

Ti Foyer (hearth) community-based nutrition activities informed by the positive deviance approach in Leogane, Haiti: A programmatic description

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Abstract

This paper details the steps to design and implement a positive deviance-informed, “Hearth” approach for the nutritional rehabilitation of malnourished children in the district of Leogane, Haiti. Groups of four to five children met daily for two weeks at the home of a local volunteer mother for nutritional and health messages and a well-balanced meal. Health messages and meal components were determined using information gathered from interviews with the mothers of positive deviant children in the community who are well nourished despite their family’s limited economic resources. Hearth participants were then followed for six months in their own home by the program “monitrices,” women hired from each village and intensively trained to supervise the Hearth program, periodically weigh the children to evaluate their progress, and liaise between the hospital and the community. Monitoring from the first cycle indicated that 100% of children in eight villages and 66% of children in the remaining five villages continued to gain weight as fast or faster than the international standard median six months after participating in a Hearth program. At the conclusion of this cycle, programmers interviewed participant and non-participant families and made six modifications to the model, including the addition of a microcredit option for participating mothers.

Key words: Hearth, malnutrition, positive deviant, nutrition, Haiti

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Introduction

Hearth or “Ti Foyers” in Haiti: historical background

Haiti and the Hearth model have a long history together, originating in the 1970s in the “Projet Intégrée de Santé et de Population” (PISP) under Haiti’s Division of Family Hygiene [1]. Prior to that, in Haiti’s “Centres d’Education et de Rehabilitation Nutritionnelle” (CERNS), mothers used local foods daily in three month sessions in village centers to rehabilitate their malnourished children under the supervision of nutrition aids known as “monitrices” [2, 3]. Although children recovered and their mothers adopted better child-feeding practices, CERNS were too expensive and were phased out [4].

In 1976, the PISP in rural Haiti modified the above model and integrated it into a community health program that included family registration, growth monitoring and counseling (GMC), periodic deworming, immunization, maternal education, and temporary distribution of food supplements to children whose growth faltered [5]. The CERN activities, including use of local foods, extra meals, and snacks, were reduced to two week intensive daily training sessions for groups of mothers and their malnourished children in “Grand Foyers” (large outdoor kitchens of a volunteer home, church, or school). In this modification, 20 or more malnourished children identified by the ongoing growth monitoring program came daily with their caretakers to two weeks of nutrition rehabilitation sessions where volunteer mothers assisted monitrices in nutrition and child-feeding “learning tasks” [6], and then committed themselves to continue the rehabilitation process in their own homes. During the two weeks of intensive training, a change in the malnourished child became obvious: appetite returned, edema disappeared, and children began to run and play again. The child was then followed in ongoing community health growth monitoring sessions. Evaluations carried out by the

PISP showed that this approach was as effective as the use of more permanent nutrition rehabilitation centers (CERNS), but reached many more children, with the monitrice serving as an itinerant worker, going from village to village to implement the sessions [7].

The “Ti Foyer,” or Hearth, is a neighborhood model for rehabilitation of children in nearby home-kitchens that first emerged in the Hôpital Albert Schweitzer’s community health program in the face of an economic embargo in the 1990s [1, 7]. The hospital pediatric ward was overwhelmed with cases of severe malnutrition; and its district community health workers were confronted with the problem of more than 9,000 children in need of rehabilitation. Monitrices were trained to rehabilitate children in small groups, neighborhood by neighborhood, in the context of each community’s ongoing growth monitoring and promotion program [7–9].

At this time the “positive deviance inquiry” (PDI), derived from work by Zeitlin, and local market surveys were added to the curriculum for monitrices who in turn trained volunteer mothers [10]. They found poor mothers who were managing to keep their children well nourished in the face of the deteriorating economic situation in rural Haiti. These “positive deviants” were using local foods to prepare extra meals and snacks and exhibited model child feeding and child-caring behaviors. These mothers were willing to be interviewed and observed by the neighborhood women who in turn volunteered to rehabilitate malnourished children in their own homes. Mothers of malnourished children attended daily sessions for two weeks and contributed food or fuel as their “ticket” to admission. Monitrices walked from one session to the other to supervise and assist in encouraging the anorectic children to begin to eat. Berggren and Grant reported preliminary findings that nearly two-thirds of the Hearth-attending children were growing at rates as fast or faster than the international standard median as measured by the weight-for-age index during the two months subsequent to the rehabilitation sessions.* The population at the time was highly mobile, and although a subsequent retrospective study two years later failed to show the sustainability of the effect, it was flawed by high numbers of cases lost-to-follow up [8, 11]. The next major Ti Foyer endeavor that adhered to the above model began in 2000 in the District of Leogane with the Nutrition Program of Hôpital St. Croix (HSC), described below.

Child health in Leogane

Leogane has a population of approximately 200,000,

divided among 120 villages of diverse geography. Mountainous villages have higher childhood malnutrition than plains villages (61% vs. 32%, respectively), apparently due to less local food availability and nutrient variety [12]. The community health workers of HSC visit each village once per month to hold “rally posts” where they vaccinate, distribute vitamin A, and carry out GMC for children under-five years old using the “road-to-health” card with a weight-for-age graph.

Historically, the only nutrition program available in the Leogane area was the GMC program and food supplements for malnourished children as measured by the Gomez standard (e.g., those weighing less than 75% of the international standard median of weight-for-age). Although the rations proved helpful for many families living close enough to the hospital to access the service, staff interviews revealed its limitations: participant mothers feared losing eligibility for the supplement if their children gained weight; mothers lived too far away to reach the distribution site; the rations became a commodity sold at the local market rather than consumed by the malnourished child; and most importantly, mothers became dependent on an imported commodity and were not learning how to use local, inexpensive foods to prevent or treat malnutrition.

This paper details the steps involved in the design, implementation, and modifications of a PD-informed Hearth approach to addressing moderate-to-severe malnutrition in children under five years of age in an area with little existing GMC in place.

Methodology

Setting

The nutrition program of the HSC is community-based, and began in 2000 in response to an observed increased number of severely malnourished children dying in the hospital. Its staff discovered PD mothers in most villages, and planned to integrate nutrition intervention activities within the existing village health worker program using the Hearth model. At the same time, they sought funds to upgrade nutrition services at the HSC, so that children suffering kwashiorkor and severe marasmus could be treated according to the WHO protocol [13].

The original goal of the nutrition program was to rehabilitate malnourished children and prevent it at the community level. The program planners started by examining GMC data from 120 surrounding villages and planned the steps to implement a PD-informed program. Their intent was to target motivated villages with the greatest malnutrition problem. However, village health workers did not have updated records of post-attending children, vital records, or information

* Berggren W, Grant J. Report to the Board of Directors of the Albert Schweitzer Hospital, Deschapelles, Haiti, Albert Schweitzer Hospital, Deschapelles, Haiti, 1996.

on non-attending children. Given Haiti's countrywide vaccination coverage rate of 35% by age 5, the staff estimated that about 65% of the children in Leogane were not being followed at all. Therefore, the nutrition program staff consulted with health workers and selected the first cohort of villages from areas with observed high levels of malnutrition.

Implementation

Step 1. Community preparation

The nutrition program staff collaborated with village health workers of selected villages to organize meetings with community leaders to introduce the idea of how to combat malnutrition and to reach consensus on the need to prevent it. This meeting usually included the local priest, the Voodoo practitioner, the head school-teacher, and respected merchants. In an effort to assure that no child would be left out, villagers agreed to help map and assign house numbers in their village for a door-to-door registration. Community leaders were asked to identify women from the village who might serve as nutrition educators (monitrices) to supervise the local program. Candidate criteria were the ability to read and write at eighth grade level and perform simple mathematical calculations.

Step 2. Monitrice candidate testing

Villagers willingly attended the second meeting to present their candidates and observe the monitrice testing. The written test involved simple knowledge of child health, plotting points on a graph, math calculations, and opinion questions. After the written test, each candidate was given an oral test in which the interviewer looked for elements of a dynamic personality and ability to problem-solve.

Step 3. Village registration, creation of child register, data gathering, and analysis

Mapping, house-numbering, and registration

Nutrition program staff trained the selected monitrices, the local health workers, and supervisors in registering households and completing the registration form. The form included the following sections: women of childbearing age (14–49), including family planning information, pregnancy, tetanus vaccine history, breastfeeding, and knowledge about oral rehydration solutions (ORS); children under five years old, including vaccination history and that day's weight; child death and cause of death; and socioeconomic information on the household, including type of roof and floor, ownership of a radio, and source of drinking water. The nutrition program staff and the local

health worker drew a detailed map of each village, and numbered each inhabited house prior to beginning registration. Less than 3% of families in all villages refused to participate.

Creation and use of the register

Nutrition program staff members analyzed data from the registration using Epi Info6, with weight-for-age as the indicator of nutritional status. The nutrition program consulted the health worker supervisors and designed a child register that included vaccinations and weights, deworming, and home-visits, and gave the health worker from each registered village a copy with data from all children in the village. Staff conducted a separate training day with these health workers to demonstrate how to update the register, track births and deaths, and establish a system for encouraging absentee children to attend the next post. Results from the registration indicated that only 30% of children were completely vaccinated by age five.

Step 4. Monitrice training

The first cycle of monitrice training included 13 selected candidates from the 13 registered villages. The five-week training provided housing for monitrices from far-away villages. After completing the training and the final exam, graduates signed a contract for six months detailing their responsibilities for supervising Hearth and related activities in their village. The nutrition program staff conducted the training, along with guest-speakers from the hospital and community health program. The schedule is outlined below.

Week one

Topics included group-building exercises, introduction to nutrition, the Ti Foyer concept, the role of the monitrice, professionalism and ethics, immunizations and the cold chain, breastfeeding, family planning, diarrhea and ORS, acute respiratory infection (ARI), and exam one.

Week two

Topics included HIV/AIDS, hygiene, malaria, scabies, worms, malnutrition, a tour of the hospital pediatric ward, an explanation of the dry food ration program, demonstration of the preparation of enriched milk to rehabilitate children from severe protein-energy malnutrition, stages of child development, using the child growth card, and exam two.

Week three

Topics included principles of participatory adult learning, a short teaching experience in which each monitrice prepared a lesson on one health topic, peer suggestions on improving teaching techniques, and an introduction to PD.

Positive deviance instruction

Using participatory learning techniques, the nutrition program developed several handouts for use in the PD segment of the training. Participants were asked to come up with possible PD behaviors in their villages within the following three categories: good child-care, good health practices, and good foods. Even though this was a group-generated list, the monitrices learned that PD practices were unique to each village and, in the case of PD foods, were seasonal. In preparation for a group home visit to a PD family, monitrices learned observation skills and recording techniques and generated a list of behaviors and conditions that they would observe in the household; for example, Did the house and kitchen look clean? Were animals present? Was the child clothed? and Who fed the child and how often?

As a group, monitrices and supervisors visited three pre-selected PD families to practice observing PD behaviors and conducting a 24-hour diet recall with caretakers before going to their own villages. Then each monitrice received a list of several PD children in her own village (defined as normal or greater-than-normal weight-for-age Z score (WAZ) and low socioeconomic status determined by the house characteristics section of the village registration form). The monitrices returned to their villages to independently conduct the PD inquiry (PDI) and 24-hour dietary recall in these selected households.

Week four

Monitrices returned to the classroom to discuss their PDI and dietary recall findings from which they created well-balanced and nutritious Ti Foyer menus, which included foods with adequate protein, vitamin A, and iron. Monitrices then learned how to read a food value table for Haiti and how to use a dietary weighing scale, and were given exercises on food value calculations. Other PDI findings (good child care, good health care) were discussed and included in the Ti Foyer daily agenda as key messages.

'Aller au marche' or market survey exercise

Monitrices gathered their village-specific menus and took a trip to the local market. They were given 50 gourdes (approximately US\$ 2) and instructed to buy enough food to feed five children (number of children attending a Ti Foyer) a meal and snack with a total of 800 kcal and 26 g of protein. The meal had to include a source of iron and vitamin A. Upon return to the classroom, monitrices calculated the price, calories, and protein of the menus for each child. The final cost of the meals varied from 6 to 8 gourdes (approximately US 25 cents) per child. Each monitrice was given a printout of all the meals in detail to use as examples in the Ti Foyers. Food availability and market food prices in each village fluctuated with the seasons requiring new PDIs for each season.

Week five

Topics included final exam review; a discussion of food availability in Haiti and Haiti-specific maternal and child health challenges (e.g., only 6% of mothers exclusively breastfeed for the first six months, and 86% of children under five years old are fed only one or two times per day); the responsibilities of the monitrice; the volunteer mother training; and an explanation of forms and data collection (see Step 8 below). After a final exam, those who passed signed a contract with detailed weekly responsibilities for six months. In addition to the village responsibilities, all monitrices attended a monthly staff meeting to review data forms and plan. To close the training, all participants (passing or failing) enjoyed a small ceremony in their honor with invited guests and a certificate of accomplishment.

Step five. Volunteer mother training

Each village's monitrices received a list of all children with weight-for-age Z scores of -2 or less to invite into the Ti Foyer program. The number of qualifying children determined the number of volunteer mothers needed to host the program (one volunteer mother per five children). The monitrices had previously selected mothers with PD children and invited them to host the Ti Foyers, and the monitrices held a five-day training session for these volunteers. All monitrices were given a detailed agenda of how to conduct the training session. The last day of the volunteer mother training was the weighing day, in which all invited children were weighed and which was used as the official pre-program weight. At this time, mothers met the monitrice(s) and the volunteer mother and together decided upon the menu and the food contribution from each mother for the first day (the nutrition program staff contributed the snack each day for each Ti Foyer).

Step 6. Implementation of Ti Foyer activities

The Ti Foyers were designed to last a maximum of two hours each day at a convenient time, for 10 days. Monitrices dewormed all selected children with albendazole or piperazine two weeks prior to the start of the Ti Foyers. Monitrices followed the following daily agenda. Mothers gather with children and sing or pray. Mothers offer their food contribution, wash their hands, and begin meal preparation. Mothers wash the children's hands and distribute a small snack to each child to stimulate their appetite before the meal (e.g., one mango per child or bread with peanut butter). Monitrices deliver a key message (one of the health topics discussed in the training) and all sing a related health song. Mothers feed their own children the supplemental meal. Monitrices encourage the anorectic child and help the mother. Mothers assist the volunteer mother in cleaning up the kitchen area. All discuss the next

day's menu, why that choice is a well-balanced meal, and decide upon a key message they would like to hear about for the next day.

The monitrices were required to deliver a key message each day according to the interests of the mothers or the specific needs of the village with the caveat that three key messages must be breastfeeding, the importance of vaccines, and diarrhea control and prevention (with demonstration of ORS preparation). In addition to the key message, each day's discussions reinforced the lessons learned from the three categories of PDI behaviors in that village (good child care, good health care, good food) as well as highlighted the reasons why that day's menu was selected. Monitrices emphasized the idea that children should eat from five to seven times each day in order to change the behavior of Haitian children typically eating once or twice a day and to safeguard against mothers substituting the Ti Foyer meal for the child's only meal of the day.

Step 7. Follow-up

After the two weeks of the Ti Foyer, monitrices made home visits for two weeks to maintain contact with the mothers, discuss the children's progress, and observe meal preparation and good practices in the home. Monitrices also attended each month's rally post and personally visited any Ti Foyer children who did not attend.

Step 8. Surveillance

Monitrices filled out two forms during and after the Ti Foyers. The daily Ti Foyer report tracks child and mother daily attendance, daily menu, key messages, and general observations of the day and of each child. The surveillance form tracks each child by age in months at initial weight; weight, date, and nutritional status at month one, two and six; and remarks about hospitalization, drop-out, and significant observations of progress.

Step 9. Hospital and community integration

All hospital staff and health workers were aware and supportive of the Ti Foyers, and the hospital pediatrician was regularly informed of the activities, which established a hospital-health worker-community network that had not previously existed.

Preliminary findings

A total of 50 children participated in the first cycle of Ti Foyers, and monitrices recorded their weights at months one, two, and six (fig. 1). The nutrition program also followed the 55 invited children whose

mothers opted not to participate in the Ti Foyers to better assess the impact of the program. Program children grew better than comparison children after one month (68% vs. none growing at or better than the international weight-for-age median rate). Moreover, many program children who were faltering at month one were, in fact, recovering from illness and clearing edema. Program children continued this catch-up growth through months two and six (40% and 60%, respectively). Put another way, all (100%) of the children in eight villages and two-thirds (66%) of those in the remaining five villages continued to gain weight as fast or faster than the international standard median six months after participating in the Ti Foyer.

A follow-up survey with participant mothers indicated economic strain as the primary reason they felt they were unable to continue the healthy feeding practices learned in the Ti Foyers.

Lessons learned

The participation rate in the first cycle of Ti Foyers was lower than expected (47.6%, 50 of 105), especially given the high community interest. All participants and non-participants (those invited who did not attend or dropped-out) were interviewed after completion of the first Ti Foyer cycle to strengthen the model. For non-participants, the daily food contribution, the time commitment each day, and paternal objections were the primary deterrents to participation. This section highlights modifications made to the model.

Food contribution

Ti Foyers were enlarged from five children to eight children to reduce the amount of food required per participant to create a balanced menu. In addition, the

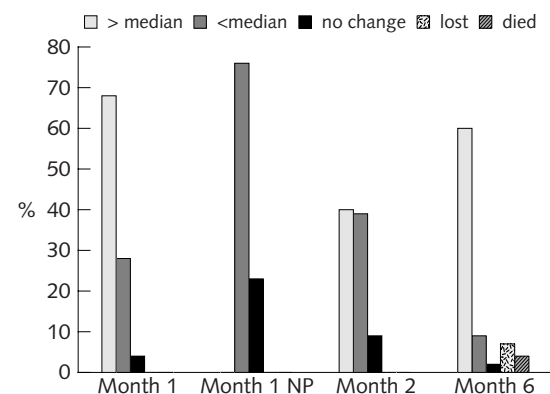


FIG. 1. Nutritional status (weight-for-age) of children by month after Ti Foyer. 50 participants and 55 non-participants (NP)

monitrice and the nutrition program contributed one item to each menu.

Time commitment

This proved to be a difficult hurdle, as the model of a daily meeting is designed to reinforce habitual good practices. However, Haitian women have many responsibilities, and some simply could not devote time every day. The requirement of 100% attendance was reduced to the mother present three times per week and another responsible adult with the child on the other days.

Paternal objections

The Ti Foyer model had been advertised as a program for children who were not in "good health," which was culturally more appropriate terminology than "malnourished." However, given the few, but important, paternal objections across all villages, the marketing of Ti Foyers was altered to being a small "school" for mothers, due to the high regard Haitians hold for education. Experience from the on-going second large cycle of Ti Foyers has suggested that this has improved participation.

Microcredit opportunity

The nutrition program has partnered with Fonkoze Bank, a countrywide microcredit institution that works with other projects and nongovernmental organizations in Haiti. This addition to the Ti Foyer model has increased overall interest and participation in the program, and is expected to also address the issue of mothers not maintaining the good practices learned in Ti Foyers due to financial difficulties. One added benefit of the partnership is that Fonkoze decided to hire the monitrices to teach the required literacy classes for the women, which will continue the relationship between the monitrices and the women as well as offer some financial support for their work as monitrices.

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"Permanent" monitrices

The nutrition program altered the Hearth model of transient monitrices to maintain a well-trained health educator in each village upon program completion. The monitrices are hired on a contractual basis, and have on-going monthly meetings to maintain contact with the program even in months with no scheduled activity in their villages.

Two-week weight

Due to mothers' overwhelming requests to know how much their child weighed after the two weeks of the Ti Foyer, another weighing day was added. Mothers were excited to know how their children fared in weight gain in addition to the visible changes they observed such as increased appetite, and improved demeanor.

In summary, we detail the methods of a complex nutrition program to combat a severe childhood malnutrition challenge in Haiti using local personnel, identified model practices, and community-led modifications. We believe that this approach has wide applicability for achieving health objectives in nutrition and possibly beyond.

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