 lives, including 676 children younger than 5.²² The unexpected nature of the epidemic coupled with the previously listed issues strained already resource-strapped primary health care centers and threatened to divert resources from other areas like acute malnutrition treatment.

Outpatient Therapeutic Feeding Program, 2009–2013. The outpatient therapy feeding program (OTP) described in this paper was implemented at a resource-constrained primary care health clinic in Thomassique, a rural community on Haiti’s Central Plateau. The clinic, funded by a US-based nonprofit organization and staffed by Haitian employees, offers ambulatory, obstetric, emergency, and low-acuity inpatient care. The OTP began in March 2009, when a local auxiliary nurse was hired and trained as the program coordinator (PC). Clinical supervision was provided by a clinic physician, but most program activities were performed independently by the PC, including entry and discharge examinations for many cases. The program employs RUTF (Plumpy’Nut/Medika Mamba produced locally in Cap-Haïtien by Meds and Food for Kids–Nutrisset) for acute malnutrition in children aged 6–59 months. At the time of the program’s inception it was operating in accordance with international standards for the

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