USAID | HAITI
FROM THE AMERICAN PEOPLE

Aksyon Kominotè nan Sante pou Ogmante Nitrisyon

AKSYON Final Evaluation Report

SEPTEMBER 30, 2021

Submission Date: September 30, 2021

Contract/Agreement Number: AID-521-A-16-00002
Activity Start Date and End Date: August 24, 2016 – August 23, 2021
[COR/AOR] Name: Dr. Olbeg Desinor

Submitted by: Aaron Baum, PhD
Assistant Professor and Principal Economist
Arnhold Institute for Global Health
Icahn School of Medicine at Mount Sinai
1216 Fifth Ave, Suite 556, New York NY 10029
Tel: (212) 824-7950
Email: aaron.baum@mssm.edu

Icahn School of Medicine at Mount Sinai

Top Left: *Monthly CHE training session in Mirabalais.* ***Top Right****: A 12-month-old girl who was able to recover from severe acute malnutrition after receiving services from AKSYON. Her mother received education, support and encouragement from the AKSYON team.* ***Bottom Left:*** *Saint-Raphaël: Fonkoze nurse visiting child during treatment phase. The father has assumed caregiving responsibilities due to the mother's illness*. ***Bottom Right****: Socio-Dig survey enumerator*.

This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Fonkoze and do not necessarily reflect the views of USAID or the United States Government.

CONTENTS

ACRONYMS AND ABBREVIATIONS

AKSYON: AKSYON KOMINOTE NAN SANTE POU OGMANTE NITRISYON

CHE: COMMUNITY HEALTH ENTREPENEUR

CI: CONFIDENCE INTERVAL

COVID-19: CORONAVIRUS DISEASE 2019

FONKOZE: FONDASYON KOLE ZEPÒL

ODK: OPEN DATA KIT

OR: ODDS RATIO

ORS: ORAL REHYDRATION SOLUTION

SFF: SÈVIS FINANSYE FONKOZE

WHO: WORLD HEALTH ORGANIZATION

FIGURES

TABLES

EXECUTIVE SUMMARY

Aksyon Kominotè nan Sante pou Ogmante Nitrisyon (Community Health Action to Improve Nutrition, "AKSYON") was a child and maternal malnutrition initiative supported by USAID/Haiti and led by the Fondasyon Kole Zepòl (Fonkoze), a Haitian organization focused on social and economic inclusion. Through AKSYON, Fonkoze and its partners aimed to decrease the number of children under age five and women who suffer from malnutrition by engaging more than 1,000 nurse-supervised community health entrepreneurs (CHEs) across the country who identified, referred, and tracked severe acute malnutrition and moderate acute malnutrition cases, as well as at-risk cases. Over the life of the program, 508,562 children under 5 years of age were screened for malnutrition over the course of the project, including 214,197 during the COVID-19 pandemic (**Figure 1**). 11,455 children were successfully treated for malnutrition, and the program consistently maintained a recidivism rate of less than 1%.

AKSYON contracted researchers at the Icahn School of Medicine at Mt. Sinai to conduct an impact evaluation using data from a baseline (year 1) and endline (year 5) national-scope survey. Researchers assessed three primary outcomes and several secondary outcomes, as follows:

- Wasting: Over the life of the program, wasting increased in survey sites. Economic and sociopolitical crises, as well as the COVID-19 pandemic, likely contributed to a relatively high rate wasting at endline compared to baseline. However, our evaluation found that there was a far smaller increase in rates of wasting between the baseline and endline survey among children who lived in treated versus control branch regions. This is consistent with the screenings

having a potentially beneficial impact on wasting. Furthermore, children of treated respondents who knew of the program experienced a greater reduction in rates of wasting than children of treated respondents who did not know of the program.

- Nutritional status: We observed improvements in nutrition, use of vitamin A and ORS, and use of evidence-based water treatments among treated respondents who knew of the program versus treated respondents who did not know of the program, indicating there may have been potential benefits to these outcomes from engagement in the program.

- Stunting: Between the baseline and endline survey, there was not a significant change among households who lived in treated versus control branches in rates of stunting among children under 5 years old.

- Undernourishment of adult women: Between the baseline and endline survey, there was not a significant change among households who lived in treated versus control branches in malnutrition rates of women.

- Secondary outcomes (household mortality and morbidity, nutrition, use of health goods and services, and use of improved sanitation facilities and evidence-based water treatments): Between the baseline and endline survey, there was not a significant change in secondary outcomes

Taken together, the results from the quantitative analysis of the baseline and endline survey data – coupled with rich qualitative data from focus groups and interviews of CHEs that provide insight into the programmatic processes, modifications, and

challenges – suggest that the AKSYON program is succeeding as a malnutrition screening system and that it may have contributed to improved rates of wasting among children under 5 years old in treated areas relative to control areas. However, there is no evidence that the program improved rates of stunting among children under 5 years old or rates of adult female malnutrition.

INTRODUCTION & CONTEXT

Introduction

Aksyon Kominotè nan Sante pou Ogmante Nitrisyon (Community Health Action to Improve Nutrition, "AKSYON") was a child and maternal malnutrition initiative supported by USAID/Haiti and led by the Fondasyon Kole Zepòl (Fonkoze). Through AKSYON, Fonkoze and its partners aimed to decrease the number of children under age five and women who suffer from malnutrition—reinforcing the sustainability of these gains through knowledge and skill building around nutrition, hygiene, sanitation, and food security strategies.

Founded in 1994, Fonkoze is known for the financial inclusion work of its sister organization, Sèvis Finansye Fonkoze (Fonkoze Financial Services, SFF). Fonkoze provides support services in health, adult education and ultra-poverty alleviation to SFF's network of 60,000 microcredit clients nationwide. SFF's network is broken down into geographic regions centered around each of the 45 branch offices; each branch region includes ~100 hubs of roughly 20 clients organized into "Credit Centers," with a total of nearly 2000 Credit Centers nationwide. Fonkoze's health program, Boutik Sante (Community Health Store), a health social franchising initiative, trains a client leader in each Credit Center to become a Community Health Entrepreneurs (CHE). CHEs provide community health education, conduct basic screening services and sell over-the-counter health products.

AKSYON leveraged the nationwide Boutik Sante CHE network to identify, refer and follow-up on cases of malnutrition. To prevent recidivism, and to maintain and

improve the health of other community members, AKSYON nurses trained CHEs to deliver monthly health education sessions. AKSYON also included activities to prevent undernutrition and improve nutrition and health status. Focus group discussions with CHEs and nurses revealed that the original design – for CHEs to conduct community screenings for malnourished children and then refer those who are ill to clinics or hospitals – was generally followed. Specifically, nurses stationed at the branch headquarters trained CHEs to administer basic health screenings. CHE conducted a minimum of one screening per year and made their own determinations about the location of the communities they screened. The CHEs were equipped with supplies of vitamin A and albendazole to distribute to children of the appropriate age and prenatal vitamins to distribute to pregnant women. Finally, the nurses provided CHEs with a 500 HTG per diem for any day they are in the field screening.

In the event a CHE identified a malnourished child, the CHE referred the malnourished child to the appropriate health facility, provided the caregiver with a stipend for transport (the quantity of which depended on the distance to the screening site). Following referral, the nurse would visit the child's home within 14 days, delivering a kit with soap, ORS, water purification tablets, iodized salt, and a fortified porridge supplement. The nurse would also follow up by visiting the child at the clinic to confirm the child in fact went to the clinic for care. After the child was released from the clinic, the CHEs were to do three follow-up visits over a period of four months.

The Icahn School of Medicine at Mt. Sinai conducted an evaluation of AKSYON using data from a baseline (year 1) and endline (year 5) national-scope survey. This evaluation assessed three primary outcomes: rates of stunting of children under 5 years of

age, rates of wasting of children under 5 years of age, and rates of malnutrition of adult women, as well as several secondary health outcomes. The research team assessed treated versus control geographic regions, with adjustment for baseline outcomes and sociodemographic covariates.

Context

Over the course of the 5-year project, program participants experienced major economic and health shocks from crises that affected Haiti broadly, including a challenging sociopolitical environment, a deepening economic crisis, and the COVID-19 pandemic.

- Sociopolitical crisis: At the time of writing, Haiti was reeling from the assassination of President Jovenel Moise. Tragic, in and of itself, his death was also indicative of insecurity that had been steadily increasing over the few years prior. Gang violence and associated kidnapping compromised security, particularly along roads. The AKSYON teams thus faced repeated limitations on movement and travel, especially in the second half of the program, starting in July, 2018.

- Economic crisis: Since the beginning of the program, Haiti had been experiencing a deepening economic crisis, as indicated by high inflation. Prior to 2020, there was a steady deterioration of the Haitian gourde (HTG) against the US dollar. In September 2020, Haiti's Central Bank took several actions to intervene in the foreign exchange market, leading to a sudden and dramatic appreciation of the

HTG against the USD. These fluctuations created severe economic challenges for program participants.

- COVID-19: The first documented case of COVID-19 in Haiti was in March 2020. The government took rapid measures to restrict gatherings and limit mobility. While the documented caseload and deaths in Haiti was lower than expected, the economic impact of pandemic mitigation measures was severe for program participants. In addition, the restrictions forced AKSYON to scale back and adapt activities, especially the malnutrition screening campaigns that involved the mobilization of large groups. Indeed, when the COVID pandemic crisis began in Haiti in March, 2020, Fonkoze suspended all screening for a three-month period (March to June 2020). When the suspension was lifted, CHEs were instructed to conduct door-to-door screenings as opposed to the large group screenings; this change was also subsequently lifted.

- Even prior to the pandemic, the results of the January 2020 SMART (Standardized monitoring and evaluation of emergencies and transitions) nutritional survey in Haiti suggest that the nutritional situation of children under 5 years old was poor (6.0%) and had experienced a significant deterioration compared to the situation in 2012 (4.10%), with substantial disparities across the departments.

METHODOLOGY

Survey Data

Data concerning nutrition, morbidity and mortality, hygiene, food security, access and use of health products and services, and sociodemographic characteristics was collected from field surveys administered by the evaluation firm, Socio-Dig. Data was collected via tablet computers that automatically converted survey data into the tabular (Excel ODK) format with linked debriefing notes that enabled verification of the precise time that a survey was conducted, the amount of time the survey took, the time between surveys, and the precise location of the interview. The external survey firm conducted trainings on the instrument and tablets for enumerators; ensured enumerators obtained sufficient practice administering the instrument in the field via debriefing and reviews; and cross-checked all questionnaires and logistics.

Prior to rollout, enumerator teams visited two survey sites to conduct rehearsal surveys at each site, fine-tune the survey, and sensitize supervisors to the process. Data from the tablets was compiled daily, with responses from enumerators compared across the group to detect misapplication of the questionnaire or the occasional rogue enumerator. Final verification of survey was made through telephone calls to 10% of all respondents. All enumerators were required to provide a telephone number for the respondent or a close relative of the respondent.

In spring and summer of 2017, the baseline survey was administered across 20 Fonkoze branch regions in ten departments of Haiti. The 20 branches included in the baseline survey were selected by Fonkoze and the monitoring and evaluation (M&E) team. The team selected 10 branches where the program was scheduled to be

implemented before the planned midline survey (treated branches) and 10 where it would be implemented after the midline survey (control branches). The midline survey, originally planned for 2019, was not conducted due to a budget reduction.

At the end of 2020 and in early 2021, an endline survey was administered in 19 of the 20 branches surveyed at baseline. Among the planned treated branches, all had received the intervention by the endline. Among the planned control branches, one branch began the program after the baseline in 2017 and was considered treated in this analysis, one was not surveyed at endline, and eight others were considered control branches in this analysis. Of the latter, three branches had begun to implement some aspects of the program during the year preceding the endline.

In both the baseline and endline surveys, the survey firm sampled program participants within branches by randomly choosing five Credit Centers within each branch. In the communities associated with each Credit Center, enumerators selected approximately 20 respondents who were not Fonkoze clients as follows: they used the CHE's household location as the basepoint, selected 4 points (500 meters north, east, south, and west of the basepoint), and searched for the homes closest to each point that had a woman with a child 60 months or younger. If there was more than one such woman in a household, the surveyors interviewed the youngest woman. Enumerators also selected four Fonkoze clients at each Credit Center by asking the CHE to provide a list of group members who had children younger than five years of age (60 months) and randomly selecting four from the list.

Treatment Variable

The research team considered a respondent and child to be in the treated group if their household was located in the geographic catchment area of a Fonkoze branch where the program was implemented prior to January 1, 2019; otherwise the household was placed in the control group.

Because not every household located in geographic catchment area where the AKYSON program was implemented actually engaged with the program, to explore changes in outcomes associated with engagement in, rather than proximity to, the program, in a secondary analysis we consider a household treated if a respondent reported any knowledge of the program.

Outcome Variables

The pre-specified primary outcomes were defined as: (1) Percent of children under age 5 who were stunted: A child was defined as stunted if his or her height-for-age score was 2 or more standard deviations below the median of the WHO reference population for their sex and age in months; (2) Percent of children under 5 who were wasted: A child was defined as wasted if his or her weight-for-height was greater than 2 standard deviations below the WHO reference population median for their sex and age in months; (3) Percent of women who were undernourished: An adult woman was defined as undernourished if her mid-upper-arm circumference was measured as less than 21 cm. We calculated Z-scores using the WHO Anthro software, which matches data on each child surveyed to the WHO Child Growth Standards for their sex and age in months

Secondary outcomes were also pre-specified and included: percent of respondents who reported knowing about the program; percent of households reporting any household

member or any child under 5 years in the household who died in past 12 months, respectively; percent of respondents reporting any cases of diarrheal disease in their household in the past two weeks; self-reported household nutrition as defined by number of food groups consumed in the prior day by women and children 6-23 months, respectively, and the percent of children 6-23 months of age eating a minimum acceptable diet in the prior day (based on meal frequency and food groups consumed); percent of children 0-6 months of age who are exclusively breastfed; percent of households reporting any use of ORS, vitamin A, and albendazole, respectively, in the past six months; percent of respondents who reported meeting their doctor monthly or more in their last pregnancy; percent of respondents who reported delivering their last child at home; and percent of respondents who used of improved sanitation facilities and evidence-based water treatments in past 24 hours, respectively.

Covariates

Covariates included respondent characteristics (respondent age, marriage status, literacy level, and work status), child age and sex, and household size and assets.

Statistical Analysis

The research team compared sociodemographic characteristics among respondents and children in treated versus control branches, and the change in each sociodemographic characteristic between the baseline and endline survey in treated versus control branches.

In unadjusted analyses, we compared the mean of each primary and secondary outcome at baseline and endline among respondents and children in treated versus control branches, respectively. Next, we compared the change in each outcome between baseline and endline among respondents and children in treated versus control branches.

In adjusted analyses, we estimated the association between living in a treated branch and each primary and secondary outcome, after controlling for sociodemographic covariates. In subgroup analyses, we stratified the sample by respondent and child sociodemographic characteristics. In a secondary analysis restricted to households in treated branches, we estimated the association between a respondent having knowledge of the program and each primary and secondary outcome, after adjustment for sociodemographic covariates.

We used a logistic regression model for binary outcome variables (and reported odds ratios and 95% confidence intervals (CI)) and a linear model for continuous outcome variables (and reported coefficients and 95% CIs). Standard errors were clustered at the branch-level.

KEY FINDINGS

Study Population

In the baseline survey, a total of 1,174 female heads of households with children under 5 years of age (mean respondent age 30.2 years, 16.2% Fonkoze clients, mean number of people living in household 5.8, 24.8% married, and 65.9% own livestock; 51.5% of children female, child mean age 26.0 months) were interviewed and assessed through the use of anthropometric measurements across the 19 branches surveyed in both survey rounds **(Table 1)**. Among them, 664 (56.6%) respondents were in treated branches and 510 (43.4%) were in control branches.

In the endline survey, total of 1,011 female heads of households with children under 5 years of age (mean respondent age 30.6 years, 15.1% Fonkoze clients, mean number of people living in household 5.8, 27.4% married, and 69.5% own livestock; 51.8% of children female, child mean age 26.3 months) were interviewed and assessed through the use of anthropometric measurements across the 19 branches (**Figure 2**). Among them, 567 (56.1%) respondents were in treated branches and 444 (43.9%) were in control branches.

At baseline and endline, sociodemographic characteristics – including respondent's and child's age, household size, percentage of respondent's Fonkoze clients, married, working, owning a stove, and with a tin roof – were similar across respondents in treated and control branches (**Table 1**). Between the baseline and endline surveys, changes in sociodemographic characteristics were generally similar in direction and magnitude. However, the percentage of children who were female decreased 5.4

percentage points in treated branches versus increased 7.8 percentage points in control branches.

Primary Outcomes

Between the baseline and endline survey, the percentage of children who were stunted declined from 40.9% to 18.8%, the percentage of children who were wasted increased from 17.2% to 37.8%, and the percentage of women who were undernourished declined from 3.2% to 0.8%, respectively (**Table 2, Figure 3**). In treated and control branches, the change between baseline and endline in the percentage of children who were stunted was -19.5 and -25.4 percentage points, in the percentage of children who were wasted was +14.8 and +27.9 percentage points, and in the percentage of women who were undernourished was -3.8 and -0.5 percentage points, respectively. Thus, in treated branches the unadjusted rate of stunting increased by 5.9 percentage points, wasting decreased by -13.1 percentage points, and undernourishment decreased by -3.3 percentage points, relative to changes in control branches.

In household-level analyses of endline data that adjusted for socioeconomic covariates, living in a treated branch was significantly associated with a reduction in the percentage of children who were wasted (OR=0.46, 95% CI 0.21 to 0.99). There was not a significant association between living in a treated branch and the percentage of children who were stunted (OR=1.11, 95% CI 0.73 to 1.70) or the percentage of women who were undernourished (OR=0.49, 95% CI 0.06 to 4.01) **(Table 3)**.

Similarly, among respondents who lived in treated branches, knowing about the program was significantly associated with a reduction in the percentage of children who

were wasted (0.72, 95% CI 0.52 to 0.99) but not significantly associated with percentage of children who were stunted (0.87, 95% CI 0.67 to 1.13) or the percentage of women who were undernourished (0.48, 95% CI 0.10 to 2.36), after adjusting for respondent and child sociodemographic characteristics.

Secondary Outcomes

Between baseline and endline, the percentage of respondents who reporting knowing of the program increased from 17.8% to 48.0% in treated branches and from 13.7% to 24.5% in control branches. Thus, in treated branches the percent of survey respondents with knowledge of the program increased +19.4 percentage points more than in control branches **(Table 4, Figure 4)**. Similarly, in household-level analyses of endline data that adjusted for socioeconomic covariates, living in a treated branch was significantly associated with an increase in the percentage of respondents who knew of the program (OR=3.39, 95% CI: 1.54 to 7.46) **(Table 3).**

Among the other secondary outcomes examined, we did not observe a significant association between living in a treated branch and any of the other secondary outcomes (**Table 3**). However, in treated and control branches, the change between baseline and endline in the percentage of children six months of age or younger who were exclusively breastfed was -17.0 and -32.4 percentage points, respectively; thus, in treated branches the unadjusted rate of exclusive breastfeeding increased by 15.4 percentage points relative to the changes in control branches (**Table 4**).

Additionally, among respondents who lived in treated branches, knowing about the program was significantly positively associated with the number of food groups

consumed in the past 24 hours by women (1.82 additional food groups, 95% CI: 1.07 to 3.12) and children (1.64 additional food groups, 95% CI: 0.98 to 2.74), the percentage of households who used vitamin A (OR=2.79, 95% CI: 0.99 to 7.86) and ORS (OR=2.18, 95% CI: 1.34 to 3.55) in the past 6 months, and percentage of respondents who used an evidence-based water treatment (1.86, 95% CI: 1.17 to 2.96), after adjusting for respondent and child sociodemographic characteristics **(Table 3)**. However, even after adjusting for these variables, respondents with improved food group consumption or greater usage of health products or evidence-based water treatments may simply have been more likely to engage in the program. Indeed, among respondents who lived in treated branches, knowing about the program was significantly associated with a greater mortality rate (OR=1.90, 95% CI: 1.38 to 2.61), likely because experiencing a death in the household made it more likely for a participant to engage in the program afterwards.

Heterogeneity in Program Impacts

There was substantial variation in pre-post changes to primary outcomes across branches that were treated, but the variation across treated branches was similar to the variation across control branches **(Figure 5)**.

We did not observe meaningful differences in the association between treatment and primary outcomes by respondent or child characteristics, with the exception that stunting rates were significantly greater among children 2 to 5 years of age in the treated group relative to children 2 to 5 years of age in the control group (**Table 5**).

CHE-reported data on screening processes

In addition to the quantitative analyses of survey data, researchers also gathered results from ad-hoc focus group discussions and interviews conducted at endline of CHEs. The CHEs were contacted for interviews from a list of 68 CHEs provided by Fonkoze, of whom 30 were interviewed by an external evaluation firm. Results are presented in **Table 6**. Among 30 CHEs interviewed, 20 reported having held a screening in the past month, with an average of three months since last screening. The average and modal number of children screened was 50, with an average of 1 and a mode of 0 children screening positive. One CHE reported identifying an astonishing 20 malnourished children during her most recent screening, with the next highest being five, then one at four children, another at three children, eight CHEs reporting two children malnourished, and the remaining 13 reporting no malnourished children.

All 30 CHE (100%), said they thought the children who they referred did in fact receive care. 14 CHE reported getting notification of the sick children to the nurse on the first day the children was identified, and 20 reported getting the notification to the nurse within the target of 14 days. No CHE reported not getting notification of the ill children to the nurse. And all but one CHE reported having done at least one follow-up visit to the sick children.

15 of 30 CHE (50%) reported that they conducted the most recent screening with another CHE and seven (23%) reported doing it with the branch nurse or a public sector community health agent. 27 of the 30 CHE in the sample (90%) said that Fonkoze had supplied them with enough vitamin A and albendazole for their screening activity.

LIMITATIONS

The major limitation of this study is our limited ability to causally attribute the observed improvements in wasting among treated households to the AKSYON program. The branches that received the intervention were selected by the implementing organization and M&E team based on operational considerations, rather than randomized to treatment. While the socioeconomic characteristics of respondents in treated and control branches were generally similar, unmeasured characteristics of households correlated to changes in the outcomes of interest may have differed across treated versus control branches. We note, however, that the reduction in wasting in the treated group relative to the control group remained after adjusting for the rate of wasting at each branch at baseline or for measured household-level sociodemographic differences at endline.

Additionally, due to budgetary constraints, the number of households and children assessed in the endline survey was 14 percentage points lower than in the baseline survey. Moreover, given logistical considerations of the program in combination with the timing of the COVID-19 pandemic, the endline survey was conducted in a different season of the year than the baseline. Indeed, we observed a large decrease in the overall rate of stunting and a large increase in the overall rate of wasting between the baseline and endline survey. While the increase in wasting may be related to recent negative shocks to Haitian households from the COVID-19 pandemic and the high rate of inflation in Haiti during the past 12-18 months, these changes do not explain the observed reduction in stunting rates. We suspect the large improvement in stunting between the

two survey rounds may be related to seasonal differences, in combination with potential measurement error in the primary outcomes, both of which attenuated our ability to observe a differential improvement in stunting in the treated group relative to the control group.

CONCLUSION AND RECOMENDATIONS

Conclusion

In this retrospective evaluation of the AKSYON program, we observed a similar decline in rates of stunting between the baseline and endline survey among children under 5 years old who lived in treated and control branches (-19.5 percentage point decline in the treated group versus -25.4 percentage point decline in the control group). At endline, the difference in the rate of stunting among children under 5 years old in treated branches versus control branches was small (19.9% in treated branches versus 17.3% in control branches) and not statistically significant.

In contrast, we observed a smaller increase in rates of wasting between the baseline and endline survey among children who lived in treated versus control branches (+14.8 percentage point increase in the treated group versus +27.9 percentage point increase in the control group). At endline, the rate of wasting among children under 5 years old was lower in treated branches versus control branches (30.3% in treated branches versus 47.3% in control branches) and the difference was statistically significant including after adjustment for socioeconomic covariates. Consistent with the program having a potentially beneficial impact on wasting, children of treated respondents who knew of the program experienced a greater reduction in rates of wasting than children of treated respondents who did not know of the program.

Rates of undernourishment of adult women declined more in treated branches than control branches between the baseline and endline surveys (-3.8 percentage point decline in the treated group vs. -0.5 percentage point decline in the control group).

However, at endline rates of undernourishment among adult women in treated and control groups were similar (0.7% in treated branches versus 0.9% in control branches) and the difference was not statistically significant.

With the exception of knowledge about the program, which increased substantially more in treated than control branches, pre-post changes in other secondary outcomes – including measures of household mortality and morbidity, nutrition, use health goods and services, and use improved sanitation facilities and evidence-based water treatments – were generally similar in treated and control branches. Consistent with this, we did not observe a significant difference in these outcomes at endline among households in treated versus control branches. This suggests that access to the AKSYON program did not appreciably improve secondary outcomes. However, we also note that we observed improvements in nutrition, use of vitamin A and ORS, and use of evidence-based water treatments among treated respondents who knew of the program versus treated respondents who did not know of the program, indicating there may have been potential benefits to these outcomes from engagement in the program.

Over the course of the 5-year project, program participants experienced major economic and health shocks from crises that affected Haiti broadly, including a challenging sociopolitical environment, a deepening economic crisis, and the COVID-19 pandemic. These challenges also impacted the CHEs, whose task of traveling to screening sites during political crises and COVID-19 was made more arduous and who received per diems as planned that were affected by the major currency devaluation.

Despite these challenges, results from this analysis of baseline and endline survey data in concert with programmatic data suggest the AKSYON screening system is

succeeding. It is useful to understand, however, that it has faced major challenges and seems to be succeeding due to the ingenuity and adaptive efforts of the branch nurses combined with the efforts of core groups of CHEs in each branch who were highly motivated and took on the responsibility of most screening tasks.

Recommendations

Given that even successful detection and treatment of malnutrition cases may not protect vulnerable families during major economic and public health crises, future efforts should be integrated across sectors and systemic in order to ensure sustainable results. Additionally, considering the heterogeneity in the number of annual screenings different CHEs performed and in the management skills of nurses, the program should seek to identify the characteristics of high and low performing CHEs and nurses, in order to retain and reward high performing staff. Finally, given the AKSYON program represented a unique integration of health and microfinance services, further research should evaluate the program's impact on economic outcomes, including the poverty level, assets, income, and loan repayment rates of beneficiaries and CHEs.

FIGURES

Figure 1. Programmatic data on malnutrition screenings

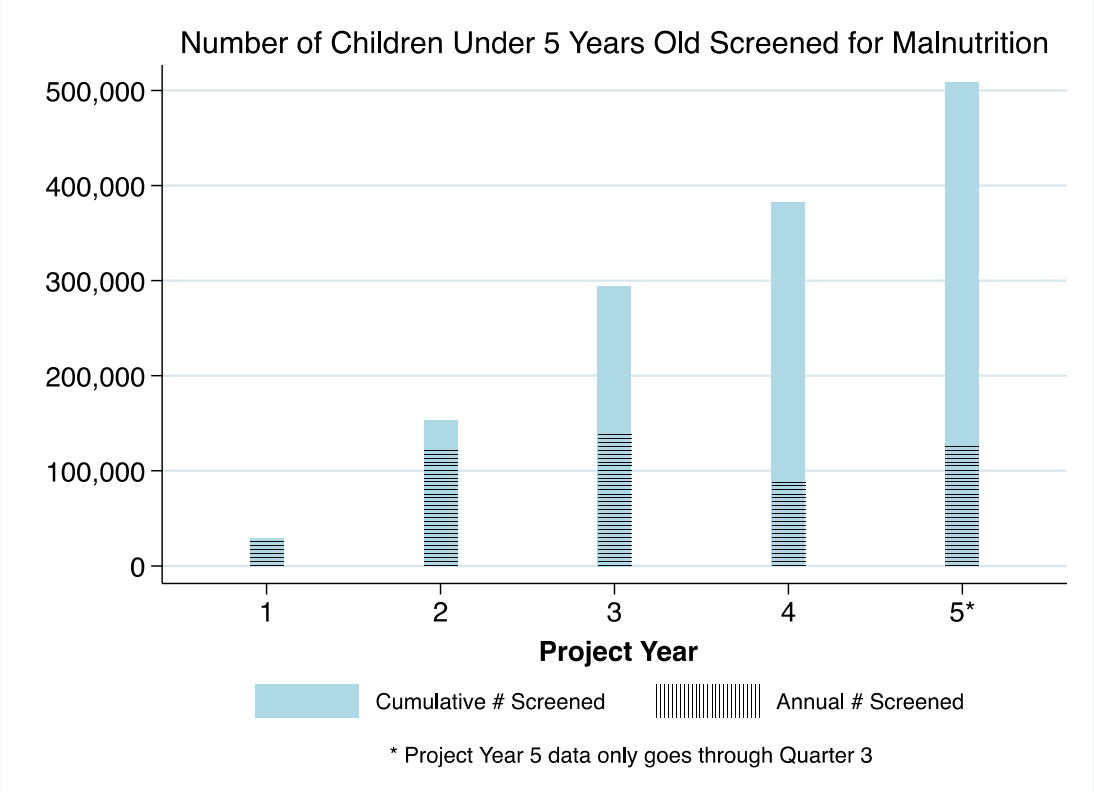
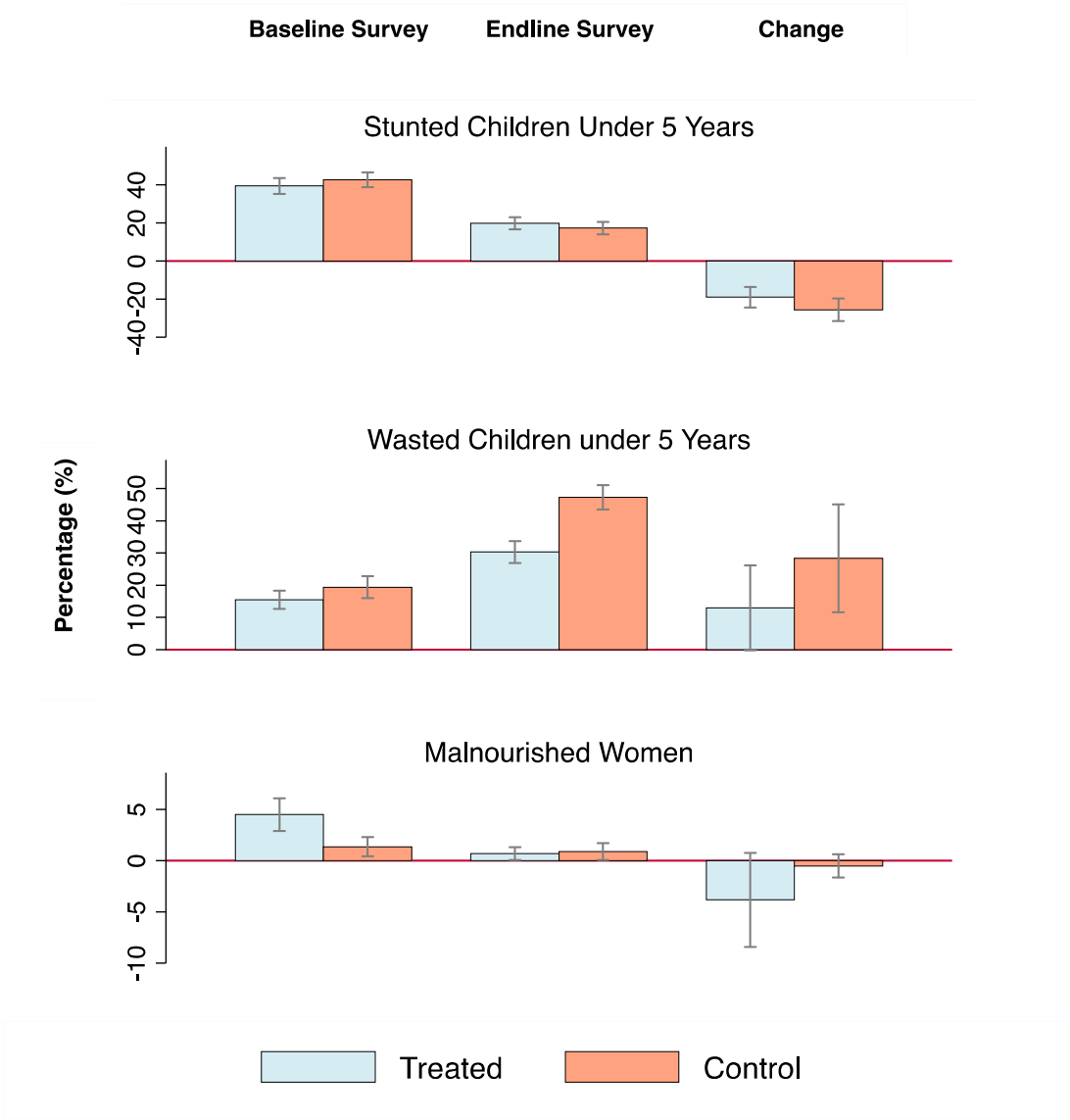


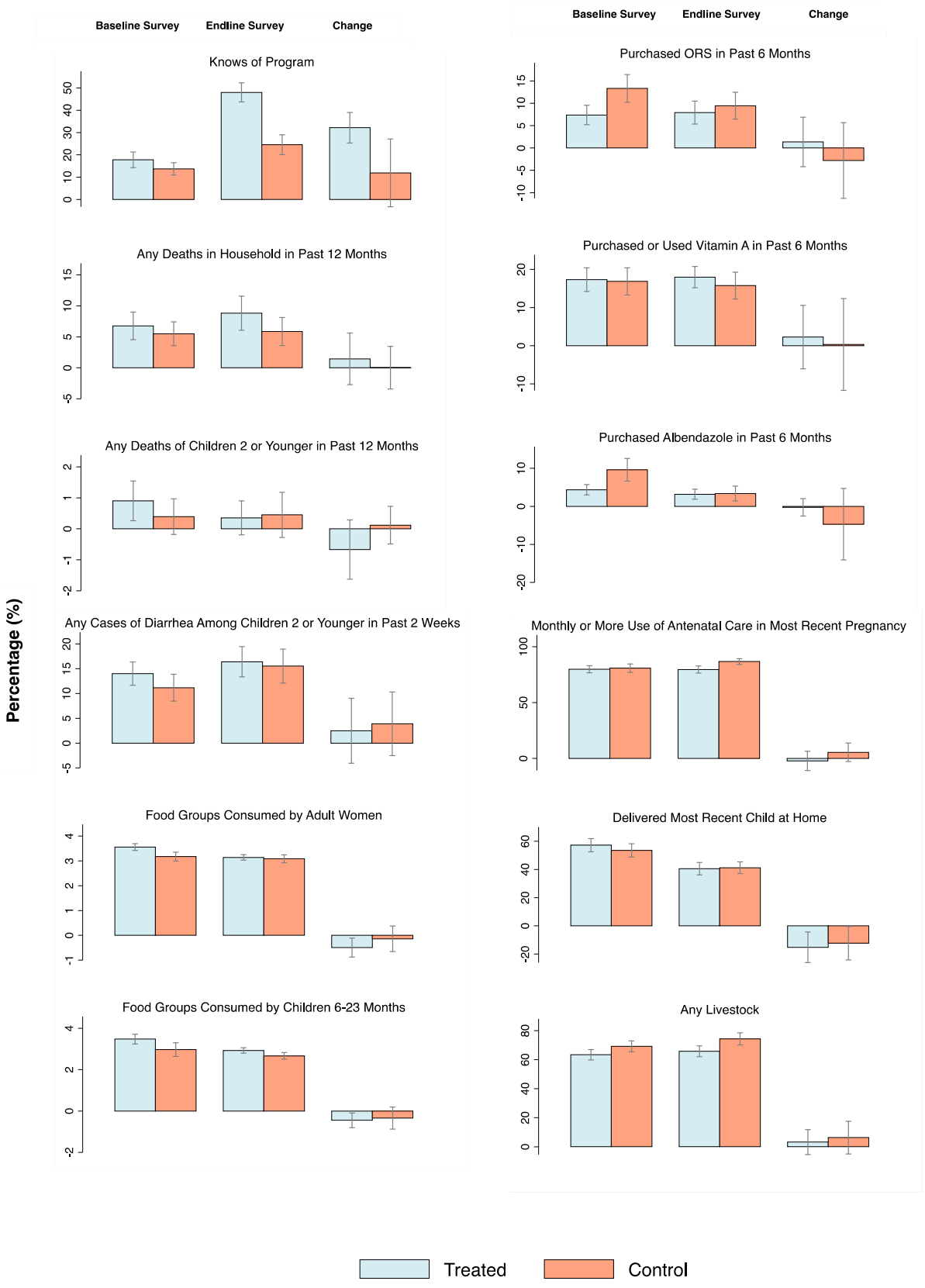
Figure 2. Locations where the Baseline and Endline Survey were Both Administered

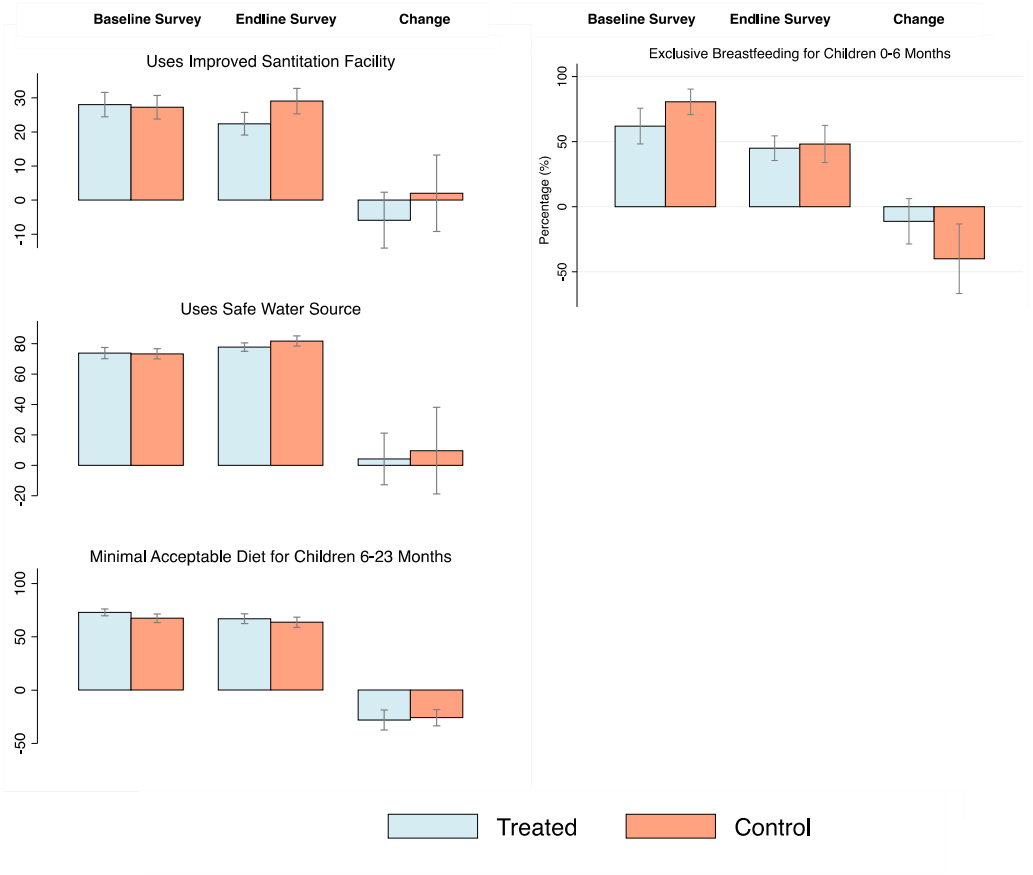
Figure 3. Primary Outcomes by Survey Round and Treatment Group



* Primary outcomes were calculated as follows: A child was defined as stunted if his or her height-for-age score was 2 or more standard deviations below the median of the WHO reference population for their sex and age in months. A child was defined as wasted if his or her weight-for-height greater than 2 standard deviations below the WHO reference population median for their sex and age in months). An adult woman was defined as undernourished if her mid-upper-arm circumference measured less than 21 cm. We calculated Z-scores using the WHO Anthro software, which matches data on each child surveyed to the WHO Child Growth Standards for their sex and age in months. Vertical lines represent 95% confidence intervals.

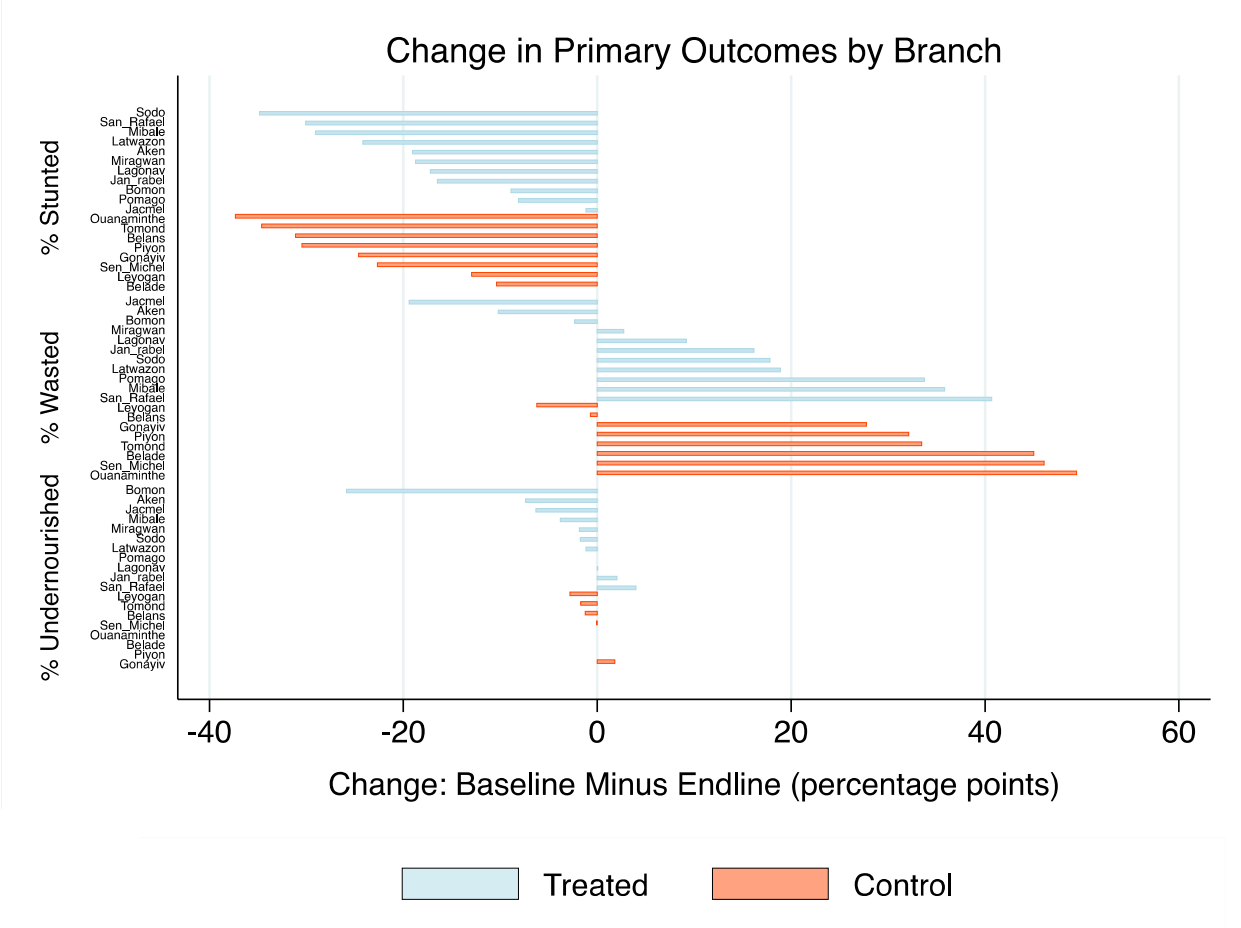
Figure 4. Secondary Outcomes by Survey Round and Treatment Group





* All outcomes were self-reported. Knows of Program was a binary indicator equal to 1 if respondents reported knowing of/counseling from the AKSYON/Boutik Sante program and 0 otherwise; ORS = Oral Rehydration Salts; MAD = Minimal Acceptable Diet. Vertical lines represent 95% confidence intervals.

Figure 5. Change in Primary Outcomes, by Branch



* Primary outcomes were calculated as follows: A child was defined as stunted if his or her height-for-age score was 2 or more standard deviations below the median of the WHO reference population for their sex and age in months. A child was defined as wasted if his or her weight-for-height greater than 2 standard deviations below the WHO reference population median for their sex and age in months). An adult woman was defined as undernourished if her mid-upper-arm circumference measured less than 21 cm. We calculated Z-scores using the WHO Anthro software, which matches data on each child surveyed to the WHO Child Growth Standards for their sex and age in months.

TABLES

Table 1. Sociodemographic Characteristics of Respondent Households, by Survey Round and Treatment Group

	Baseline (N = 1174)			Endline (N = 1011)			Change		
Characteristic [a]	**Treated**	**Control**	**Difference**	**Treated**	**Control**	**Difference**	**Δ Treated**	**Δ Control**	**Diff.**
Respondent age (years)	29.8	30.6	-0.8	30.6	30.7	-0.1	0.7	0.1	0.6
Child age (months)	26.4	25.5	0.8	26.3	26.3	0.0	-0.1	0.8	-0.8
Child is female	338 (53.9%)	223 (48.2%)	5.7	260 (48.5%)	222 (56.1%)	-7.6	-5.4	7.8	-13.3
Household size (# people)	5.7	5.9	-0.2	5.6	5.9	-0.3	-0.1	0.1	-0.1
Respondent is Fonkoze member	95 (15.2%)	81 (17.5%)	-2.2	83 (15.5%)	58 (14.6%)	0.9	0.3	-2.8	3.1
Respondent married	150 (23.9%)	120 (25.9%)	-1.9	143 (26.6%)	112 (28.4%)	-1.7	2.7	2.5	0.2
Respondent literate	452 (72.1%)	291 (62.7%)	9.4	385 (71.8%)	251 (63.5%)	8.3	-0.4	0.8	-1.1
Respondent works	327 (52.3%)	249 (53.7%)	-1.5	317 (59.1%)	270 (68.5%)	-9.4	6.8	14.7	-7.9
Owns livestock	397 (63.4%)	320 (69.2%)	-5.8	353 (65.8%)	294 (74.3%)	-8.5	2.4	5.1	-2.7
Owns stove	449 (71.7%)	320 (69.2%)	2.5	428 (79.9%)	292 (73.9%)	6.0	8.2	4.7	3.5
Owns radio	243 (38.9%)	203 (43.9%)	-5.1	268 (50.1%)	227 (57.4%)	-7.3	11.2	13.5	-2.3
Roof type tin	569 (91.0%)	416 (89.8%)	1.2	475 (88.7%)	368 (93.2%)	-4.5	-2.3	3.4	-5.7
Cooking fuel charcoal	132 (21.1%)	115 (24.9%)	-3.8	204 (38.1%)	128 (32.4%)	5.7	17.0	7.5	9.5

[a] All characteristics are self-reported by survey respondents.

Table 2. Primary Outcomes by Survey Round, Child Sex, and Treatment Group

Survey Round	Overall			Child Female			Child Male		
Outcome	**Treated**	**Control**	**Diff.**	**Treated**	**Control**	**Diff.**	**Treated**	**Control**	**Diff.**
Baseline									
Stunted Children Under 5 Years	262 (39.5%)	218 (42.7%)	-3.3	126 (35.2%)	100 (40.7%)	-5.5	136 (44.4%)	118 (44.7%)	-0.3
Wasted Children under 5 Years	103 (15.5%)	99 (19.4%)	-3.9	51 (14.2%)	45 (18.3%)	-4.0	52 (17.0%)	54 (20.5%)	-3.5
Malnourished Women	30 (4.5%)	7 (1.4%)	3.1	--	--	---	--	--	---
Endline									
Stunted Children Under 5 Years	113 (19.9%)	77 (17.3%)	2.6	46 (16.7%)	45 (18.1%)	-1.3	67 (22.9%)	32 (16.4%)	6.5
Wasted Children under 5 Years	172 (30.3%)	210 (47.3%)	-17.0	83 (30.2%)	110 (44.2%)	-14	89 (30.5%)	100 (51.3%)	-20.8
Malnourished Women	4 (0.7%)	4 (0.9%)	-0.2	--	--	---	--	--	---
Change (Baseline minus endline)									
Stunted Children Under 5 Years	-19.5	-25.4	5.9	-18.5	-22.6	4.1	-21.5	-28.3	6.8
Wasted Children under 5 Years	14.8	27.9	-13.1	15.9	25.9	-10.0	13.5	30.8	-17.3
Malnourished Women	-3.8	-0.5	-3.3	--	--	---	--	--	---

* Primary outcomes were calculated as follows: A child was defined as stunted if his or her height-for-age score was 2 or more standard deviations below the median of the WHO reference population for their sex and age in months. A child was defined as wasted if his or her weight-for-height greater than 2 standard deviations below the WHO reference population median for their sex and age in months). An adult woman was defined as undernourished if her mid-upper-arm circumference measured less than 21 cm. We calculated Z-scores using the WHO Anthro software, which matches data on each child surveyed to the WHO Child Growth Standards for their sex and age in months.

Table 3. Adjusted Differences in Outcomes at Endline

Outcome	Adjusted Difference at Endline Among Respondents in Treated versus Control Branches [a] (95% CI)	Adjusted Difference at Endline Among Respondents in Treated Branches Knowing versus Not Knowing of Program [b] (95% CI)
Primary Outcomes [c]		
Stunted Children Under 5 Years	1.11 (0.73 to 1.70)	0.87 (0.67 to 1.13)
Wasted Children under 5 Years	0.46 (0.21 to 0.99)	0.72 (0.52 to 0.99)
Malnourished Women	0.49 (0.06 to 4.01)	0.48 (0.10 to 2.36)
Secondary Outcomes [d]		
Knows of Program	3.39 (1.54 to 7.46)	--
Any under 5 deaths	0.38 (0.09 to 1.60)	--
Any deaths	1.81 (0.67 to 4.91)	1.90 (1.38 to 2.61)
Any diarrhea case past 2 weeks	0.94 (0.64 to 1.38)	1.14 (0.59 to 2.20)
Food groups (women) [e]	1.79 (0.92 to 3.51)	1.82 (1.07 to 3.12)
Food groups (children 6-23 mo.) [e]	1.55 (0.75 to 3.22)	1.64 (0.98 to 2.74)
Used ORS in past 6 months	0.80 (0.48 to 1.32)	2.79 (0.99 to 7.86)
Used vitamin A in past 6 months	1.14 (0.69 to 1.91)	2.18 (1.34 to 3.55)
Used albendazole in past 6 months	0.86 (0.44 to 1.69)	3.80 (0.83 to 17.39)
Met doctor monthly last pregnancy	0.60 (0.32 to 1.11)	0.89 (0.46 to 1.72)
Delivered last child at home	1.09 (0.63 to 1.90)	0.80 (0.54 to 1.19)
Used an improved sanitation facility	0.67 (0.43 to 1.06)	0.81 (0.48 to 1.38)
Used evidence-based water treatment	0.84 (0.46 to 1.55)	1.86 (1.17 to 2.96)
MAD for children 6-23 mo.	1.09 (0.46 to 2.57)	0.88 (0.61 to 1.28)
Exclusive breastfeeding children 0-6 mo.	0.93 (0.41 to 2.15)	0.99 (0.98 to 1.00)

[a] Based on a logistic regression for binary outcomes and linear regression for continuous outcomes with dependent variable the outcome of interest and independent variables a binary indicator equal to 1 if respondents lived in a treated branch and 0 otherwise and a vector of sociodemographic covariates: respondent age, child age, child sex, household size, and whether or not respondent is a Fonkoze member, married, literate, work, owns livestock, owns a stove, owns a radio, has a tin roof, and uses charcoal for cooking fuel. Standard errors were clustered at the branch-level. Sample restricted to endline respondents only.
[b] Same regression as above except we replaced the key independent variable with a binary indicator equal to 1 if respondents reported knowing of/counseling from the AKSYON/Boutik Sante program and 0 otherwise and further restricted the sample to endline respondents located in treated branches only.
[c] Primary outcomes were calculated as follows: A child was defined as stunted if his or her height-for-age score was 2 or more standard deviations below the median of the WHO reference population for their sex and age in months. A child was defined as wasted if his or her weight-for-height greater than 2 standard deviations below the WHO reference population median for their sex and age in months). An adult woman was defined as undernourished if her mid-upper-arm circumference measured less than 21 cm. We calculated Z-scores using the WHO Anthro software, which matches data on each child surveyed to the WHO Child Growth Standards for their sex and age in months.
[d] Secondary outcomes were self-reported. ORS = Oral Rehydration Salts; MAD = Minimal Acceptable Diet.
[e] Linear regression models were used for these continuous outcome variables.

Table 4. Secondary Outcomes by Survey Round and Treatment Group

Outcome (Number, %)	Baseline (N= 1174)			Endline (N= 1011)			Difference		
	Treated	Control	Diff.	Treated	Control	Diff.	Δ Treated	Δ Control	Diff.
Knows of Program	118 (17.8%)	70 (13.7%)	4.0	272 (48.0%)	109 (24.5%)	23.4	30.2	10.8	19.4
Any Under 5 Deaths	6 (0.9%)	2 (0.4%)	0.5	2 (0.4%)	2 (0.5%)	-0.1	-0.6	0.1	-0.6
Any Deaths	45 (6.8%)	28 (5.5%)	1.3	50 (8.8%)	26 (5.9%)	3.0	2.0	0.4	1.7
Any diarrhea case past 2 weeks	93 (14.0%)	57 (11.2%)	2.8	93 (16.4%)	69 (15.5%)	0.9	2.4	4.4	-2.0
Food groups (women)	9 (3.5%)	6 (3.0%)	0.5	17 (2.9%)	12 (2.7%)	0.3	-0.5	-0.3	-0.2
Food groups (children 6-23 mo.)	24 (3.6%)	16 (3.2%)	0.4	18 (3.1%)	14 (3.1%)	0.1	-0.4	-0.1	-0.3
Used ORS in past 6 months	421 (63.4%)	353 (69.2%)	-5.8	373 (65.8%)	330 (74.3%)	-8.5	2.4	5.1	-2.7
Used Vitamin A in past 6 months	49 (7.4%)	68 (13.3%)	-6.0	45 (7.9%)	42 (9.5%)	-1.5	0.6	-3.9	4.4
Used Albendazole in past 6 months	115 (17.3%)	86 (16.9%)	0.5	102 (18.0%)	70 (15.8%)	2.2	0.7	-1.1	1.8
Met doctor monthly last pregnancy	29 (4.4%)	49 (9.6%)	-5.2	18 (3.2%)	15 (3.4%)	-0.2	-1.2	-6.2	5.0
Delivered last child at home	530 (79.8%)	412 (80.8%)	-1.0	451 (79.5%)	385 (86.7%)	-7.2	-0.3	5.9	-6.2
Used an improved sanitation facility	380 (57.2%)	273 (53.5%)	3.7	230 (40.6%)	183 (41.2%)	-0.7	-16.7	-12.3	-4.4
Used evidence-based water treatment	186 (28.0%)	139 (27.3%)	0.8	127 (22.4%)	129 (29.1%)	-6.7	-5.6	1.8	-7.4
MAD for children 6-23 months	190 (73.8%)	154 (73.3%)	0.5	441 (77.8%)	165 (81.8%)	-4.0	4.0	8.4	-4.4
Exc. breastfeeding for children 0-6 mo	44 (62.0%)	50 (80.6%)	-18.6	36 (45.0%)	27 (48.2%)	-3.7	-17.0	-32.4	15.4

[*] All outcomes were self-reported. Knows of Program was a binary indicator equal to 1 if respondents reported knowing of/counseling from the AKSYON/Boutik Sante program and 0 otherwise; ORS = Oral Rehydration Salts; MAD = Minimal Acceptable Diet.

Table 5. Heterogeneous effects of treatment of primary outcomes at endline, by sociodemographic characteristics

Characteristic [a]	**Stunting Rate Among Children Under 5 Years (95% CI)** [b]	**Wasting Rate Among Children Under 5 Years (95% CI)** [b]
Respondent Age		
< 30 years	1.24 (0.69 to 2.21)	0.46 (0.18 to 1.17)
≥ 30 years	1.13 (0.69 to 1.87)	0.51 (0.22 to 1.19)
Child Age		
< 2 years	0.89 (0.46 to 1.72)	0.44 (0.20 to 0.98)
≥ 2 years	1.96 (1.15 to 3.34)	0.54 (0.19 to 1.51)
***Child* Sex**		
Male	1.52 (0.86 to 2.66)	0.42 (0.17 to 0.99)
Female	0.91 (0.53 to 1.57)	0.55 (0.23 to 1.31)
Respondent is a Fonkoze member		
No	1.14 (0.75 to 1.74)	0.51 (0.22 to 1.20)
Yes	1.58 (0.51 to 4.92)	0.36 (0.13 to 0.98)
Household size		
< 5 people	1.43 (0.73 to 2.81)	0.45 (0.17 to 1.20)
≥ 5 people	1.07 (0.65 to 1.77)	0.51 (0.23 to 1.16)
Respondent is married		
No	1.17 (0.70 to 1.95)	0.52 (0.22 to 1.25)
Yes	1.23 (0.63 to 2.39)	0.41 (0.18 to 0.94)
Respondent is literate		
No	1.22 (0.62 to 2.40)	0.46 (0.20 to 1.07)
Yes	1.14 (0.71 to 1.83)	0.51 (0.20 to 1.28)
Respondent is working		
No	1.26 (0.65 to 2.41)	0.44 (0.17 to 1.11)
Yes	1.17 (0.76 to 1.82)	0.46 (0.20 to 1.06)
Respondent owns livestock		
No	1.05 (0.51 to 2.19)	0.45 (0.14 to 1.43)
Yes	1.24 (0.74 to 2.08)	0.51 (0.24 to 1.08)

[a] All characteristics were self-reported.

[b] A child was defined as stunted if his or her height-for-age score was 2 or more standard deviations below the median of the WHO reference population for their sex and age in months. A child was defined as wasted if his or her weight-for-height greater than 2 standard deviations below the WHO reference population median for their sex and age in months). We calculated Z-scores using the WHO Anthro software, which matches data on each child surveyed to the WHO Child Growth Standards for their sex and age in months.

[*] Based on a logistic regression for binary outcomes and linear regression for continuous outcomes with dependent variable the outcome of interest and the independent variable a binary indicator equal to 1 if respondents lived in a treated branch and 0 otherwise, with the sample restricted to subgroups of participants based on each characteristic of interest. Standard errors were clustered at the branch-level.

Table 6. Responses from 30 CHE Regarding Screening Process

Question/Response	Range	Average	Mode
Months since CHE last held screening (months)	1 to 12	3	1
Number of children screened in last screening (#)	13 to 320	51	50
Number of children with malnutrition in last screening (#)	0 to 20	1.8	0
Days until nurse was informed (days)	1 to 14	3.9	1
Question/Response	Number		%
# CHE who believe referred child received care	30		100%
# CHE who say they did 1 or more follow-up visits	29		97%
# Nurses who responded within 14 days of CHE referral	28		93%
# CHE who say they had enough Vitamin A at last screening	27		90%
# CHE who say they had enough albendazole at last screening	27		90%
# CHE who say they did last screening with other CHE	15		50%
# CHE who say last screening done with a nurse/health worker	7		23%

ANNEX A, SURVEY INSTRUMENT

AKSYON

QUESTIONNAIRE ENGLISH

BASIC IDENTITY DATA

1) Surveyor: what's your name
2) Surveyor: Write your name
3) Department,
4) Commune
5) Section
6) Branch Number
7) Lokalite
8) Center Name
9) Center Number

INTRODUCTION

10) Hello. My name is __. We are conducting a survey regarding a FONKOZE program that USAID funds. This study is so that FONKOZE better provide health services to woman and small children. We will not divulge exactly who you are and what you specifically said to us. Do you agree to respond to the questions and allow us to weigh and measure your child's height?

BASIC IDENTITY DATA ON CLIENT

11) Last name of client
12) First name of client
13) Are you a client of FONKOZE?
14) Client ID Number
15) Group Number
16) Name of group

IDENTITY DATA ONHOUSEHOLD AND FONKOZE

17) Is there anyone else in your house who is a client of FONKOZE, meaning are they borrowing money from FONKOZE at the moment? y/n
18) Has anyone in the house ever been a client of FONKOZE? y/n
19) Are you currently active in FONKOZE? y/n

KNOWLEDGE/USE OF BOUTIK SANTE

20) Have you heard of the program AKSYON? y/n
21) Do you know what a Boutik Sante is? 20) Have you heard of the program AKSYON? y/n
22) [If does not know what a Boutik Sante is] Surveyor, explain what a Boutik Sante is
23) In the past year has a vendor in a boutik sante counseled you or someone in your house regarding an illness? y/n
24) What illness/condition? [List]
25) Explain other,
26) In the past year has a vendor in a boutik sante tested/screened you or someone in your house regarding an illness? y/n
27) What illness/condition? [List]
28) Explain other,
29) In the past 12 months has Boutik Sante seller sent you to an ajan sante, clinic, or a doctor? y/n
30) What illness/condition? [List]
31) Explain other,

BIRTH INFORMATION ON TARGET MOTHER

32) Year mother born
33) Month mother born
34) Age

BIRTH INFORMATION ON TARGET CHILD

35) Year that the child of respondent--the one you will measure--was born.

[DATA CHECK: If more than 5 years of age.]

36) You are not supposed to survey the child.
37) In what month was the child born?
38) [If the child has months of age that's more than 60 months, tell the mother] We cannot survey her/him.

[DATA CHECK]

39) Verify that it is the woman's child
43) Is it her child? y/n
44) [If NO] Tell the woman that we cannot interview her because the child is not hers

VACCINATIONS

40) Does the woman have a vaccination card for the child? y/n

IF MOTHER SAYS CHILD HAS VACCINATION CARD

41) ANKETE Do you have the child's vaccination card in your hand?
42) ANKETE: If you do not have the vaccination card in hand then it does not exist for us. Go back to the previous question and mark, 'no, that you do not have the vaccination card.

IF ANKETE HAS VACCINATION CARD

45) Take a photo of the cover of the vaccination card
46) Take a picture of the main page of the card, the page with what vaccines the child has had and the dates.
47) Now you're going to note all the vaccines that the child has had
48) Check all the times that the child was vaccinated
49) Hepatitis B
    1st dose
    2nd dose
    3rd dose
    4th dose
    no dose
50) DTP Polio
    1st dose
    2nd dose
    3rd dose
    4th dose
    no dose
51) HIB
    1st dose
    2nd dose
    3rd dose
    4th dose
    no dose
52) ROR
    1st dose
    2nd dose
    3rd dose
    4th dose
    no dose

53) Varicelle
- 1st dose
- 2nd dose
- 3rd dose
- 4th dose
- no dose

54) Meningoocoque
- 1st dose
- 2nd dose
- 3rd dose
- 4th dose
- no dose

55) Pneumonocoque
- 1st dose
- 2nd dose
- 3rd dose
- 4th dose
- no dose

56) Typhoide
- 1st dose
- 2nd dose
- 3rd dose
- 4th dose
- no dose

57) Hepatitis A
- 1st dose
- 2nd dose
- 3rd dose
- 4th dose
- no dose

IN CASE OF NO VACCINATION CARD

58) ANKETE: You're going to note all the vaccines that the child has had for each disease.

59) SURVEYOR: Ask the mother for all the times that the child was vaccinated for each disease

60) Hepatitis B
- 1st dose
- 2nd dose

3rd dose
4th dose
no dose

61) DTP Polio
1st dose
2nd dose
3rd dose
4th dose
no dose

62) HIB
1st dose
2nd dose
3rd dose
4th dose
no dose

63) ROR
1st dose
2nd dose
3rd dose
4th dose
no dose

64) Varicelle
1st dose
2nd dose
3rd dose
4th dose
no dose

65) Meningoocoque
1st dose
2nd dose
3rd dose
4th dose
no dose

66) Pneumonocoque
1st dose
2nd dose
3rd dose
4th dose
no dose

67) Typhoide
    1st dose
    2nd dose
    3rd dose
    4th dose
    no dose
68) Hepatitis A
    1st dose
    2nd dose
    3rd dose
    4th dose
    no dose

MEASURING THE CHILD

69) ENUMERATOR: Measure the child's height, in centimeters.
70) What is the child's height, in centimeters?
    Take pic stadiometer measure
71) Did you measure the child laying down or standing?
72) ENUMERATOR: Measure the child's weight in pounds.
73) What is the child's weight, in kilograms?
    Take pic measure on scale
74) ENUMERATOR: Measure the woman's brachial circumference.
75) What is the woman's brachial circumference in centimeters?
    Take pic of measure on tape
76) ENUMERATOR: Measure the child's brachial circumference.
77) What is the child's brachial circumference in centimeters?
    Take pic of measure on tape

CHILD ILLNESS AND FEEDING KNOWLEDGE AND PRACTICE

78) Is your child ill? y/n
79) Yesterday, did your child eat without whining or crying? y/n
80) How many days old was the baby when you first nursed him/her?
81) Do you know at how many days the doctor recommends that you first breast feed?
82) At how many days does the doctor recommend that you first breast feed?
83) At how many days, weeks, or months did you give the baby tea for the first time?
84) Do you know at how many days, weeks, or months the doctor recommends that you give a baby tea for the first. y/n

85) At how many days, weeks or months does the doctor recommend that you give tea for the first time? [List]
86) At what did age did you first give the baby porridge or other food? [List]
87) Do you know at how many days, weeks, or months the doctor recommends that you give the first solid food? y/n
88) At how many days, weeks or months does the doctor recommend that you first give solid food? [List]
89) At what age should you completely wean the baby? [List]
90) Are you still breast feeding the baby? [List]
91) When you nurse the child, do you always give him/her the same breast or both breasts? y/n
92) How any times do you breast feed the child during the day? [List]
93) How any times do you breast feed the child during the night? [List]
94) Do you give the child a bottle? y/n
95) In the past 24 hours, how many times did you give the child a bottle with formula?
96) Do you give the child food other than a bottle or breast milk? y/n
97) How often do you feed the child in a 24-hour period?
98) And yesterday, how many times did you feed the child?
99) What the child ate yesterday:
100) I am going to ask you some questions about what you fed the child yesterday?
    101) Maize , maize porridge, rice, sorghum, millet pasta, bread, potato, manioc, sweet potato, yam...
    102) Beans. Peas, groundnuts and cashew nuts
    103) Vegetables and leaves
    104) Fruits
    105) Beef, goat, poultry, pork, eggs and fish
    106) Milk yogurt and other diary
    107) Oils, fats and butter

<u>RESPONDENT FEEDING PRACTICE</u>

108) I am going to ask some questions about what YOU ate in the past 24 hours.
109) What YOU ate yesterday:
    110) Maize , maize porridge, rice, sorghum, millet pasta, bread, potato, manioc, sweet potato, yam...
    111) Beans. Peas, groundnuts and cashew nuts
    112) Vegetables and leaves

113) Fruits
114) Beef, goat, poultry, pork, eggs and fish
115) Milk yogurt and other diary
116) Oils, fats and butter

HOUSEHOLD COMPOSITION

117) Now I am going to ask you how many people live in your household. I am going to ask how many females and then how many males.
118) How many people in the house?
119) How many are male?
120) How many are female?
121) How many of the children have 24 months of age or less?
122) How many have 24 months to 5 years of age?
123) [CHECK ON RESPONSES] Surveyor, the total that you gave does not equal the total for all the age categories. Go back and correct the error
125) The youngest female, what is her age in years (baby less than 1 year = 0)?
126) 2nd youngest female?
127) 3rd female?
128) 4th female?
129) 5th female?
130) 6th female?
131) 7th female?
132) 8th female?
133) 9th female?
134) 10th female?
135) 11th female?
136) The youngest male, what is her age in years (baby less than 1 year = 0)?
137) 2nd youngest male?
138) 3rd male?
139) 4th male?
140) 5th male?
141) 6th male?
142) 7th male?
143) 8th male?
144) 9th male?
145) 10th male?
146) 11th male?

147) How many children do you have (living)?
148) Age of the oldest
149) Age of the youngest
150) You are, [list marital status]
151) How many times have you been pregnant?
152) Who cared for you while you were pregnant?
153) How many months where you pregnant when you first went to the ?
154) After that, how often did you visit the doctor/klinik?
155) Explain other,
156) Where did you give birth to the last child?
157) Explain other,
158) Was the baby born normal?
159) Explain other,
160) After the baby was born, did you see another specialist, such as a midwife, nurse, or doctor?
161) Which specialist(s)?
162) Explain other,
163) When did you see the [specialist specified]?
164) Are there any women in your house nursing a baby?
165) How many months of age is xxx baby right now?
166) Are there any women in your house pregnant?
167) How many months along is xxx, more or less?

ILLNESS KNOWLEDGE AND PRACTICE

168) Do you know what anemia is? y/n
169) Tell me one cause of anemia [List]
170) In the list I am going to read, tell me which foods are a good source of iron. [List]
171) I am going to present a series of products and I would like you to tell me if you've purchased any of them in the past 1 to 6 months. [List]
172) In the past 2 weeks, are there any children 2 years old and younger in your household who had diarrhea? y/n
173) How many children 2 years or less had diarrhea in the past 2 weeks?
174) Age of the 1st child less than 2 years of age who had diarrhea?
175) Sex of the child? m/f
176) Did you give him SRO? y/n
177) Was it a homemade SRO or purchased?
178) Explain

179) While the child was sick, did you give the child any of these other remedies in the list below? [List]
180) Explain
181) While the child was sick, did you consult with any of the following? [List]
182) Explain
183) Age of the 2nd child less than 2 years of age who had diarrhea?
184) Sex of the child?
185) Did you give him SRO? y/n
186) Was it a homemade SRO or purchased?
187) Explain
188) While the child was sick, did you give the child any of these other remedies in the list below? [List]
189) Explain
190) While the child was sick, did you consult with any of the following? [List]
191) Explain
192) Age of the 3rd child less than 2 years of age who had diarrhea?
193) Sex of the child?
194) Did you give him SRO? y/n
195) Was it a homemade SRO or purchased?
196) Explain
197) While the child was sick, did you give the child any of these other remedies in the list below? [List]
198) Explain
199) While the child was sick, did you consult with any of the following? [List]
200) Explain
201) In the past 2 weeks, are there any children between 2 years (24 months) and 5 years of age (60 months) in your household who had diarrhea? y/n
202) How many children of that age had diarrhea in the past 2 weeks?
203) Age of the 1st child between 2 years (24 months) and 5 years of age (60 months) who had diarrhea?
204) Sex of the child? m/f
205) Did you give him SRO? y/n
206) Was it a homemade SRO or purchased?
207) Explain
208) While the child was sick, did you give the child any of these other remedies in the list below? [List]
209) Explain
210) While the child was sick, did you consult with any of the following? [List]
211) Explain

212) Age of the 2nd child between 2 years (24 months) and 5 years of age (60 months) who had diarrhea?
213) Sex of the child?
214) Did you give him SRO? y/n
215) Was it a homemade SRO or purchased?
216) Explain
217) While the child was sick, did you give the child any of these other remedies in the list below? [List]
218) Explain
219) While the child was sick, did you consult with any of the following? [List]
220) Explain
221) Age of the 3rd child between 2 years (24 months) and 5 years of age (60 months) who had diarrhea?
222) Sex of the child? m/f
223) Did you give him SRO? y/n
224) Was it a homemade SRO or purchased?
225) Explain
226) While the child was sick, did you give the child any of these other remedies in the list below? [List]
227) Explain
228) While the child was sick, did you consult with any of the following? [List]
229) Explain
230) In the past 2 weeks, are there any other people in your household who had diarrhea? y/n
231) How many other people had diarrhea in the past 2 weeks?
232) Age of the 1st other person who had diarrhea in the past 2 weeks?
233) Sex of the person?
234) Did you give him SRO? y/n
235) Was it a homemade SRO or purchased?
236) Explain
237) While the person was sick, did you give the person any of these other remedies in the list below? [List]
238) Explain
239) While the person was sick, did you consult with any of the following? [List]
240) Explain
241) Age of the 2nd other person who had diarrhea in the past 2 weeks?
242) Sex of the person? m/f
243) Did you give him SRO? y/n

244) Was it a homemade SRO or purchased?
245) Explain
246) While the person was sick, did you give the person any of these other remedies in the list below?
247) Explain
248) While the person was sick, did you consult with any of the following? [List]
249) Explain
250) Age of the 3rd other person who had diarrhea in the past 2 weeks?
251) Sex of the person? m/f
252) Did you give him SRO? y/n
253) Was it a homemade SRO or purchased?
254) Explain
255) While the person was sick, did you give the person any of these other remedies in the list below? [List]
256) Explain
257) While the person was sick, did you consult with any of the following? [List]
258) Explain

DEATH IN THE HOUSEHOLD

259) In the past year, did any children in the household 5 years of age or younger die? y/n
260) How many?
261) What age did the 1st child who died have?
262) When the child died, did he/she have any of the following, [List]
263) Explain other,
264) What age(s) did the 2nd child who died have?
265) When the 2nd child died, did he/she have any of the following, [List]
266) Explain other,

267) In the past year, meaning since June of last year, is there anyone else in your household who has died? y/n
268) How many members of the household died in the past year (12 months)?
269) All totaled, including both your children and others in the house who died, who many members of the household died in the past year (12 months)?

270) In the next few questions, I would like you to consider all the members of your household who died in the past year, both your children and other people of the household who died.
271) Who were they? [List]
272) What age(s) did the people who died have?
273) The first person who died in the past year, what age did he or she have?
274) The first person who died in the past year, when the person died, did he/she have any of the following [list],
273) The second person who died in the past year, what age did he or she have?
274) The second person who died in the past year, when the person died, did he/she have any of the following [list]
273) The third person who died in the past year, what age did he or she have?
274) The third person who died in the past year, when the person died, did he/she have any of the following [list]
273) The fourth person who died in the past year, what age did he or she have?
274) The fourth person who died in the past year, when the person died, did he/she have any of the following [list]

HOUSEHOLD INFRASTRUCTURE

281) Where do you get your drinking water for the house? [List]
282) Explain other,
283) In the past 24 hours have you treated drinking water with one of the following methods? [List]
284) Explain other,
285) Does your house have a latrine? y/n
286) Where do people in your house go to the bathroom [list]
287) Explain other,
288) What type of a latrine is it [list]
289) Explain other,
290) Is the latrine for the house only or is it shared?
291) What type of a latrine is it [list]
292) Explain other,

HYGIENE KNOWLEDGE AND PRACTICE

293) Do you know when a person should wash his/her hands to avoid germs that cause diarrhea [list]
294) When?
295) Explain
296) When should a person bath [List]
297) Do you have a spot at your house that is dedicated to washing hands (hand washing station) y/n

FOOD PREPARATION KNOWLEDGE AND PRACTICE

298) During your last meal at home, did you:
- 301) I am going to ask some questions about how you prepare food
- 302) Hand-wash with soap before food preparation?
- 303) Wash utensils with soap?
- 304) Separate utensils for raw and cooked food?
- 305) Prepare foods for cooking on a table?

OWNERSHIP OF LIVESTOCK

306) I am going to ask some questions about how many animals everyone in the household has together.
307) How many in each of the following animals do all the people in the household own total?
- 308) Chicken
- 309) Guinea hen
- 310) Duck
- 311) Goat
- 312) Sheep
- 313) Pigs
- 314) Cows
- 315) Donkey
- 316) Mule
- 317) Horse

WORK

318) I would like to talk for a moment about the work that people in the house did in the past week.
319) The woman of the house (the female household head, or the wife of the male household head), how many hours did she work in the past week?

320) Now, for the rest of the household members who have more than 10 years of age, how many of them are there?
321) And how many of these household members worked at least 1 hour in the past week?

LITERACY

322) Can the female household head or spouse of head read and write?
y/n or no female head
323) Can the male household head or spouse of head read and write?
y/n or no male head

COOKING FUEL

324) Principal cooking fuel [list]
325) Does the household or a household member have a stove (wood/charcoal)? y/n

TECHNOLOGY

326) Does the household or a household member have a radio? y/n

CONTACT INFORMATION AND LOCATION

327) Telephone #
328) 2nd telephone number
329) GPS