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Suaahara Baseline Survey Report



SUAAHARA

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an affiliate of Johns Hopkins University



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Executive summary

Background

Suaahara is a USAID funded initiative aiming to improve nutritional status among children under two and their mothers, over a period of five years (2011-2016) in 20 districts of Nepal. The program aims to reach all children under two years of age in these districts across the three agroecological zones of mountains, hills, and Terai. *Suaahara* is a partnership initiative led by Save the Children International; other partners include Helen Keller International (HKI), JHU Center for Communications Programs, JHPIEGO, Nepal Water for Health (NEWAH), the National Promotion and Consultancy Service (NPCS) and the Nepali Technical Assistance Group (NTAG) as collaborating partners.

Suaahara's strategy is designed around multi-sectoral interventions and aims to achieve reductions in undernutrition by improving household health and nutritional behaviors, increasing the use of quality health and nutrition services, increasing consumption of diverse and nutritious foods, and strengthening coordination on nutrition between government and other stakeholders.

Impact evaluation and baseline survey design

The primary objective of the *Suaahara* impact evaluation is to address the overarching question: *What overall project-level impact did the Suaahara program have on maternal and child undernutrition?*

The evaluation aims to estimate the effectiveness of *Suaahara's* primary and secondary impact indicators. Specifically, the impact evaluation is designed to capture the impact of the program on:

- Prevalence of stunting, wasting, and underweight among children 0-59.9 months of age
- Prevalence of underweight among mothers
- Prevalence of anemia among mothers and children 6-59.9 months of age

This evaluation design also allows for the assessment of indicators related to various aspects of three of *Suaahara's* intermediate results (IRs): 1) improved household health and nutrition behaviors, 2) increased use of quality nutrition and health services by women and children, 3) increased consumption of diverse and nutritious food by women and children.

As part of the evaluation, the baseline survey had two main objectives:

- To gather data on the main outcomes in order to determine the comparability between *Suaahara* intervention and comparison areas on the impact indicators before implementation of any *Suaahara* programming
- To assess differences at the baseline between the groups on various factors that could influence overall maternal and child health and nutrition outcomes in Nepal

Methods

To estimate the sample size for the baseline survey, we used the current prevalence of stunting and anemia as reported in the 2011 Nepal Demographic and Health Survey (NDHS), the expected rates of change after *Suaahara* interventions, and the power to detect those changes. We employed multi-stage cluster sampling with the first-stage sampling unit as districts (16), the second-stage sampling unit as VDCs (5 per district), the third-stage sampling unit as wards (3 per VDC), and the final-stage sampling unit as rural households with children under 5 years of age (17 per ward).

New Era, a survey firm headquartered in Kathmandu, conducted primary data collection for the baseline survey in rural communities of 16 districts throughout Nepal, from June 13 through October 6, 2012. Data collection tools and questionnaires were developed using the UNICEF conceptual framework for nutrition as a reference; reviewing formative research and published literature on Nepal's current health, nutrition, and food security situation; and collaborating with New Era and the *Suaahara* team to adapt questions from previous similar IFPRI evaluation questionnaires as well as the 2011 NDHS. Careful attention was given to *Suaahara's* planned interventions and program results framework.

Data collection included surveys of:

- Two household members (mother of the index child and her husband, where possible)
- One group of community leaders per ward
- One Female Community Health Volunteer (FCHV) per ward

The questionnaire administered to the mother of the index child covered maternal and child health and nutrition; household food security; water, sanitation, and hygiene; infant and young child feeding (IYCF) practices; IYCF knowledge, attitudes, and perceptions; access to information; and women's empowerment. This part of the survey also involved taking anthropometric measurements and drawing blood to measure hemoglobin status of children and the mother of the index child in the household. If available, the grandmother of the index child was also asked a short series of questions focusing on her perceptions on maternal and child health and nutrition. The male questionnaire was intended for the husband of the mother of the index child, usually the father of the index child. If unavailable, another adult male who makes major household economic decisions was selected. If no male was available, the mother of the index child was also asked the men's questionnaire. This questionnaire covered household demographics, economics, social assistance, agricultural practices, and empowerment, followed by a salt test and observations of the dwelling characteristics and hygiene spot checks.

The interview of FCHVs included questions on demographic and socioeconomic status; work activities related to the role of FCHVs; demand for services; exposure to training; contact with other health, nutrition, and agricultural staff in the community; knowledge of key *Suaahara* messages; motivation, job satisfaction, self-efficacy and confidence; supervisory support; information access; and dwelling and water, sanitation, and hygiene observations. In each ward, the community leaders were also interviewed as a group on ward access to key facilities, ward access to key health and agricultural staff, migration patterns, livelihoods and poverty, social capital, leadership in the community, economic events, and local prices.

New Era initially cleaned the data and IFPRI conducted all final data cleaning and analyzed the data using STATA 12. Appropriate variables were created as needed for the analyses. Results on means and proportions were generated for the entire survey sample as well as separately for intervention and comparison areas. Statistical testing for differences between the intervention and comparison areas was done for key variables, including adjustments for clustering at the district level.

Results and implications for *Suaahara*

A summary of the key results and implications for *Suaahara*, where applicable, are as follows. One of the major purposes of the baseline is to establish the comparability of intervention and comparison areas. Ideally, intervention and comparison districts would be comparable on most major indicators. Therefore, we would expect to see few differences. Where differences exist, they will need to be adjusted for in the analyses when endline results are available.

- Prevalence of maternal and child undernutrition is high in our sample. Adjusting for clustering at the district level, core *Suaahara* impact indicators are not significantly different between the intervention and comparison areas.
- We find that the prevalence of child stunting, underweight and anemia in the intervention areas is lower than in the comparison areas, although the differences are not statistically significant. Child stunting prevalence is the highest in the mountain areas while wasting and anemia is most prevalent in the Terai.
- We also do not find statistically significant differences, adjusting for clustering at the district level, on core and optional WHO recommended IYCF indicators between intervention and comparison groups. Regarding exclusive breastfeeding, timely introduction of complementary foods, and minimum meal frequency, the intervention sample appears to be worse off.
- Although over 60 percent of the mothers report timely introduction of complementary food, the foods introduced are predominately cereals, pulses, and dairy. Only a fifth of the children consumed iron-rich foods in the last 24 hours and only 0.5 percent of the children received iron supplementation. The *Suaahara* intervention sample appears to be particularly worse off in the

timely introduction of vitamin A rich fruits and vegetables, flesh foods and eggs. There is a large scope for *Suaahara* to improve overall IYCF practices and diet quality among children under two years of age.

- Health care practices to help children recover from illness remain poor. Just over a third of the children in the sample receive oral rehydration solution (ORS) to tackle diarrhea and 14 percent receive zinc. Less than 10 percent of the children get more to eat during illness. This is not surprising given the poor knowledge overall of the mothers, grandmothers, and FCHVs on this topic. Although statistically not significant, these practices seem to be worse off in *Suaahara* intervention areas. *Suaahara* should promote ORS and Zinc to treat diarrhea and feeding sick children an extra meal a day to recover from illness.
- Prevalence of maternal anemia is very high among both pregnant and non-pregnant women, but nearly 20 percentage points higher among pregnant women. Given the low dietary diversity, and particularly low consumption of animal sources foods, this is not surprising. Although over 80 percent of women report consuming iron and folic acid (IFA) tablets, in intervention and comparison areas, only about a third consume the full course. *Suaahara* should consider strengthening existing mechanisms to improve compliance with IFA supplementation to reach non-pregnant, pregnant, and post-partum women.
- The key indicators on antenatal, postnatal, and newborn care are not significantly different between intervention and comparison areas. However, overall, the sample in the *Suaahara* intervention areas seems to be doing better than the comparison sample. Overall, maternal care with regard to health services seems to deteriorate from pregnancy to delivery to the postnatal period. In *Suaahara* areas, a skilled provider treats nearly 3 in 4 women during the prenatal period, but only 42 percent for delivery. For postnatal care, only 17 percent of these women receive the recommended 3 visits. This shows that while the systems exist, they currently do not deliver a comprehensive continuum of care or families do not avail themselves of these services or both. *Suaahara* should increase demand for services and strengthen existing services.
- Only a third of the women report using any method of family planning to avoid pregnancy. *Suaahara* needs to carefully focus on family planning. Delaying the age of first pregnancy and spacing births are important for maternal and child health and nutrition outcomes. Therefore, *Suaahara* should consider interventions to change prevailing norms with respect to the current timing and spacing of pregnancies, rather than focusing on reducing fertility rates per se.
- In general, the indicators on water, sanitation and hygiene (WASH) are not different between intervention and comparison areas. Defecation and hand washing practices are unacceptably poor and interventions to improve these practices should be ramped up.
- Almost all the households interviewed own land, the landholdings are about half a hectare. While the primary use of land reported is to cultivate crops through rain-fed irrigation, about a third report leaving their land fallow. Only 6 percent of men and 3 percent of women have any access to an extension worker and even less availability of and access to village model farmers. This result is expected given that *Suaahara* interventions in agriculture have not yet begun. *Suaahara* could consider improving the extension system, given its focus on agriculture and improved food production.
- The households in our sample favor production of field crops, followed by green leafy vegetables. The production of other vegetables, fruits and animal products is low. While about half of the households in our sample report growing green leafy vegetables, very few report growing fruits and vegetables. Milk is the most popular product (with respect to production and consumption of animal products) with half of all households reporting that they produce milk, followed by poultry and other animal meat, at 23 percent and 12 percent respectively. There is scope for *Suaahara* to boost the cultivation of fruits, vegetables, and animal products. However, given the poor knowledge of mothers, grandmothers, and FCHVs on maternal and child health and nutrition, production strategies alone will not improve consumption. A strong behavior change communication strategy is required to ensure that boosting production translates into improved diet quality.

- Mothers consult FCHVs, but their current strength appears to be in delivering interventions that are product driven, for example, vitamin A supplementation and deworming. However, their current role in postnatal and newborn care and as a change agent to improve nutrition and health behaviors is rather low. The survey also reveals very poor knowledge and capacity of FCHVs in the realms of health and nutrition. *Suaahara* and the government of Nepal need to make heavy and rapid investments in strengthening the existing FCHV system as well as other systems of community mobilization and outreach through interpersonal communication to deliver high quality maternal and child health and nutrition services.

Conclusions

From the baseline survey, our findings show that *Suaahara* intervention and comparison areas are comparable on most impact indicators as well as other variables related to maternal, child, household, and community characteristics, adjusting for clustering at the district level. Overall, it appears that *Suaahara* intervention areas may be slightly better off than the comparison areas indicating that matching at the analysis stage will be critical to estimate the impact of *Suaahara* on maternal and child nutrition and health. The baseline survey results reinforce the importance of *Suaahara's* interventions to improve maternal and child health and nutrition.

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LIST OF ACRONYMS

BCC	Behavior Change Communication
BMI	Body Mass Index
EBF	Exclusive Breast Feeding
FCHV	Female Community Health Volunteer
HAZ	Height for Age Z-Score
HFIAS	Household Food Insecurity Access Scale
HH	Household
IFPRI	International Food Policy Research Institute
IYCF	Infant and Young Child Feeding Practices
MoHP	Ministry of Health and Population
MToT	Master Training of Trainers
NDHS	Nepal Demographic and Health Survey
NHRC	Nepal Health Research Council
PPS	Probability Proportional to Size
SD	Standard Deviation
SES	Socioeconomic Status
TBA	Traditional Birth Attendant
TV	Television
USAID	United States Agency for International Development
VDC	Village Development Committee
VHW	Village Health Worker
WASH	Water, Sanitation, and Hygiene
WAZ	Weight for Age Z-Score
WHO	World Health Organization
WHZ	Weight for Height Z-Score

1. Introduction

1.1: Overview of health, nutrition, and agriculture in Nepal

Throughout the last two decades, Nepal has undergone numerous political, economic, and social transformations. Having recently emerged from a decade-long Maoist insurgency, in 2008 Nepal held a Constituent Assembly election and was declared a Republic State resulting in abolishment of the 240 year old monarchy. As a newly formed republic, Nepal was administratively divided into 75 districts among 5 regions: Eastern, Central, Western, Mid-Western, and Far Western. The country is further divided into three extremely diverse agroecological zones: the lowland Terai (plains), the hills, and the mountains, including many of the highest ones on earth.

In the 21st century, Nepal has made great strides in development. Between 1995-1996 and 2003-2004, all three agroecological zones have seen a decline in poverty; overall poverty has dropped from 41.8 to 30.8 percent.ⁱ However, the United Nation's Human Development Index measuring three dimensions of human development – a long and healthy life, knowledge, and a decent standard of living – shows that since 2000, Nepal has maintained a score of 0.4 or 0.5 and as of 2011 was still ranked 157 of 187 countries measuredⁱⁱ. The most recent report of the Gender Gap Index published by the World Economic Forum, which quantifies gender disparities on economic, political, educational and health based criteria scored Nepal at 0.6 of a possible 1.0; since 2006, this same report has ranked Nepal between 110 and 125 out of 135 nations being scored.ⁱⁱⁱ

Improvements in child health, as highlighted in the most recent Nepal Demographic and Health Survey-2011 (NDHS) report, can be noted by declines in both infant mortality rates and under 5 mortality rates. But declines in maternal and child anemia remain slow (Table 1.1).^{iv}

Table 1.1: Trends in maternal and child mortality and anemia in Nepal

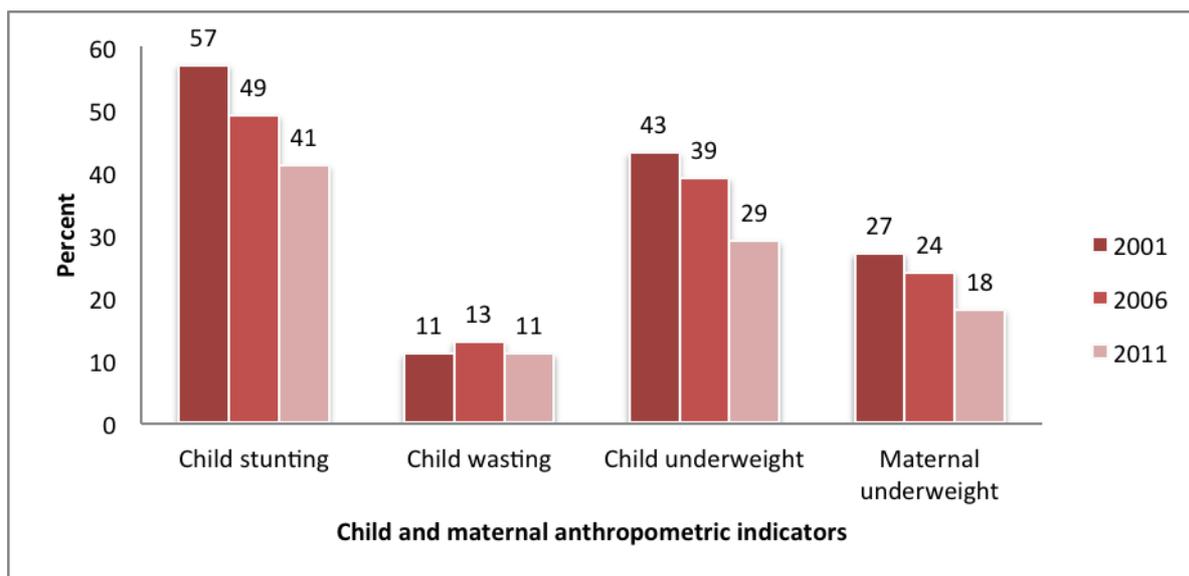
Health Factors	2001	2006	2011
Maternal and child mortality			
Maternal mortality (Number of deaths/100,000 live births)*	360.0	250.0	170.0
Infant mortality rate (Number of deaths/1000 live births)	64.0	48.0	46.0
Under 5 mortality rate (Number of deaths/1000 live births)	91.0	61.0	54.0
Anemia among women aged 15-49 years (percent)			
(Not pregnant - <12.0grams/dl) and pregnant <11.0gm/dl)			
All		36.0	34.8
Mountain		21.5	26.9
Hill		20.7	26.9
Terai		51.4	42.0
Anemia among children 6-59.9 months (percent)			
(<11.0 grams/dl)			
All		48.0	46.0
Mountain		45.2	47.7
Hill		36.9	41.0
Terai		58.5	50.2

Sources: Ministry of Health and Population, Nepal, New ERA. (2012). *Nepal Demographic and Health Survey 2011*. Kathmandu; WHO: Global Health Observatory Data Repository

Note: * indicates these data are from 2000, 2005, and 2010, slightly different years from the other data presented in the table.

Although child under nutrition is still high, Nepal has seen impressive declines in rates of stunting and underweight among children under 5 years of age. Between 2001 and 2011, the rate of child stunting (low height-for-age) has declined by 16 percentage points and underweight (low weight-for-age) has declined by 14 percentage points, while the rate of wasting (low weight-for-height) remained stagnant (Figure 1.1).^v

Figure 1.1: Trends in maternal and child nutritional status in Nepal



Source: Ministry of Health and Population, Nepal, New ERA. (2012). *Nepal Demographic and Health Survey 2011*. Kathmandu.

Although Nepal has seen impressive gains in nutrition, much remains to be done to address pervasive maternal and child undernutrition. Increasingly, policymakers are focused on nutrition, through initiatives such as Nepal’s Multisectoral Nutrition Plan^{vi} and Nepal’s commitment to Scaling Up Nutrition^{vii} (SUN), a global platform of networks, organizations, international bodies, businesses, governments, and individuals to substantially reduce undernutrition in the first 1,000 days of life, from pregnancy to two years of age. Despite an increase in attention and commitment, harmonization of subnational planning and implementation, capacity building for effective service delivery, and an increase in resources is urgently needed.

Suaahara seeks to improve the following six outcome indicators (results for NDHS 2011 reported below):

- Child stunting and underweight: are high but there have been impressive declines between 2001 and 2011: 16 percentage points for stunting and 14 percentage points for underweight. Even so, four in 10 children less than 5 years of age are stunted. The prevalence of wasting remains stagnant.
- Child wasting: according to the Nepal Demographic and Health Survey, 10.9 percent of children less than 60 months of age are wasted. This percentage has remained largely unchanged.
- Child anemia: 46.2 percent of children suffer from mild, moderate or severe anemia.
- Body Mass Index for women: 20 percent of women are chronically energy deficient with a body mass index of <18.5.
- Anemia among women: More than a third of women in Nepal are anemic. The prevalence of anemia in Nepal remains unchanged since 2006. Anemia is particularly problematic in the Terai where nearly half of all women of reproductive age are anemic.

1.2: Description of *Suaahara*

Suaahara is a five year (2011-2016) initiative aimed at improving the nutritional status of women and children under two years of age by improving household health and nutritional behaviors; increasing the use of quality health and nutrition services by women and children; increasing consumption of diverse and nutritious food by women and children; and strengthening coordination on nutrition between the government and other stakeholders. *Suaahara* aims to reach all households in 20 districts of Nepal (Figure 1.2), especially mothers and children under two years of age, across the three agro-ecological zones (mountains, hills, and Terai). One of the distinguishing elements of *Suaahara* is the integration of various sectors—including agriculture—to achieve improved nutrition for vulnerable populations. *Suaahara*’s strategic objective (SO) and intermediate results (IR) are presented in Table 1.2. Funding has been provided by USAID.

Figure 1.2: Program districts

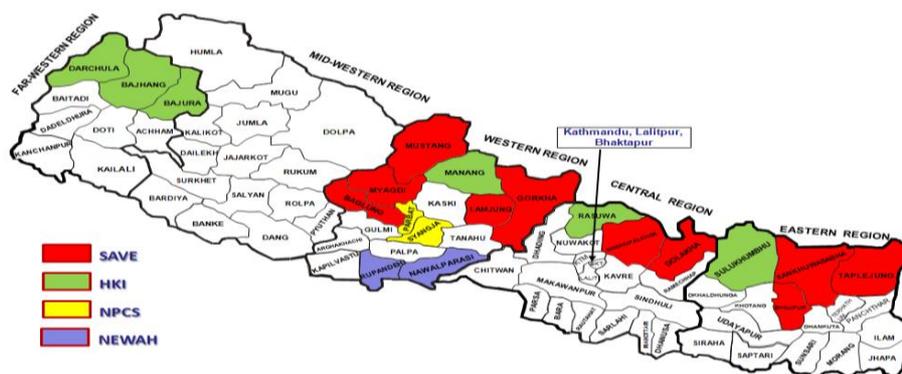


Table 1.2: Results framework

Goal: Health and Well-being of Nepalis Improved and Sustained			
SO: To improve the Nutritional Status of women and children under two years of age			
IR1: Household (HH) health and nutrition behaviors are improved	IR2: Women and children increase use of quality nutrition and health services	IR3: Women and their families increase consumption of diverse and nutritious foods	IR4: Coordination on nutrition between government and other actors is strengthened

Led by Save the Children in partnership with the Government of Nepal Ministry of Health and Population, *Suaahara's* local, national, and global partners include Helen Keller International (HKI) which is the senior technical consortium partner, Jhpiego, Johns Hopkins University Center for Communication Programs (JHU/CCP), National Promotion and Consultancy Service (NPCS), Nepali Technical Assistance Group (NTAG), and Nepal Water for Health (NEWAH). Working collaboratively these organizations focus on five main program areas:

- Maternal and child nutrition
- Maternal, newborn, and child health services
- Family planning services
- Water, sanitation, and hygiene
- Agriculture and homestead food production

Behavior change communication (BCC) approaches adapted to each location and with a focus on gender and social inclusion provide the basis for all *Suaahara* interventions. Female community health workers (FCHV) and a variety of other outreach workers and change agents are key to program implementation.

1.3: Structure of the baseline report

The *Suaahara* evaluation design and baseline report is structured in the following way. Following this introduction (Chapter 1), we describe the impact evaluation design in Chapter 2. In Chapter 3, we present a summary of key findings and implications for *Suaahara*, followed by a presentation of results in the remaining chapters. In Chapter 4, we outline the sample characteristics before describing findings on the core *Suaahara* impact indicators in Chapter 5. Chapter 6 presents results on maternal and child dietary quality, including IYCF. Our attention in Chapter 7 turns to maternal, newborn, and child services. In Chapters 8 and 9 the focus is on findings related to two key areas of *Suaahara* programming - family planning and water, sanitation, and hygiene (WASH). In Chapter 10, findings on various aspects of agriculture and homestead food production, another main intervention area for *Suaahara*, are presented. The findings on women's empowerment in various agricultural domains are reported in Chapter 11, followed by a section on behavior change communication mediums in Chapter 12. In Chapters 13, 14, and 15 we focus on household economic indicators, community characteristics, and FCHVs respectively. Various annexes are also provided, where deemed appropriate and necessary.

2. Impact evaluation and baseline survey design

2.1: Evaluation description and objectives

The objective of the *Suaahara* impact evaluation addresses the overarching question:
What is Suaahara's overall impact on maternal and child nutrition outcomes?

The primary aim is to estimate the impact of *Suaahara* on the indicators below:

- Prevalence of stunting, wasting, and underweight among children 0-59.9 months of age
- Prevalence of underweight among mothers
- Prevalence of anemia among mothers and children 6-59.9 months of age

Furthermore, the evaluation also aims to assess the impact of *Suaahara* interventions on household health and nutrition behaviors, the use of nutrition and health related services, and availability and consumption of diverse and nutritious foods. Particular examples include IYCF practices, access and use of health services for antenatal (ANC) and postnatal care (PNC), and care for the sick child.

As part of the overall *Suaahara* impact evaluation, the baseline survey seeks to:

- Measure the status of *Suaahara* primary impact indicators at baseline
- Measure the status of *Suaahara* secondary impact indicators/intermediate results at baseline
- Measure exposure to *Suaahara* intervention platforms at baseline, and
- Compare intervention and comparison districts on impact indicators, intermediate results, exposure to intervention platforms, and potential confounding and mediating factors that influence intervention effectiveness.

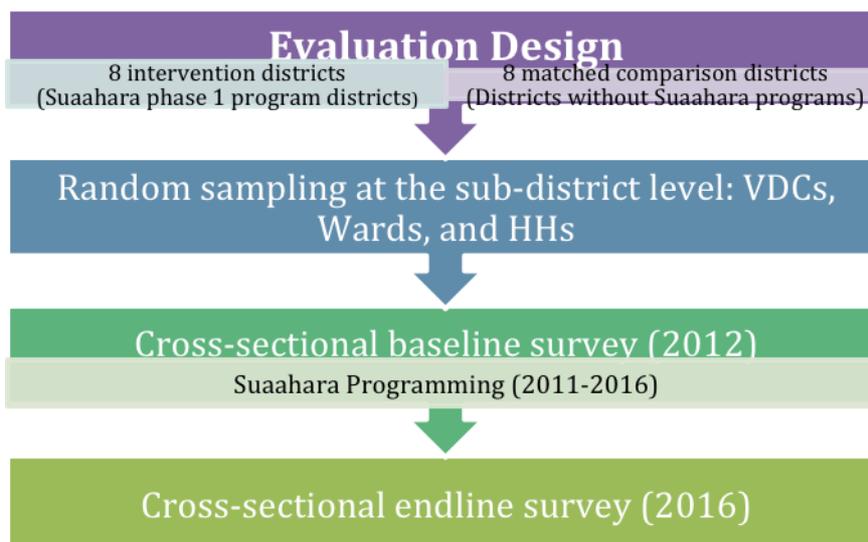
Given that the *Suaahara* program districts are pre-selected, we could not randomly allocate regions or individuals to different program intervention packages or to control groups. As an alternative to a randomized controlled impact evaluation, we opted for a quasi-experimental evaluation including two levels of matching:

- Matching districts at the time of sampling and design
- Matching households at the time of analysis.

This evaluation design uses double matching (matching by design and matching at analysis) with a difference-in-difference estimation to allow for measuring changes in outcomes both for intervention and comparison districts and both at baseline and endline. This method, to a large extent, addresses various types of biases including bias due to non-random placement of the program and self-selection of households into the program.

The *Suaahara* impact evaluation design involves repeat cross-sectional surveys, a baseline survey in 2012 and a proposed endline survey in 2016 or 3 years after the initiation of *Suaahara* interventions (Figure 2.1).

Figure 2.1: Evaluation design



We selected 16 districts: 8 intervention districts where *Suahara* will implement programs (the “intervention” sample) and 8 matched comparison districts (Figure 2.2). In order to collect baseline data prior to initiation of *Suahara* programming and to maximize the opportunity to see impact at endline as implementation will have occurred for the longest period, we selected phase 1 implementation districts as the 8 survey intervention districts. Aiming for comparison districts that were as similar as possible to the intervention districts, we selected 8 districts primarily on the following characteristics: agro-ecology/topography, human development index ranking; size of land holdings, proportion of total population under two years of age, level of poverty, percent of population that is marginalized, and radio ownership. The district matching was accomplished in consultation with the *Suahara* team, New Era, and other individuals and institutions affiliated with *Suahara* or working on health and nutrition research in Nepal. In some cases, it was difficult to find a match on all of these indicators and therefore, the closest eight matching districts were selected (Table 2.1). The matching exercise was undertaken in consultation with a large number of stakeholders knowledgeable about Nepal and documentation of indicators from the Government of Nepal and development partners such as UNICEF.

Figure 2.2: Survey districts

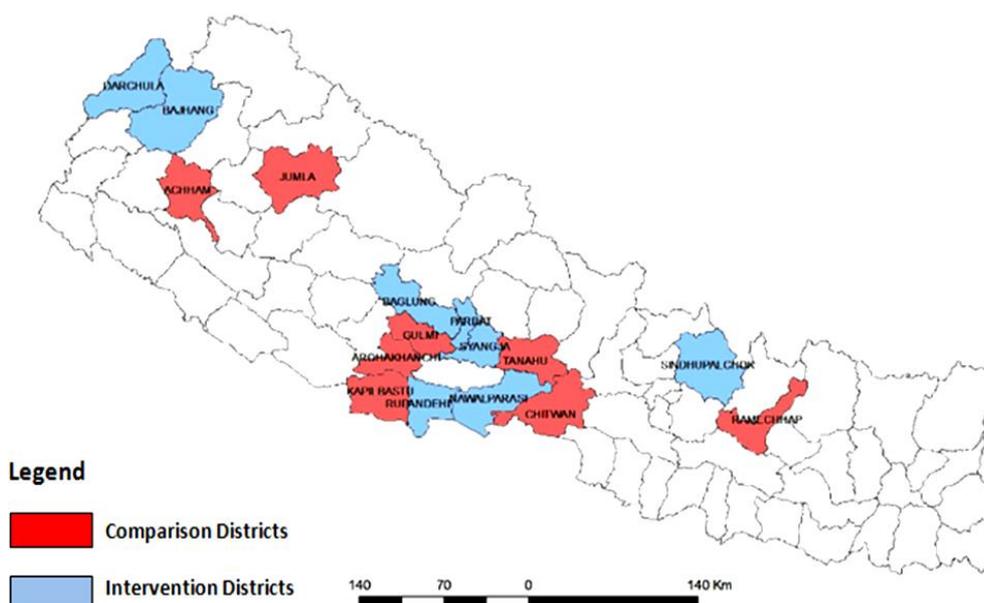


Table 2.1: Intervention and comparison districts

Intervention	Comparison
Dharchula	Jumla
Bajhang	Accham
Baglung	Gulmi
Parbat	Argokhochi
Syangja	Tanahu
Rupandehi	Chitwan
Nawalparasi	Kapilbastu
Sindhupalchok	Ramechhap

It should be noted that while Bajura is one of the 8 early implementation districts, it was not selected for baseline because Helen Keller International was already implementing its AAMA program for agriculture. Instead, Bajhang was chosen because it lies in the same ecological zone.

2.1.1: Sample size and power calculations

To estimate the sample size for the baseline survey, we used current prevalence of stunting and anemia, the expected rates of change after *Suaahara* interventions, and the power to detect those changes.

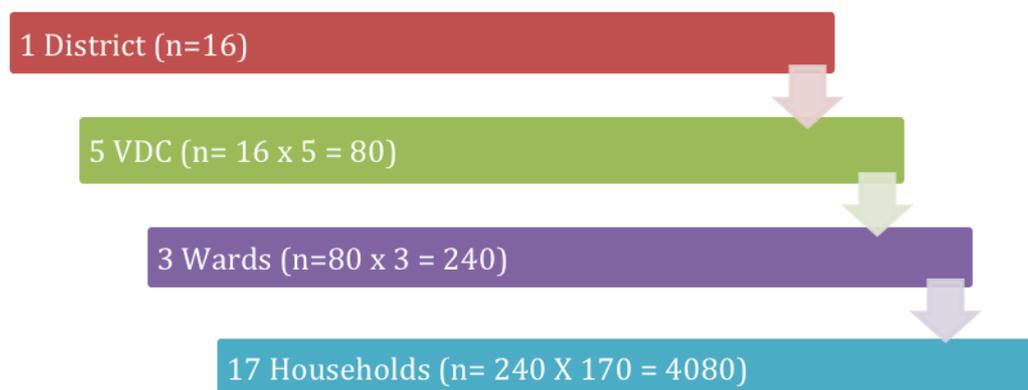
According to the NDHS 2011, 41 percent of children 0-59.9 months of age are stunted. Using a two-tailed test, we calculated that a sample of 2,040 children per group (4,080 total) would have an estimated power of 89.87 to detect a statistically significant ($p < 0.05$) improvement in the prevalence of stunting from 41 to 36.5 percent among children under 5 years of age between baseline and endline surveys in the intervention group. This sample size also has an estimated power of 98.86 to detect a statistically significant ($p < 0.05$) reduction in stunting prevalence from 41 to 35 percent among the same population. Given that stunting is already dropping by 1.8 percentage points per year in Nepal, the comparison areas can be expected to have a stunting level of about 33.5 after 4 years. Using this as a benchmark, the sample size offers statistical power to detect a difference of 5 percentage points between *Suaahara* and comparison areas. (Annex 2)

The NDHS-2011 shows anemia prevalence at 46 percent for children 6-59.9 months of age. We estimated that the proposed sample size of 2,040 children 0-59.9 months of age per group would include about 3,260 children 6-59.9 months of age. Using current prevalence, we calculated that a minimum sample of 1,465 in both intervention and comparison areas is necessary to have at least 90 percent power to detect a statistically significant ($p < 0.05$) reduction in anemia of 6 percentage points (from 46 to 40 percent) for this age group between the baseline and endline within the intervention group. Secular trends for anemia were not reported elsewhere and therefore, we estimate that the sample size offers the same statistical power as for stunting for endline comparisons between intervention and comparison areas.

2.1.2: Sampling methodology

We employed a multi-stage cluster sampling with the first-stage sampling unit as districts (16), the second-stage sampling unit as VDCs (5 VDCs per district), the third-stage sampling unit as wards (3 wards per VDC), and the final-stage sampling unit as rural households with children under 5 years of age (17 households per ward). *Suaahara* interventions are exclusively for rural communities; therefore, we used 2001 census data to identify and exclude all urban municipalities. (Figure 2.3)

Figure 2.3: Sampling methodology



Selection of VDCs and wards

We used probability proportional to size (PPS) to select VDCs and wards for inclusion in the survey. Using a list of the 16 selected survey districts, New Era listed all the VDCs and the number of households per VDC. The sampling interval (k) was obtained by dividing the total number of households in the district by the desired sample size of 5. A random number (x) between one and the sampling interval (k) was chosen as the starting point, and the sampling interval (k) was then added cumulatively and repeatedly ($x+k$)th, ($x+2k$)th, and so on, until five VDCs had been selected. New Era followed the same process of listing and selection by using a sampling interval, random number, and so on for selecting three wards per VDC.

Selection of households

Within each ward, the enumeration team randomly selected households for inclusion in the survey. For selection of households, upon arrival in each ward, the supervisor, with the support of the FCHV and other local officials if necessary, listed all children under 5 years of age and their mothers in that ward. At a minimum, the household list included the name of the household head, name(s) of the child(ren) under 5 years of age, and name of the mother of the child(ren). From this comprehensive list of households with children under 5 years of age in a particular ward, the supervisor placed each household number into a hat and asked an independent person to blindly draw at least 25 of the household numbers. The first 17 randomly selected households were included in the survey; when selection of an additional household for interview was necessary, the enumerators approached the households in the order of their random selection (18th followed by 19th followed by 20th and so on).

Selection of index and non-index child

Within each household, the enumerator randomly selected a child under 5 years of age as an index child. If there were additional children under 2 years of age belonging to the same mother, the enumerator randomly selected one child under 2 years of age as a non-index child.

Selection of FCHV and community leaders

One FCHV per ward was selected for inclusion in the survey. Most wards had only one FCHV. But in instances where a ward had more than one FCHV, a random selection by drawing from a hat informed the FCHV selection.

A community questionnaire was administered to a group of the ward's key informants who were considered knowledgeable about community-level factors that could influence health and nutrition outcomes. Potential participants were selected by identifying, approaching, and inviting the following types of community members: local leaders, government officials, FCHVs, NGO workers, business owners, health workers, school teachers, agricultural extension officers, and veterinary/livestock officers.

Timeline

The survey was rolled-out after completion of trainings, ethical approvals, and other logistics, from June 13 through October 6, 2012. The plan is to conduct an endline survey during the same months in 2016 (Table 2.2).

Table 2.2: Baseline survey timeline

Activity	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Questionnaire development	x												
Survey firm selection and contract		x											
Training of field teams			x	x									
Data collection				x	x	x	x						
Data entry and cleaning					x	x	x	x	x	x			
Data analysis and draft report									x	x	x	x	
Final report and dissemination													X

2.2: Baseline survey instruments

2.2.1: Conceptual basis for the baseline questionnaires

We used the UNICEF conceptual framework^{viii} for nutrition as a foundation for survey design and development of the questionnaires. Noting that child undernutrition is influenced by food, care, and health, which are, in turn, determined by different individual, household, and community level factors, this framework encapsulates the multiple interacting determinants that the survey also covers. Additionally, the survey captures the role of the health system and how health workers, such as FCHVs, communicate important health and nutrition messages, which is vital for *Suaahara* programming.

To design the questionnaires we reviewed both grey literatures, including various formative research reports from HKI, and published literature on the current health, nutrition, and food security situation in Nepal. The questionnaire preparation was informed by previous experience from IFPRI and New Era. We paid careful attention to the kinds of data that needed to be collected at baseline to enable an assessment of *Suaahara's* impact, including but not limited to *Suaahara's* core indicators. We anticipated that data collected in the baseline and endline surveys would enable a strong understanding of which impacts are achieved through *Suaahara* programming; what other individual and community level events, behaviors, and factors may be influencing *Suaahara's* impact; and how effective the model of using FCHVs for behavior change has been and why. The questionnaires are provided in Annex 1.

2.2.2: Household questionnaires: Mother and male household head

Female enumerators administered the questionnaire to the mother of the index child. This questionnaire included survey questions on maternal and child health and nutrition; household food security; water, sanitation, and hygiene; IYCF practices; IYCF knowledge, attitudes, and perceptions; access to information; and women's empowerment. If available and residing in the same household as the index child, the grandmother of the index child was also asked a short series of questions focusing on her perceptions on maternal and child health and nutrition.

Male enumerators administered a questionnaire to the male household head, with preference given to the husband of the mother of the index child, usually the father of the index child. If the husband of the mother interviewed was unavailable, another adult man who makes major household economic decisions was selected. In cases where no one meeting these criteria was available, the mother of the index child was also asked the men's questionnaire. The questionnaire for men includes questions on household demographics, economics, social assistance, agricultural practices, and empowerment. In addition, this questionnaire included a section for observations including observations related to water, sanitation and hygiene, salt testing to check for iodine, and observations of materials used in house construction (Table 2.3).

Table 2.3: Household questionnaire modules

Women	Men
Child health and childcare	Household roster
IYCF practices	Household economics
Household food security	Social assistance
Maternal dietary diversity	Agricultural practices and land use
Empowerment	Empowerment
Information access	Observations (house and WASH)
Maternal health	
IYCF knowledge and beliefs	
Water, sanitation, and hygiene	
Anthropometry and hemoglobin	
Grandmother's perspectives on health and nutrition	

In addition to the interviews, the enumerators collected anthropometric measurements—height, weight, and mid-upper arm circumference (MUAC)—of the mother and all children under 5 years of age. For mothers and children 24 months or older standing height was measured, whereas recumbent length was measured for children under 24 months of age. The enumerators collected blood samples to measure hemoglobin levels of mothers, index children and non-index children using Hemocue.

2.2.3: Female Community Health Volunteers' (FCHV) questionnaires

Given the importance of FCHVs for delivering *Suaahara* messages in intervention districts, capturing issues related to their performance and their awareness of key issues is a critical part of the overall evaluation design (Table 2.4). Gathering information on these health volunteers at both baseline and endline will reveal changes in their knowledge and practices and contribute to a deeper understanding of one the means by which key *Suaahara* messages may or may not be reaching target beneficiaries.

Table 2.4: Female Community Health Volunteer questionnaire modules

Female Community Health Volunteers
Demographic and socioeconomic status
Work activities
Demand for services provided by FCHVs
Exposure to training
Contact with others
Knowledge of <i>Suaahara</i> messages
Motivation, job satisfaction, self-efficacy and confidence
Supervisory support
Information access
Observations (house and WASH)

2.2.4: Community questionnaire

This survey also included a community questionnaire, administered to a group of key informants within each ward, to gather information on community level underlying factors that influence individual and household level health and nutrition outcomes. This information will allow a clearer awareness among programming staff of what is happening in the *Suaahara* intervention wards and will enable a comparison

of any differences found in the different clusters after the matching of districts and randomization of VDCs and wards (Table 2.5).

Table 2.5: Community Leaders' questionnaire modules

Community Leaders
Group composition
Access to key facilities
Access to key health and agricultural staff
Migration
Livelihoods and poverty
Social capital
Leadership
Economic events
Local prices

2.3: Baseline survey trainings and fieldwork logistics

2.3.1: Training of personnel

New Era recruited the team of data collectors from their pool of enumerators, including many who were involved in the 2011 NDHS. Selection criteria for the enumerators and supervisors included (1) prior experience working in this role for New Era on similar health, nutrition, and food security surveys; (2) fluency in one of the various local languages; and (3) ability to commit to the entire training period and fieldwork period without any breaks.

New Era led a master training of trainings (MToT) in Kathmandu for 13 days during April 2012. IFPRI and *Suaahara* supported the MToT, which included an overview of survey objectives, methodology, tools, and sampling. Training included a detailed discussion of every question of each module included in the questionnaires for mothers, men, FCHVs, and community leaders. Potential responses and how to code them were discussed. Based on these discussions, an iterative revision process of all survey instruments took place. Mock interviews, role-playing, and review games were some of the participatory methods used. In addition, the instruments were field tested in Kavre and Parsa. Based on feedback from the field testing, revisions were made to the surveys. Each of these components was included in the MToT.

Based on participation in the MToT training, enumerator training, and field testing, New Era selected 16 supervisors for the *Suaahara* baseline survey. Overall, during the MToT, 4 quality controllers, 14 supervisors and 2 enumerators were trained. Of these, 9 were selected as supervisors, 4 as quality controllers, and the others as enumerators. Ultimately, a total of 16 supervisors were hired for the baseline survey.

New Era led and IFPRI and *Suaahara* supported a training of the entire field team in Kathmandu for about 25 days between April 29 and June 11 2012. Several experts were also invited to provide training of specific sessions: 1) Mr. Raj Kumar Pokhrel from the Child Health Division, who presented information on the nutritional status of women and children in Nepal and current government actions aimed at addressing problems; 2) Mr. M.L. Jaiswal from New Era who led the training on the various agricultural models explaining how land is measured, which crops are grown, and other agricultural practices in Nepal; and 3) Mr. Raman Shrestha of NTAG who assisted with the anthropometry training and standardization.

The enumerator training included an overview of the survey objectives, methodology, and tools; interview techniques and field procedures; sampling methodology; detailed discussions on each interview question; mock interviews and role play among enumerators at least every 2 days; and practice measuring anthropometry and hemoglobin. All potential answers to each survey question and how to code the various

responses were discussed. After training on each module was done, several days were devoted to mock interviews on the final questionnaire, feedback from this practice, and review of all materials covered using diverse participatory methods. Finally, field testing of the survey in one cluster, feedback from the field testing, and a day of logistics and fieldwork planning concluded the training.

2.3.2: Standardization of the measurement of anthropometry and hemoglobin

Although all supervisors and the majority of enumerators had previous trainings and many years of experience collecting anthropometric data, all enumerators were trained and standardized in taking and recording measurements of both anthropometry and hemoglobin.

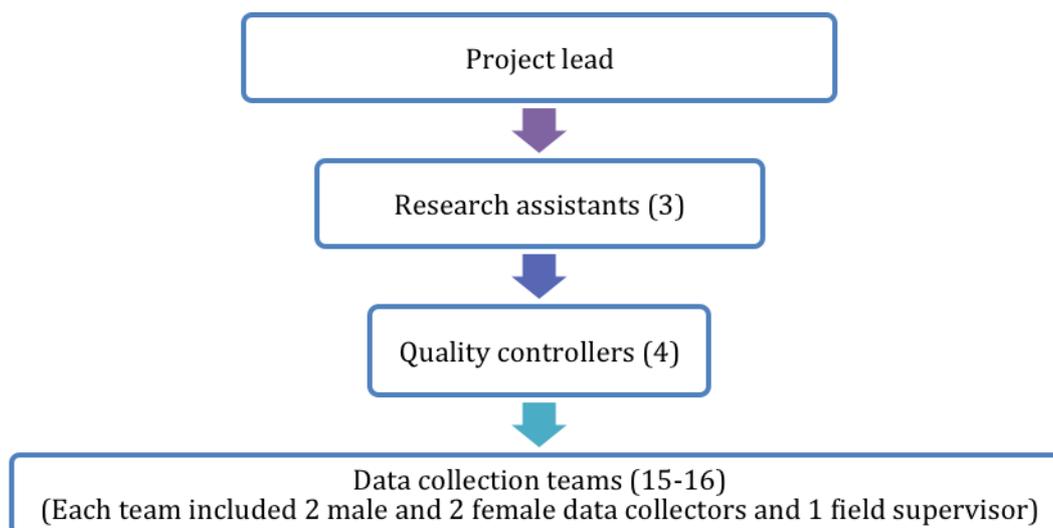
For anthropometry, all fieldworkers were trained on process, how to use the equipment, and how to record measurements. An entire day was devoted to lectures, discussions, and equipment demonstrations to measure a few adults and a few under 5 children brought to the training facility. An additional two days were devoted to practice and standardization. Training participants practiced taking measurements on each other, on children under 5 years of age at local pre-schools, on children under 2 at a local health clinic, and finally in the pre-test community. The double measurements of each person were recorded and compared. In order to standardize measurements, two quality controllers served as the standard and then sixteen supervisors were compared to their skill level by taking the height and weight twice each of the same child under 5 years of age. All supervisors showed exceptionally high accuracy and precision and were therefore reselected as the standard for the remaining standardization of enumerators.

For hemoglobin, all fieldworkers were trained on how to use the HemoCue, how to record the readings, and safety procedures. Two days were devoted to lectures, discussions, equipment demonstrations, and practice. An additional day was spent on harmonizing the procedures including recording and comparing double measurements.

2.3.3: Composition of survey teams

A total of 84 potential fieldworkers were trained and after evaluation, 79 were included in the final survey teams: 4 quality controllers, 15 supervisors, and 60 enumerators. Nira Joshi and three New Era research assistants managed fieldwork logistics. Additional New Era staff in Kathmandu supported data entry, data management, and other logistics. (Figure 2.4)

Figure 2.4: Organizational structure of fieldwork



Fifteen teams of five, each consisting of one supervisor and four enumerators, usually two women and two men, served as the primary data collectors. The supervisors were responsible for cluster-level logistics, conducting the FCHV survey and community interviews, checking the completed surveys of his/her team members, and leading the team overall. Supervisor responsibilities also included ensuring accurate ward

sampling, listing, and identification of households, in addition to working closely with local health authorities at the district, VDC, and ward level. The FCHVs and other local officials, played an important role in supporting the field teams and helping interviewers locate households. Furthermore, four quality controllers were assigned to oversee data collection and the work of team supervisors, as well as to repeat certain questions from the interview to about 5 percent of the households.

2.3.4: Coordination and sampling procedures

Prior to administering the questionnaires, the survey teams met with appropriate district, VDC, and ward level officials and leaders, including FCHVs. During these meetings, the New Era teams explained the *Suaahara* project, the purpose of the survey, and logistics in that area. The cooperation and support of community leaders were requested and generously given.

After getting settled in a particular cluster, the survey team sought the help of the FCHV in identifying how many villages there were in a given ward. Next, by going door to door, the team listed all households in the ward and systematically noted whether or not children under 5 years of age resided in the household and whether or not the household met the other survey criteria. Among the identified households for the survey, teams randomly selected at least 17 and up to 35 households from a hat for inclusion in the *Suaahara* baseline survey.

For interviewing, if a survey respondent was not available when first visited for an interview, enumerators made an appointment, if possible, for when that respondent might be available. In all instances, a particular respondent was visited up to three times and if unable to meet in all of those instances, the respondent was replaced with a new, randomly selected household.

Upon finishing an interview, each enumerator ensured that the questionnaire was completed before leaving and in the evenings, supervisors reviewed questionnaires for accuracy, legible writing, and logical consistency. Quality controllers served as yet another layer of ensuring the accuracy and usability of the survey data collected, by staying in the field with the teams to hold meetings with supervisors and/or survey teams and assist in checking the questionnaires. If it was found that data were missing or a questionnaire presented other problems, the enumerators were asked to return to the field and resolve these issues.

2.3.5: Administration of survey questionnaires

Interviews of the biological mother of the randomly selected index child involved three aspects: 1) a face-to-face interview using the structured mother's questionnaire; 2) a much shorter face-to-face interview with her mother-in-law (or mother, if not available) using a structured questionnaire; and 3) measurement of anthropometry and hemoglobin of herself and children under 5 years of age in the household. The trained enumerators measured and recorded the height, weight and MUAC of the mother and all household children under 5 years of age twice, using standardized digital weighing scales (Seca gmbh & Co. kg model 881 1021659) and length boards (ShorrBoard produced by Weight and Measure LLC), with increments of 100 grams and 0.10 centimeters, respectively. For children less than 24 completed months of age, supine length was measured instead of standing height. For hemoglobin testing, trained enumerators took a blood sample from a finger prick of the mothers as well as the index and non-index children aged 6-59 months. HemoCue machines were used to read the micro cuvettes and if the reading indicated that the individual could be anemic, that person was referred to a health facility.

Questionnaires for the male household head were administered to the husband of the mother of the index child. When unavailable, another major male economic decision maker in the household was selected and when no men were available in the household, a female who was a major household economic-decision maker was selected. These interviews involved two parts: 1) a face-to-face interview using the structured men's questionnaire and 2) observations to assess socio-economic status, test the iodine content of the household's salt, and rapidly spot-check on key hygiene and sanitation indicators. If a second woman was interviewed, the module on empowerment was deemed unnecessary and not included.

The FCHVs of all 240 clusters in which household surveys took place, were also interviewed using a structured questionnaire. The purpose was to gather information regarding the demand for their services and FCHVs' demographics and socio-economic status, work activities, exposure to trainings, contacts with other community leaders, knowledge of key maternal and child health and nutrition messages to be promoted by *Suaahara*, support from supervisors, access to information, and motivation, job satisfaction, self-efficacy, and confidence. The FCHV questionnaire consisted of two parts: 1) a face-to-face interview using a structured questionnaire and 2) spot-check observations of her household, to assess hygiene and sanitation.

The community questionnaire was administered to a group of ward leaders, including political officials, teachers/headmasters, FCHVs, business owners, agriculture/livestock/fisheries extension workers, and others. This questionnaire was designed to gather ward level information on access to key facilities, access to key health and agricultural staff, migration flows, livelihoods and poverty, social capital, leadership, economic events, and prices of common goods and agricultural commodities.

2.3.6: Fieldwork challenges

For the most part, the fieldwork progressed smoothly, but there were a few challenges including: 1) political instability in a few selected survey areas, 2) extreme weather such as very high temperatures in the Terai and heavy rains and landslides, destruction of roads, and other environmental effects throughout many districts, 3) difficult terrain, lack of roads and transportation, and scattered households especially in remote areas, 4) some very large clusters with about 1000 households and/or covering large geographic areas requiring additional time for listing and interviewing, and 5) difficulties in getting appointments with some respondents whose travel for work took them far from home.

2.4: Baseline survey data management

2.4.1: Quality control

All the questionnaire modules were pretested multiple times before finalization. First, the questionnaires were revised during the training of trainers/supervisors. Ten supervisors then completed a three-day field test, interviewing a total of 16 mothers, 16 men, 7 FCHVs, and 3 sets of community leaders. Half on these interviews were conducted in the hill district of Kavre in the VDCs of Ugratara Janagal (ward 8) and Mahendrajyoti (wards 5 and 3). The other half took place in the Parsa district of the Terai in the Sirsiya (ward 7), Alau (ward 5), and Langadi (ward 2) VDCs. Following this pretest, the questionnaires were revised in preparation for the main training, and further revisions were made during this enumerator training. Upon completion of the training, the entire survey team conducted a final pretest of the instruments by completing a total of 69 surveys. Following this pre-test, minor corrections were made and the questionnaires were finalized in Nepali and back translated into English.

Interviewers were asked to conduct an average of two interviews per day and to fully complete each questionnaire. Each evening, the field supervisors were responsible for collecting the questionnaires and checking them for completion, legibility, and consistency. The supervisors held evening team meetings and followed up on any inconsistencies or missing information. Interviewers were reassured that they could move a bit more slowly for collection of data in the first cluster to ensure quality of responses.

Furthermore, quality controllers randomly visited some of the sampled households (about 5 percent) and re-interviewed the respondents on a set of questions. Responses to questions from interviewers and quality controllers were then matched and differences in answers discussed.

For anthropometry, the teams collected double measurements and if the difference was out of the acceptable range, a third measurement was taken. The two closest measurements were recorded. For height/length, a difference of more than 2.0 cm was not acceptable, whereas for MUAC a difference of more than 0.2 cm was deemed unacceptable.

2.4.2: Data entry and cleaning

Fieldwork and data management activities overlapped. After two weeks of data collection, and after field level editing of questionnaires for completeness and consistency, the questionnaires were sent to the New Era office in Kathmandu, where they were registered and stored. The data management process involved: designing data entry programs for the household questionnaires, data coding, data entry, validation of data entry, and data cleaning.

For data management, one quality controller was responsible for overseeing all operations. She was supported by two data coding supervisors and one data entry supervisor who oversaw the larger team of personnel for data coding and data entry. New Era contracted additional personnel for data coding and entry. Two types of trainings took place for these personnel: a) prior to field work, the data entry quality controller participated in the large one month training of field staff to ensure an understanding of the logic behind each questionnaire and b) the data entry and coding staff were trained by their respective supervisors in the handling of the questionnaires and data entry program.

New Era used FoxPro to develop data entry screens to facilitate survey coding and to ensure the quality of data that were inputted. This involved three steps: a) creating fields based on the questionnaires, b) formatting the screen, and c) programming skip patterns and other design features. The quality controller entered an initial set of surveys to tease out any problems with the program and improve the system before training the supervisors, who then also coded and entered some data in order to further refine the system and improve the program by alerting the quality controller whenever they noticed difficulties in the application of the data entry screens.

The New Era coding team conducted full data coding for all questionnaires as soon as questionnaires reached Kathmandu. Coders alerted their supervisors to enumeration problems. If the supervisor agreed there was a potential problem, the issue was taken to the quality controller who in turn discussed any data concerns with the survey team leader before making decisions about how to resolve them.

As the coding process finished for each set of questionnaires, data entry proceeded immediately. This included 100 percent double data entry for all surveys, done on New Era computers using FoxPro software developed especially for such surveys. Data entry began in mid-July 2012, after initial sets of data coding were complete, and this process was completed in Oct 2012. Data entry software was designed to prompt the entry personnel when attempting to enter something that conflicted with a prior entry or was invalid for that particular question. For example, error messages would appear whenever incorrect identifiers were entered or if the number of children in the roster was not equal to the number of children indicated on the cover page. During data entry, supervisors also performed frequent consistency checks. Some of the key variables in the data were used to identify case-related problems such as duplicates, making sure each case was uniquely identified. To prevent losing any of the entered data, the data entry supervisor made sure that the data entry personnel frequently backed up the data entered on individual computers.

After double entry, the two datasets were validated and a report was generated to compare the two datasets. The quality controller managed the verification process and data entry was considered acceptable only once any differences between the two entries were resolved. For data verification, screens were specially designed to prompt the verifier whenever discrepancies arose between the first and second entries. If differences were identified, the entry personnel would verify the data from the questionnaire and input the correct information. Where discrepancies were not easily verifiable, the supervisors and/or quality controllers would provide guidance. The double entry strategy was helpful, as always, in making sure data entry errors were kept to a minimum.

The structure of the questionnaire was used to archive entered data. For instance, the data were stored in 15 different data files generated from the household questionnaires including 6 for the women's questionnaire, 8 for the household questionnaire, and 1 for the roster. These corresponded to the various

sections/modules of the questionnaire. In all of these files, each variable was given a name consisting of a letter before the question number: W for women's questionnaire, H for household questionnaire, G for grandmother, R for roster, I for index child, and NI for non-index child. Some extra variables were created for common responses that were given but were not on the list of options in the questionnaire.

For data cleaning, New Era clearly labeled data in English and then transferred data to SPSS. New Era completed the first round of data cleaning and verification and sent the cleaned raw data files to IFPRI for further data cleaning. IFPRI followed standard data cleaning procedures during the process of variable generation and tabulation of survey results including range and extreme value checks, skip pattern checks, and basic verification of question responses that should be consistent across survey modules.

2.4.3: Data analysis

IFPRI conducted the analyses of the baseline results using Stata 12. Following a second round of data cleaning, IFPRI researchers generated appropriate variables and began analyzing the results of each survey module. The team generated results on means and proportions for the entire survey sample as well as separately for intervention and comparison areas. For some indicators, we stratified the results by sex, age, or agroecological zone.

The New Era team provided exceptionally clean data. As such we encountered minimal problems. For continuous variables, we dealt with outliers by removing them, so that averages were not skewed. For instance, for calculation of child anthropometric z-scores, any children with HAZ, WAZ, or WHZ greater than 5 standard deviations were dropped from analysis, per international standards.

We performed statistical testing to detect the differences between intervention and control groups, adjusting for clustering at the district level, for all *Suaahara* impact indicators and key intermediate result indicators. **In tables throughout the report, we note testing for statistical differences between intervention and comparison groups by grey coloring of variables.** Significant differences between *Suaahara* and non-*Suaahara* areas are reported at $p < 0.05$ (labeled as * $p < 0.05$) and $p < 0.001$ (labeled as ** $p < 0.001$) for tables that report by study group. If a table has grey shading of certain variables but does not have any stars, the difference between intervention and comparison groups is not statistically significant.

2.4.4: Ethical approval

The baseline survey (full survey titled "*Suaahara* baseline survey") was approved by IFPRI's institutional review board (IRB) as well as the Nepal Health Research Council (NHRC). The London School of Hygiene and Tropical Medicine (LSHTM) also provided ethics approval for the household questionnaires. Informed consent was also obtained from each respondent included in the survey prior to beginning any interview.

3. Results: Summary and implications

3.1: Key survey findings and implications for *Suaahara*

Table 3.1: Key findings and their statistical significance and program implications

Domain	Overall Key Results	Intervention (Percent)	Comparison (Percent)	NDHS 2011 (Percent)	Implications for SUAHARA	
Maternal and child health and nutritional status						
Child nutritional status and anemia	42 percent of children 0-59.9m of age are stunted	38	45	41	Although statistically not significant, findings indicate a lower percentage of children stunted and underweight in intervention areas than in comparison areas. Given the steep decline in HAZ, WAZ and WHZ starting in infancy, a focus on infants and children under 2 years of age is critical. The results underscore the need for improving maternal nutrition and tackling anemia among mothers and children. Anemia during pregnancy (over 60%) needs immediate attention.	
	12 percent of children 0-59.9m of age are wasted	14	13	11		
	35 percent of children 0-59.9m of age are underweight	32	38	29		
	52 percent of children 6-59.9m of age are anemic	50	54	46		
Maternal nutritional status and anemia	24 percent of non-pregnant mothers are underweight	23	24	18		
	42 percent of non-pregnant mothers are anemic	41	42	35		
Maternal and child diet quality						
Maternal dietary diversity	3.8 is the mean of maternal individual dietary diversity scores (range 0-9)	3.9	3.7			Diet quality among both mothers and children is low. With the exception of timely introduction of solid foods and minimum meal frequency, all IYCF practices are poor. <i>Suaahara's</i> focus on promotion of green, yellow, and orange foods is vital: less than 5 percent of children under 5 years of age receive foods from all three of these food color groups. Although nearly 3 in 4 women report introduction of complementary foods at the right time, the 24 hour recall indicates that the diet of children 6-8.9 months almost exclusively comprises of grains and dairy; only 13 percent consume vitamin A rich fruits and vegetables, less than 2 percent eat eggs, and less than 6 percent eat meat. Among children 6-23.9m, the consumption of eggs (7%) and flesh foods (14%) remains low. Just over a third give ORS for diarrhea and only approximately 2 percent indicated they fed an extra meal. <i>Suaahara</i> should help the government provide ORS and Zinc to treat diarrhea and should also promote feeding an extra meal a day to recover from illness.
Infant and Young Child Feeding (IYCF)	39 percent of mothers initiate breastfeeding within one hour of birth	38	40	45		
	49 percent of mothers exclusively breastfeed children 0-5.9m of age	46	53	70		
	73 percent of mothers introduce solid and semi-solid foods to children 6-7.9m of age	72	75	66		
	46 percent of mothers feed from at least 4 food groups to children 6-23.9m of age	47	44	30		
	72 percent of mothers feed children 6-23.9m of age the minimum meal frequency recommended	70	75	79		
	36 percent of mothers feed the minimum acceptable diet to children 6-23.9m of age	36	36			
Feeding during child illness	20 percent of mothers feed iron rich foods to children 6-23.9m of age	20	19	24		
	13 percent of children have had diarrhea over the past two weeks (defined as 4 watery stools in a 24 hour period)	13	13			
	38 percent of children are given ORS for diarrhea	35	43	39		
	14 percent of children are given Zinc for diarrhea	13	17	6		
	11 percent of children are given more than usual to eat during diarrheal episodes	8	15	6		
	7 percent of children are given more than usual to eat during fever/cough*	4	10			

Domain	Overall Key Results	Intervention (Percent)	Comparison (Percent)	NDHS 2011 (Percent)	Implications for SUA AHARA
Maternal, newborn, and child health services					
Maternal and newborn health services	58 percent of mothers received at least 4 antenatal care visits during their last pregnancy	63	53	50	Maternal care with regards to health services seems to deteriorate from pregnancy to delivery and through the postnatal period. In <i>Suaahara</i> areas, skilled providers treat nearly 3 in 4 women during the prenatal time, but only 42 percent for delivery. For postnatal care, only 17 percent of these women are receiving the recommended 3 visits. Together this indicates a focus area of <i>Suaahara</i> should be to increase women's access to a continuum of care-- from pregnancy to newborn care. Vitamin A, deworming, and vaccine coverage are impressive, which indicates networks and systems exist for effective delivery of these types of health interventions, which <i>Suaahara</i> may be able to capitalize on. These systems should be mobilized to improve the coverage and utilization of iron syrup (less than a fifth of the children currently receive it) and IFA supplementation during pregnancy (only 38 percent of pregnant women take the full course of iron and folic acid supplementation).
	128.7 is the mean number of days IFA tablets were taken during pregnancy	128.8	128.5		
	37 percent of mothers' last deliveries were attended by a skilled birth attendant	43	32	36	
Child health services	15 percent of mothers received at least 3 postnatal care visits	17	13		
	50 percent of newborns received a postnatal health check within two days of birth	48	39	30.1	
	92 percent of children 6-59.9m of age have received vitamin A supplementation	93	92	90	
	88 percent of children 12-59.9m of age have received deworming tablets	90	86	84	
	74 percent of children under 5 years of age are fully vaccinated	73	76	87	
Family planning and maternal alcohol and tobacco use					
Family planning	32 percent of women are doing something to avoid pregnancy	35	30	50	Maternal use of tobacco and alcohol is low and therefore should not be a first priority for <i>Suaahara</i> . With only about 1 in 3 women reporting to have received counselling on healthy timing and spacing of pregnancy, there is scope for improvement. The least known message among mothers is about delaying initial pregnancy. Interestingly, more than 90 percent of grandmothers but only about half of mothers report knowing this. Given the overall fertility rate decline and the low number of children per household (1.4), <i>Suaahara</i> should consider interventions to change prevailing norms with respect to the current timing and spacing of pregnancies, rather than reducing fertility rates per se.
	33 percent of women have been counselled on healthy timing and spacing of pregnancy	40	26		
Tobacco and alcohol	8 percent of women smoke cigarettes and 7 percent use other tobacco products	7;7	10;8	9;6	
	13 percent of women drink alcohol	10	16		

Domain	Overall Key Results	Intervention (Percent)	Comparison (Percent)	NDHS 2011 (Percent)	Implications for SUA AHARA
Water, sanitation, and hygiene					
Water	88 percent of households have access to an improved source of drinking water	89	87	89	Although the vast majority has access to improved water, the rest of the WASH practices need substantial improvements. <i>Suaahara</i> should consider intensifying its focus on promoting the five key steps for hand washing. Particular attention should be given to improving hygienic drying of hands, currently the weakest area for demonstration or explanation of important hand washing behaviors. The issue of lack of soap or ash in about half the households requires further investigation. <i>Suaahara</i> should consider intensifying its focus on tackling open defecation, which remains a serious concern in about half of the <i>Suaahara</i> sample. Interventions to prevent fecal contamination should be prioritized, especially given the latest research on its relationship with undernutrition.
	13 percent of households treat drinking water	13	13	18	
	44 percent of households have soap and water/ash at a hand washing station commonly used by family members	49	40	47.8	
Sanitation	57 percent of households practice open defecation	57	58	88.5	
	91 percent of households who have toilets are using an improved sanitation facility	92	90		
Hygiene	11 percent of mothers demonstrated all five key handwashing practices	15	7		
	13 percent of mothers reported handwashing at all five critical times*	18	8		
Agriculture/homestead food production					
	98 percent of households own land	97	100	68 (land for agriculture)	In <i>Suaahara</i> areas, nearly all households use their land mainly for cultivating crops. The primary source of water is rain, indicating a need for investments in other types of irrigation. Promotion of production of fruits and vegetables will be an important aspect of <i>Suaahara</i> programming as few are growing much more than grains. There is scope for improvement in household production of animal products, such as eggs and poultry. Availability of key agricultural personnel such as extension workers and village model farmers is nearly non-existent indicating another area with scope for improvement via <i>Suaahara</i> programs.
	Nearly 75 percent of households produce maize	70	77		
	Green leafy vegetables are the only fruit or vegetable grown by more than 50 percent of households	49	55		
Women's empowerment in agriculture					
	89 percent of women are disempowered	90	87		In the <i>Suaahara</i> sample, only ten percent of women are empowered in the five domains of agriculture comprising the Women's Empowerment in Agriculture Index (WEAI). For the 90 percent who are disempowered, they are disempowered in about half of the domains. Furthermore, only about 1 of 4 mothers in these areas has gender parity in the household. Areas in need of greatest attention include: control over use of income, autonomy in production, and input into productive decisions. In the <i>Suaahara</i> sample, 40 percent of mothers report that mothers' groups do not exist in their ward and 2/3rds of women report lack of any other women's groups. Even if present, participation is low. <i>Suaahara</i> should consider strengthening such groups.
	74 percent of women have no gender parity in the household	74	74		

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups; a star indicates the difference found is statistically significant with a p value of at least <0.05. Absence of the star in the shaded area indicates that differences are not statistically insignificant.

4. Results: Sample Characteristics

4.1: Summary findings

This section provides information on the survey sample sizes and on the general characteristics of the households surveyed. This includes household composition and headship, each household member's age, sex, civil status, level of education, primary and secondary occupation and schooling, and on whether or not the biological mother and father of the index child were alive.

The survey sample includes 4080 households, yielding data for 2,040 index children from each study area. The sample includes an additional 340 non-index children under 2 years of age and additional children, if any, for anthropometry. Thus overall, the baseline dataset includes 5,549 children. The 4,080 randomly selected index children are the focus of data analysis. Among them, the sex distribution is almost equal with only slightly fewer girls than boys (Table 4.1).

The mean household size is 5.7 (+/- 2.4). Children are evenly divided between intervention and comparison areas and both areas have approximately the same dependency ratio. The dependency ratio is 1.3 dependents per working adult. The reported mean age of the mothers in the sample is 27 years and almost all are currently married. About 28 percent of mothers report never attending school and over twenty percent have completed primary school. The primary occupation of the women in the sample is agriculture with nearly thirty percent reporting work in non-income earning occupations (Tables 4.2 and 4.3).

Table 4.1: Sample sizes

Sample sizes	Intervention Number	Comparison Number	All Number
Children			
Total	2,698	2,851	5,549
Index children	2,040	2,040	4,080
Non-index children	149	191	340
	Percent	Percent	Percent
Age groupings among all children (N=5,549)			
0-5.9 m	8.9	9.8	9.3
6-11.9 m	11.4	10.7	11.0
12-23.9 m	21.2	20.6	20.9
24-59.9 m	58.5	59.0	58.7
Age groupings among index children (N=4,080)			
0-5.9m	9.2	9.7	9.4
6-11.9m	12.4	11.2	11.8
12-17.9m	11.7	11.7	11.7
18-23.9m	10.9	10.9	10.9
24-29.9m	10.1	10.6	10.4
30-35.9m	11.8	10.2	11.0
36-41.9m	8.9	10.0	9.5
42-47.9m	9.7	9.4	9.5
48-53.9m	8.2	8.9	8.6
54-59.9m	7.2	7.4	7.3
Sex groupings among index children (N=4,080)			
Male children	51.5	53.3	52.4
Female children	48.5	46.7	47.6

Table 4.2: Household size and composition, by program group

Household size and composition	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Male-headed households	64.9	67.6	66.2
Female-headed households	35.1	32.4	33.8
Households in which a major male economic decision-maker was available to be interviewed	62.0	56.5	59.2
	Mean (SD)	Mean (SD)	Mean (SD)
Age of household head (years)	44.4 (26.5)	42.7 (15.4)	43.6 (21.7)
Household size	5.5 (2.3)	5.8 (2.5)	5.7 (2.4)
Adults > 18 y old	2.8 (1.5)	2.9 (1.6)	2.8 (1.5)
Children < 5 y old	1.3 (0.5)	1.4 (0.6)	1.4 (0.6)
School-age children (5 to 18 y)	1.3 (1.3)	1.4 (1.4)	1.3 (1.3)
Dependents (<15 y or >64 y)	2.8 (1.4)	2.9 (1.5)	2.8 (1.5)
Working age members (15 to 64 y)	2.8 (1.6)	2.9 (1.7)	2.8 (1.6)
Dependency ratio (defined as dependents: working age household members)	1.3 (1.0)	1.4 (1.0)	1.3 (1.0)

Table 4.3: Socioeconomic status by wealth quintile, by program group

Wealth Quintiles	Intervention	Comparison	All
	Percent	Percent	Percent
Lowest (N=279-I, 527-C, 806-A)	13.8	26.2	20.0
Second (N=360-I, 446-C, 806-A)	17.8	22.2	20.0
Middle (N=404-I,402-C, 806-A)	20.0	20.0	20.0
Fourth (N=463-I, 343-C, 806-A)	22.9	17.1	20.0
Highest (N=514-I, 292-C, 806-A)	25.5	14.5	20.0

Table 4.4: Mean socioeconomic scores, by program group

Mean socioeconomic score by quintile	Intervention	Comparison	All
	Mean	Mean	Mean
Lowest (N=279-I, 527-C, 806-A)	-1.0	-1.0	-1.0
Second (N=360-I, 446-C, 806-A)	-0.5	-0.5	-0.5
Middle (N=404-I,402-C, 806-A)	-0.2	-0.2	-0.2
Fourth (N=463-I, 343-C, 806-A)	0.2	0.2	0.2
Highest (N=514-I, 292-C, 806-A)	1.5	1.4	1.5

Table 4.5: Maternal characteristics: age, civil status, education, and primary occupation, by program group

Maternal characteristics	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Mean age (SD)	26.7 (5.9)	27 (6.3)	26.9 (6.1)
Civil status			
Currently married	99.1	98.8	99.0
Widowed	0.6	0.7	0.7
Separated	0.3	0.4	0.4
Divorced	0.0	0.1	0.0
Education level			
Started school, but not completed	0.7	0.6	0.7
Completed primary school (1-5)	20.4	22.1	21.3
Some secondary school (6-9)	26.7	19.6	23.2
Completed secondary school (10)	9.8	8.8	9.3
Completed class 12	6.9	4.7	5.8
Higher education	2.4	1.8	2.1
Informal education	10.5	8.6	9.6
Never attended school	22.5	33.8	28.2
Primary occupation			
Agriculture/livestock/poultry/aquaculture	57.9	68.4	63.2
Non-income earning occupation (e.g. housewife/FCHV)	31.5	23.5	27.5
Salaried worker	3.7	3.2	3.5
Self-employment/business	3.2	2.7	2.9
Student	2.4	1.0	1.7
Wage employment	1.2	1.1	1.2
Piece worker	0.1	0.1	0.1
Not working but looking for work	0.0	0.1	0.0

5. Results: Maternal and Child Health and Nutritional Status

5.1: Summary findings

Child health and nutrition

Weight and height/length of children under 5 years of age are used to derive statistical scores and compare each child's anthropometric measurements to the 2006 World Health Organization (WHO) child growth standards reference for his/her age and sex.^{ix} Height-for-age Z-score (HAZ), weight-for-age Z-score (WAZ), and weight-for-height Z-score (WHZ) are the three indicators created to assess stunting, underweight, and wasting, respectively. These are defined as HAZ <-2 Z-scores, WAZ <-2 Z-scores; and WHZ <-2 Z-scores, respectively. The Mid Upper Arm Circumference (MUAC), an additional anthropometric indicator measured mid-way between the tip of the left shoulder and tip of the left elbow, among children 6-59.9 months of age is also included. Hemoglobin levels, taken using Hemocue and adjusted during analysis for altitude, are used to assess levels of anemia among children. For the child health assessment, respondents were asked whether their child had suffered from any of four common childhood illness symptoms (fever, cough/cold, fast breathing/shortness of breath, diarrhea) in the two weeks prior to the survey.

Adjusting for clustering at the district level, we do not find statistically significant differences between intervention and program groups, for any of the core *Suaahara* impact indicators (Table 5.1). Among all index children less than 5 years of age, mean HAZ is very low at -1.7 (± 1.2). Low HAZ manifests early in life among those less than 6 month old and worsens through 59.9 months of age. Mean WAZ at -1.6(± 1.1) and WHZ at -0.9 (± 1) are also low (Table 5.2). Mean HAZ, WAZ, and WHZ scores by child age and by program group are graphically illustrated (Figures 5.1 and 5.2). Mean HAZ, WAZ, and WAZ for boys and girls are similar (Table 5.3).

The overall prevalence of stunting is high (42 percent) and it increases as children get older, peaking among children 24-59.9 months of age. The prevalence of underweight and wasting in the sample are 35 and 13 percent, respectively, both higher than the national averages (Table 5.1 and 5.4). The differences in the prevalence of stunting, wasting and underweight between intervention and control groups are not statistically significant, adjusting for district level clustering. Boys appear to be slightly worse off than girls (Table 5.5). In the mountains, nearly 43 percent are stunted, but only around 37 to 38 percent in the hills and Terai. Underweight is also the highest in the mountains at 42 percent, whereas wasting affects more in the Terai at 19 percent (Figure 5.3). Severe acute malnutrition (SAM), calculated as HAZ <-3 Z-scores, WAZ <-3 Z-scores; and WHZ <-3 Z-scores for stunting, underweight, and wasting, respectively, showed that nearly fifteen percent of children under 5 years of age are severely stunted, almost 10 percent severely wasted, and 2 percent severely underweight (Tables 5.6 and 5.7).

Mean hemoglobin levels are about 11g/dl (Table 5.8). Although the prevalence of anemia tends to fluctuate from 6-59.9 months, anemia declines as children get older: a prevalence of around 80 percent at one year drops to around 30 percent for those 48 months of age and above (Figure 5.4). The prevalence of anemia among children in the Terai is the highest among three agroecological zones. (Figure 5.5) Among children less than two years of age, 68.1 percent of those living in intervention districts were anemic whereas 72.7% of children under two years of age living in comparison districts were anemic.

Only about fifteen percent of mothers considered their child to have been born smaller than average or very small; a similar pattern is seen among intervention and comparison areas (Table 5.9).

Maternal health and nutrition

For maternal health and nutrition, women's weight and height measurements are used to derive their body mass index (BMI: weight in kg/height in m²) and assess chronic undernutrition (BMI<18.5kg/m²). Hemoglobin levels adjusted for altitude, pregnancy status, and smoking are used to assess maternal anemia status.

Mean BMI among non-pregnant women is 20.5 (± 2.8) and their mean MUAC is 24.1cm (± 2.5), while that of pregnant women is only slightly higher at 21.5(± 2.8) (Table 5.10). Chronic energy deficiency remains an issue for 24 percent of non-pregnant women and almost the same amount of women who gave birth in the last three years. 30 percent of pregnant women have BMI < 20kg/m², which is considered an obstetric risk (Table 5.11). The prevalence of chronic energy deficiency/undernutrition appears to be higher in the Terai and hills than in the mountains (Table 5.12).

Among non-pregnant and pregnant women, mean hemoglobin levels are 12.2 (± 1.5) and 11.4 g/dl, respectively (± 1.5) (Table 5.13). The prevalence of anemia between intervention and comparison groups is not statistically significant (Table 5.1). The prevalence of anemia among pregnant women is almost 20 percentage points higher than among non-pregnant women (Figure 5.6). With respect to maternal anemia, the Terai fares the worst compared to hill and mountain districts (Figure 5.7).

In the two weeks prior to the survey, less than 15 percent of index children suffered from diarrhea and nearly 25 percent suffered from a fever (Table 5.14).

5.2: Core impact indicators

Table 5.1: Core *Suaahara* impact indicators, by program group

Indicators of maternal and child nutritional status	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Child stunting	38.4	44.9	41.6
Child wasting	13.7	13.0	13.3
Child underweight	31.7	38.2	34.9
Child anemia	50.3	53.5	51.9
Maternal underweight (non-pregnant women)	23.0	24.4	23.7
Maternal anemia (non-pregnant women)	40.6	42.4	41.5

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a p value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

5.3: Child nutritional status

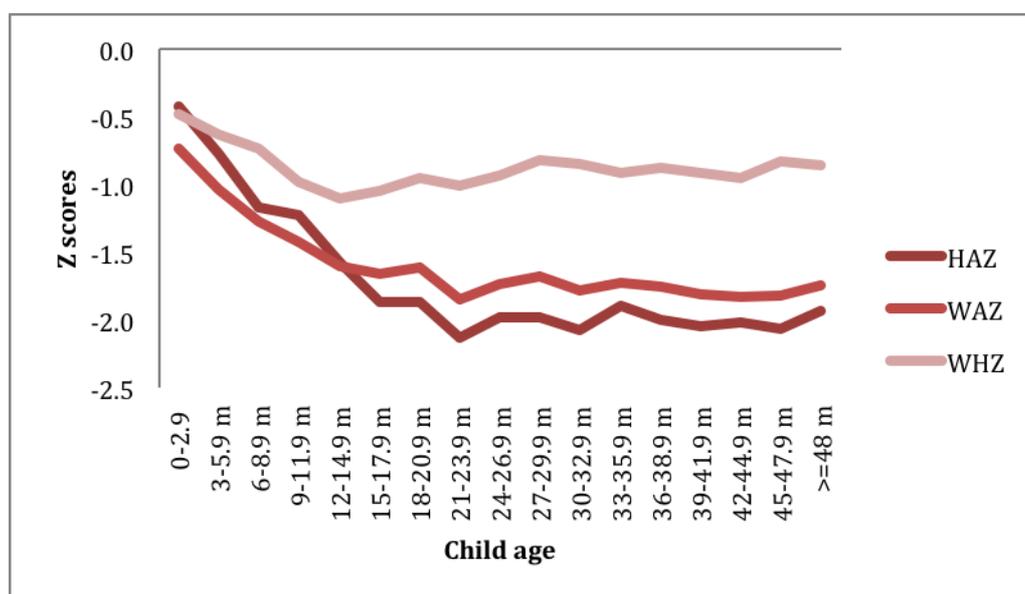
5.3.1: Child anthropometry

Table 5.2: Mean height-for-age, weight-for-age, and weight-for-height Z-scores, by age and program group

Child nutritional status	Intervention	Comparison	All
	Mean (SD)	Mean (SD)	Mean
Height- for- age Z-score (HAZ)			
All (N=2,020-I, 2,009-C, 4,029-A)	-1.6 (1.2)	-1.8 (1.2)	-1.7 (1.2)
0-5.9 m	-0.6 (1.3)	-0.6 (1.2)	-0.6 (1.3)
6-11.9 m	-1.2 (1.2)	-1.3 (1.2)	-1.1 (1.2)
12-23.9m	-1.8 (1.2)	-1.9 (1.2)	-1.8 (1.1)
24-59.9m	-2.0 (1.1)	-2.1 (1.1)	-1.9 (1.1)
Weight -for-age Z-score (WAZ)			
All (N=2,034-I, 2,033-C, 4,067-A)	-1.6 (1.1)	-1.7 (1.0)	-1.6 (1.1)
0-5.9m	-0.9 (1.3)	-0.8 (1.1)	-0.9 (1.2)
6-11.9 m	-1.2 (1.1)	-1.5 (1.0)	-1.3 (1.1)
12-23.9 m	-1.6 (1.1)	-1.7 (1.0)	-1.7 (1.1)
24-59.9 m	-1.7 (0.9)	-1.8 (1.0)	-1.8 (1.0)
Weight -for-height Z-score (WHZ)			
All (N=2,013-I, 2,023-C, 4,036-A)	-0.9 (1.0)	-0.9 (1.0)	-0.9 (1.0)
0-5.9 m	-0.6 (1.3)	-0.5 (1.3)	-0.6 (1.3)
6-11.9 m	-0.8 (1.1)	-1.0 (1.0)	-0.9 (1.1)
12-23.9 m	-1.0 (1.1)	-1.1 (1.0)	-1.0 (1.0)
24-59.9 m	-0.9 (0.9)	-0.9 (1.0)	-0.9 (1.0)
Mid upper arm circumference (MUAC) in cm			
All (N=1,848-I, 1,838-C, 3,686-A)	14.3 (1.1)	14.1 (1.1)	14.2 (1.1)
6-11.9 m	13.8 (1.1)	13.7 (1.1)	13.8 (1.1)
12-23.9 m	13.9 (1.0)	13.7 (1.0)	13.8 (1.0)
24-59.9 m	14.6 (1.1)	14.4 (1.1)	14.5 (1.1)

Note: Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Figure 5.1: Mean height-for-age, weight-for-age, and weight-for-height Z-scores of children 0-59.9 months of age



Looking specifically at children less than two years of age, in intervention areas, 26.7 percent were stunted, 14.2 percent were wasted and 25.4 percent were underweight. In comparison areas, 31.9 percent of children less than two years of age were stunted, 13.6 percent were wasted and 31.3% underweight. No testing for statistical significance was carried out owing to smaller sample sizes for children less than two years of age.

Figure 5.2: Mean height-for-age Z scores of children 0-59.9 months of age, by age and program group

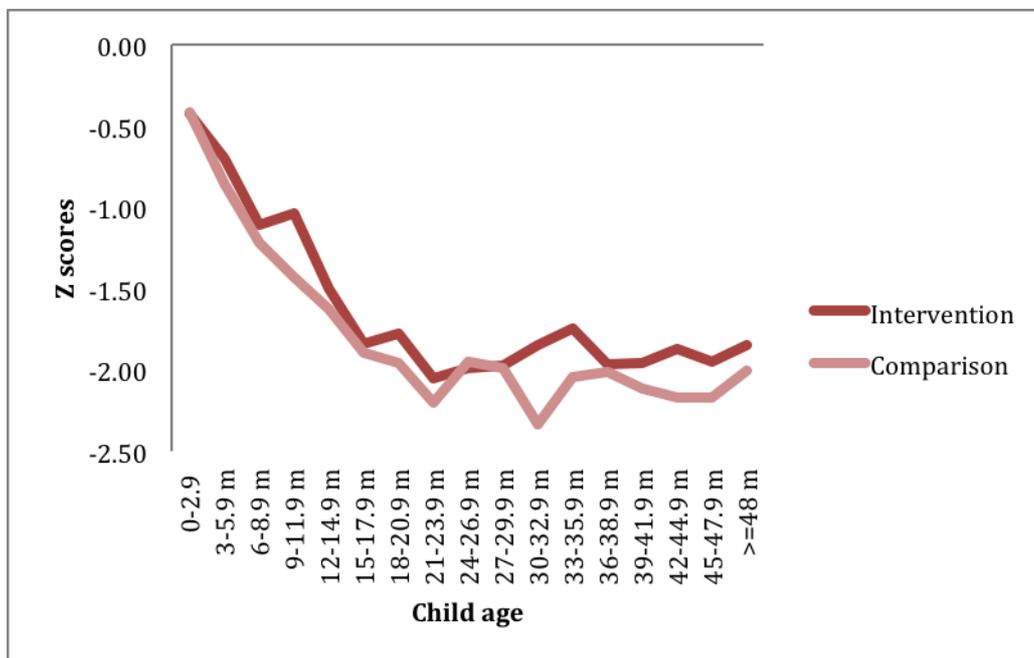


Table 5.3: Mean height-for-age, weight-for-age, and weight-for-height Z-scores, by sex and program group

Child nutritional status outcomes	Intervention	Comparison	All
	Mean (SD)	Mean (SD)	Mean
Height- for- age Z-score(HAZ)			
All children (N=2,020-I, 2,009-C, 4,029-A)	-1.6 (1.2)	-1.8 (1.2)	-1.7 (1.2)
Male children (N=1,038-I, 1,068-C, 2,106-A)	-1.7 (1.2)	-1.8 (1.3)	-1.7 (1.3)
Female children (N=982-I, 941-C, 1,923-A)	-1.6 (1.2)	-1.8 (1.2)	-1.7 (1.2)
Weight -for-age Z-score(WAZ)			
All (N=2,034-I, 2,033-C, 4,067-A)	-1.6 (1.1)	-1.7 (1.0)	-1.6 (1.1)
Male children (N=1,046-I, 1,085-C, 2,131-A)	-1.6 (1.1)	-1.7 (1.1)	-1.6 (1.1)
Female children (N=988-I, 948-C, 1,936-A)	-1.5 (1.0)	-1.7 (1.0)	-1.6 (1.0)
Weight -for-height Z-score(WHZ)			
All (N=2,013-I, 2,023-C, 4,036-A)	-0.9 (1.0)	-0.9 (1.0)	-0.9 (1.0)
Male children (N=1,032-I, 1,077-A, 2,109-A)	-0.9 (1.0)	-0.9 (1.1)	-0.9 (1.0)
Female children (N=981-I, 946-C, 1,927-A)	-0.9 (1.0)	-0.9 (1.0)	-0.8 (1.0)

Note: Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 5.4: Prevalence of stunting, wasting, and underweight, by age and program group

Indicators of child nutritional status	Intervention	Comparison	All
	Percent	Percent	Percent
Stunting			
All(N=2,020-I, 2,009-C, 4,029-A)	38.4	44.9	41.6
0 - 5.9 m	11.9	11.0	11.4
6- 11.9 m	17.5	27.3	22.2
12 - 23.9 m	44.2	46.9	45.6
24 - 59.9 m	45.0	53.3	49.2
Underweight			
All(N=2,034-I, 2,033-C, 4,067-A)	31.7	38.2	34.9
0 - 5.9 m	16.6	14.9	15.5
6- 11.9 m	21.2	31.0	25.9
12 - 23.9 m	35.2	42.5	38.9
24 - 59.9m	35.1	41.8	38.5
Wasting			
All(N=2,013-I, 2,023-C, 4,036-A)	13.7	13.0	13.3
0 - 5.9 m	10.9	10.8	10.8
6- 11.9 m	14.9	14.0	14.5
12 - 23.9 m	17.7	16.7	17.2
24 - 59.9m	12.2	11.7	12.0

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 5.5: Prevalence of stunting, wasting, and underweight, by sex and program group

Child nutritional indicators	Intervention	Comparison	All
	Percent	Percent	Percent
Stunting			
All (N=2,020-I, 2,009-C, 4,029-A)	38.4	44.9	41.6
Male children (N=1,038-I, 1,068-C, 2,106-A)	39.5	44.4	42.0
Female children (N=982-I, 941-C, 1,923-A)	37.2	45.5	41.2
Underweight			
All (N=2,034-I, 2,033-C, 4,067-A)	31.7	38.2	34.9
Male children (N=1,046-I, 1,085-C, 2,131-A)	33.2	38.4	35.9
Female children (N=988-I, 948-C, 1,936-A)	30.1	37.9	33.9
Wasting			
All (N=2,013-I, 2,023-C, 4,036-A)	13.7	13.0	13.4
Male children (N=1,032-I, 1,077-C, 2,109-A)	15.2	14.3	14.7
Female children (N=981-I, 946-C, 1,927-A)	12.0	11.6	11.8

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Figure 5.3: Prevalence of stunting, wasting, and underweight among children 0-59.9 months of age, by agroecological zones

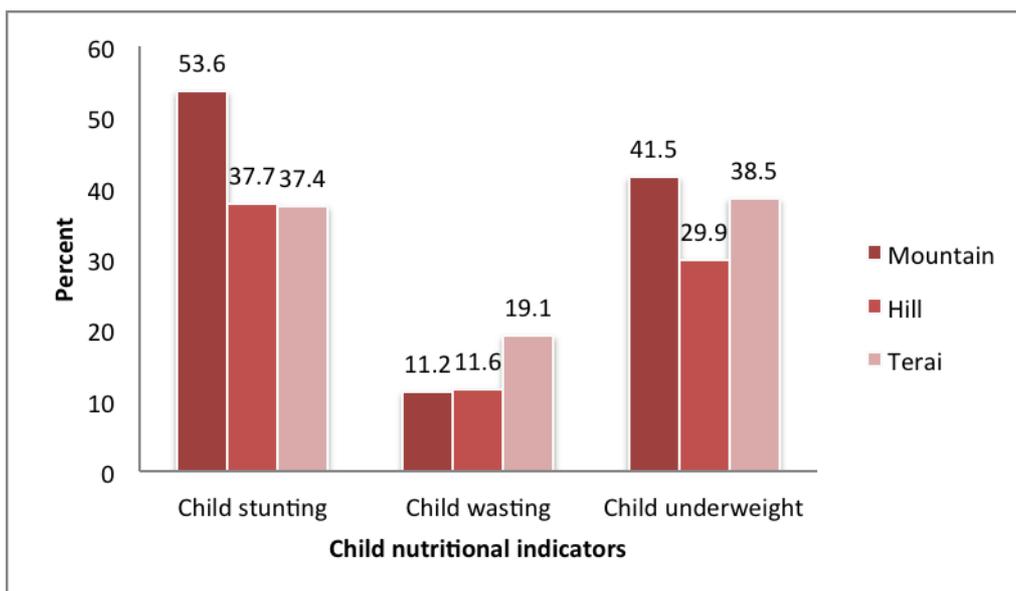


Table 5.6: Prevalence of severe acute malnutrition, by age and program group

Indicators of severe acute malnutrition	Intervention	Comparison	All
	Percent	Percent	Percent
Height- for- age Z-score <-3			
All (N=2,020-I, 2,009-C, 4,029-A)	12.5	16.7	14.6
0 - 5.9 m	4.9	3.1	4.0
6 - 11.9 m	6.8	6.2	6.5
12 - 23.9 m	14.6	18.3	16.5
24 - 59.9 m	14.2	20.4	17.3
Weight -for-age Z-score (WAZ) <-3			
All (N=2,034-I, 2,033-C, 4,067-A)	8.1	9.8	9.0
0 - 5.9 m	5.3	3.1	4.2
6 - 11.9 m	7.6	5.7	6.7
12 - 23.9 m	9.6	8.0	8.8
24 - 59.9 m	8.2	12.5	10.3
Weight -for-height Z-score (WHZ) <-3			
All (N=2,013-I, 2,023-C, 4,036-A)	2.6	2.1	2.3
0 - 5.9 m	5.1	4.1	4.6
6 - 11.9 m	3.6	2.6	3.1
12 - 23.9 m	3.7	2.8	3.3
24 - 59.9 m	1.5	1.3	1.4

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 5.7: Prevalence of severe acute malnutrition, by sex and program group

Indicators of severe acute malnutrition	Intervention	Comparison	All
	Percent	Percent	Percent
Height- for- age Z-score (HAZ) <-3			
All (N=2,020-I, 2,009-C, 4,029-A)	12.5	16.7	14.6
Male children (N=1,038-I, 1,068-C, 2,106-A)	13.4	17.9	15.7
Female children (N=982-I, 941-C, 1,923-A)	11.5	15.3	13.4
Weight -for-age Z-score (WAZ) <-3			
All (N=2,013-I, 2,023-C, 4,036-A)	8.1	9.8	9.0
Male children (N=1,032-I, 1,077-C, 2,109-A)	7.9	9.5	8.7
Female children (N=981-I, 946-C, 1,927-A)	8.3	10.1	9.2
Weight -for-height Z-score (WHZ) <-3			
All (N=2,034-I, 2,033-C, 4,067-A)	2.6	2.1	2.3
Male children (N=1,046-I, 1,085-C, 2,131-A)	2.6	2.7	2.7
Female children (N=988-I, 948-C, 1,936-A)	2.5	1.4	2.0

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

5.3.2: Mean hemoglobin levels and anemia prevalence among children 0-59.9 months of age, adjusted for altitude, by program group

Table 5.8: Mean hemoglobin levels and anemia prevalence, by sex and program group

Hemoglobin levels and anemia prevalence	Intervention	Comparison	All
	Mean (SD)	Mean (SD)	Mean (SD)
Hemoglobin levels			
All (N=1,838-I, 1,816-C, 3,654-A)	10.9 (1.4)	10.7 (1.4)	10.8 (1.4)
Male children	10.9 (1.4)	10.7 (1.4)	10.8 (1.4)
Female children	10.9 (1.3)	10.8 (1.3)	10.8 (1.3)
Anemia			
All children	50.3	53.5	51.9
Male children	49.2	53.0	51.2
Female children	51.5	54.0	52.7

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Figure 5.4: Prevalence of child anemia, by age and program group

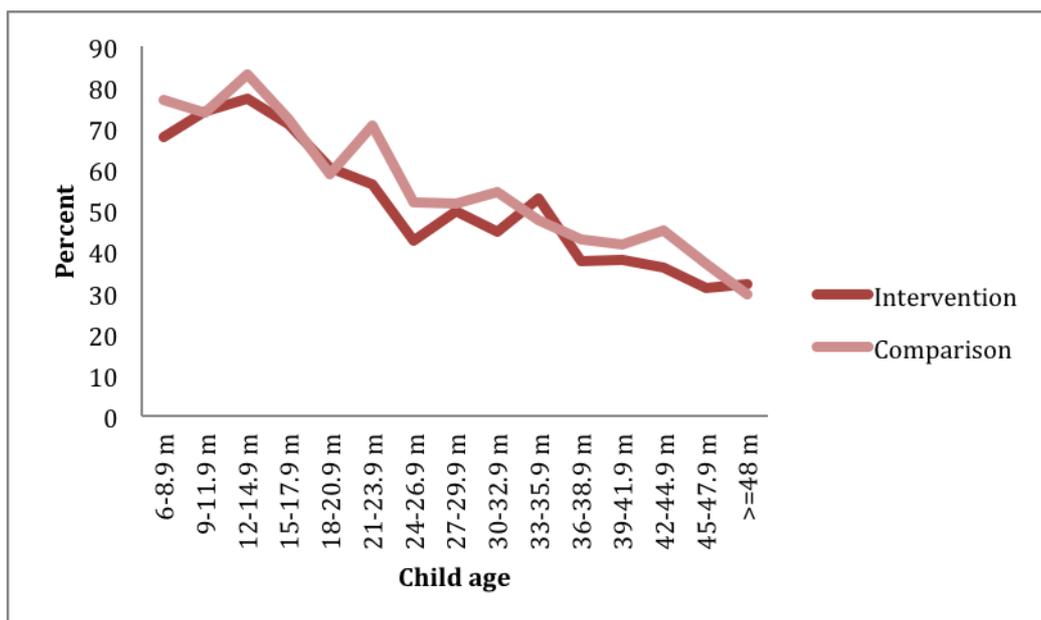


Figure 5.5: Prevalence of child anemia, by agroecological zones

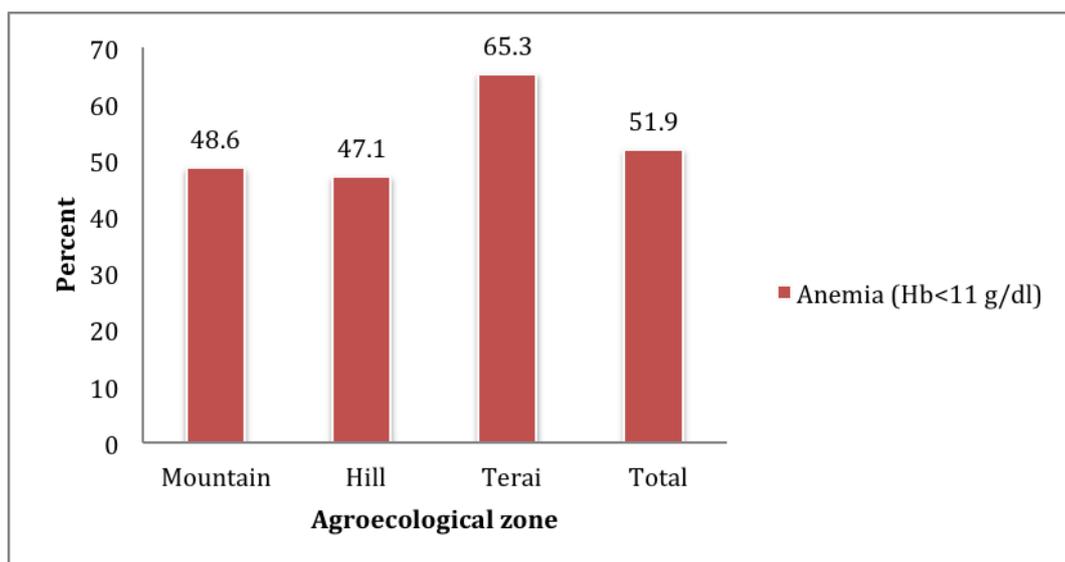


Table 5.9: Birth size by mother's recall, by program group

Perception of birth size	Intervention	Comparison	All
	N=2033	N=2038	N=4071
	Percent	Percent	Percent
Very big	2.3	1.7	2.0
Bigger than average	21.9	19.2	20.5
Average	57.7	64.3	61.0
Smaller than average	14.7	13.0	13.8
Very small	3.5	1.9	2.7

5.4: Maternal nutritional status

5.4.1: Body mass index

Table 5.10: Women's nutritional status, by pregnancy status and program group

Body mass index and mid upper arm circumference	Intervention	Comparison	All
	Mean (SD)	Mean (SD)	Mean (SD)
Body mass index (BMI) (kg/m²)			
All (N=2,039-I, 2,038-C, 4,077-A)	20.7 (2.9)	20.4 (2.7)	20.6 (2.8)
Non-pregnant (N=1,914-I, 1,913-C, 3,827-A)	20.7 (2.9)	20.4 (2.6)	20.5 (2.8)
Pregnant (N=120-I, 122-C, 242-A)	21.6 (2.8)	21.2 (2.3)	21.3 (2.6)
Women who gave birth in 3 last years (N=1,484-I, 1,479-C, 2,963-A)	20.9 (2.9)	20.4 (2.7)	20.5 (2.8)
Mid upper arm circumference (MUAC) (cm)			
All (N=2,039-I, 2,040-C, 4,079-A)	24.3 (2.6)	23.9 (2.5)	24.1 (2.5)
Non-pregnant (N=1,914-I, 1,915-C, 3,829-A)	24.3 (2.6)	24.0 (2.5)	24.1 (2.5)
Pregnant (N=120-I, 122-C, 242-A)	23.5 (2.3)	23.0 (2.3)	23.3 (2.3)
Women who gave birth in the last 3 years (N=1,484-I, 1,480-C, 2,964-A)	24.1 (2.5)	23.8 (2.4)	23.9 (2.5)

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 5.11: Chronic energy deficiency, by pregnancy status and program group

Chronic energy deficiency (BMI <18.5 kg/m ²)	Intervention	Comparison	All
	Percent	Percent	Percent
All (N=2,039-I, 2,038-C, 4,077-A)	22.3	23.5	22.9
Non-pregnant (N=1,914-I, 1,913-C, 3,827-A)	23.0	24.4	23.7
Pregnant (N=120-I, 122-C, 242-A)	10.8	9	9.9
Pregnant (BMI<20)(N= 120-I, 122-C, 242-A)	30.0	30.3	30.2
Women who gave birth in 3 last years (N=1,484-I, 1,479-C, 2,963-A)	23.2	24.4	23.8

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 5.12: Chronic energy deficiency, by pregnancy status and agroecological zone

Chronic energy deficiency (BMI <18.5 kg/m ²)	Mountain	Hill	Terai	All
	Percent	Percent	Percent	Percent
All (N=1,020-M, 2,038-H, 1,019-T, 4,077-A)	28.4	18.3	26.7	22.9
Non-pregnant (N=948-M, 1,923-H, 956-T, 3,827-A)	29.6	18.8	27.7	23.7
Pregnant (N=67-M, 114-H, 61-T, 242-A)	10.4	9.6	9.8	9.9
Pregnant (BMI<20) (N=67-M, 114-H, 114 -T, 240-A)	32.8	31.6	31.6	30.2
Women who gave birth in 3 last years (N=767-M, 1,461-H, 735-T, 2,963-A)	28.6	18.8	29	23.8

5.4.2: Maternal hemoglobin levels and anemia, adjusted for altitude, smoking and pregnancy

Table 5.13: Mean Hemoglobin levels, by pregnancy status and program group

Maternal hemoglobin levels	Intervention Mean (SD)	Comparison Mean (SD)	All Mean (SD)
All (N=2,034-I, 2,030-C, 4,064-A)	12.2 (1.5)	12.1 (1.5)	12.1 (1.5)
Non-pregnant	12.2 (1.5)	12.2 (1.5)	12.2 (1.5)
Pregnant	11.5 (1.5)	11.3 (1.5)	11.4 (1.5)

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Figure 5.6: Maternal anemia, by pregnancy and delivery status, and program group

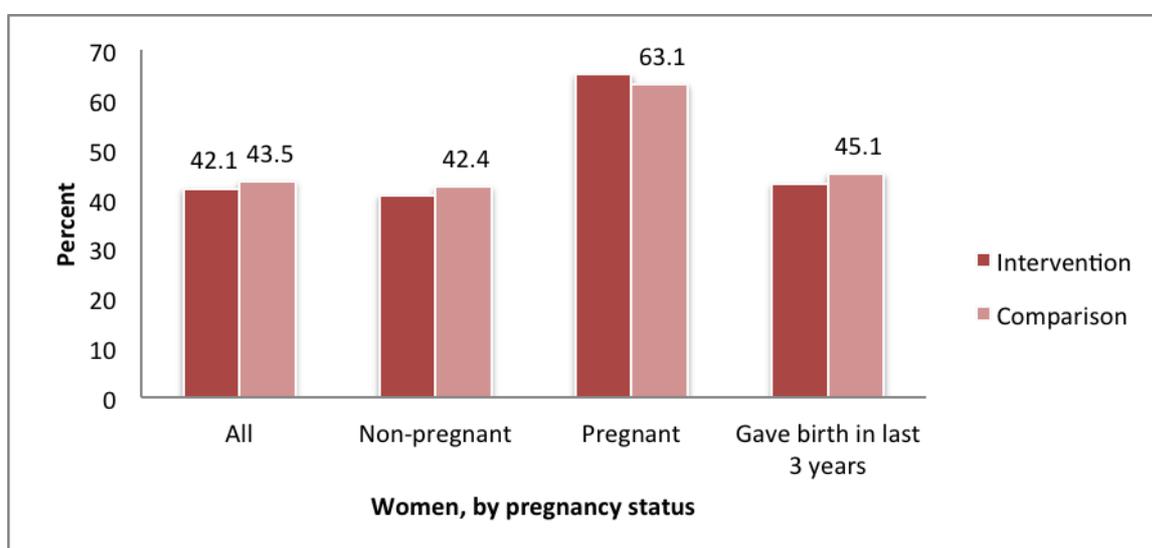
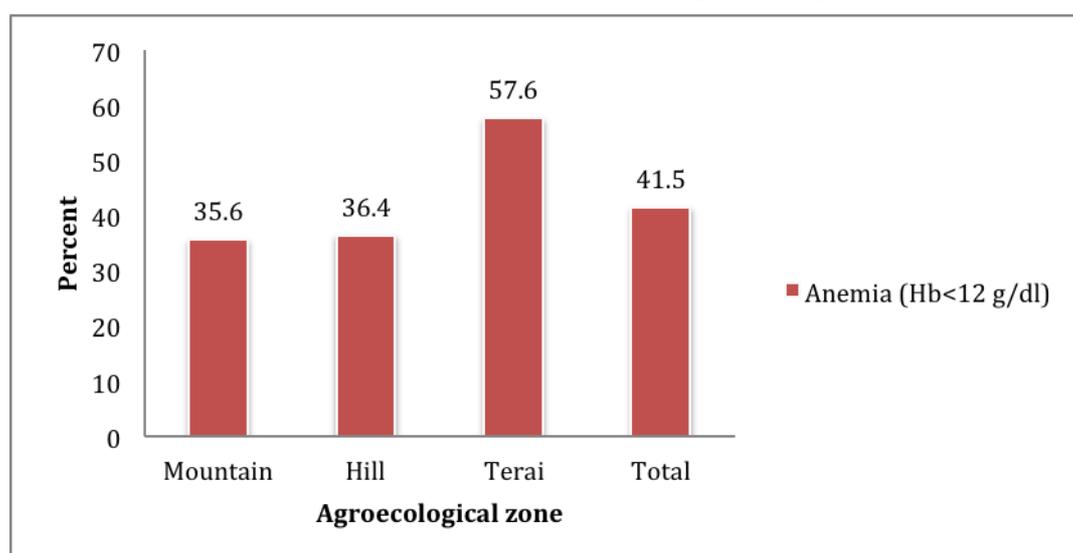


Figure 5.7: Maternal anemia of non-pregnant women, by agroecological zones and total



5.5: Child health

Table 5.14: Child morbidity in the previous two weeks, by program group

Child morbidity symptoms	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Diarrhea	12.5	12.5	12.5
Fever	23.4	22.7	23.0
Cough	19.6	20.4	20.0

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

6. Results: Maternal and Child Dietary Quality

6.1: Summary findings

Maternal Diet

We computed individual dietary diversity scores for mothers based on their consumption of 9 food groups.^x The mean maternal dietary diversity score is 3.8 (± 1.1), with no statistically significant difference between intervention and comparison groups. The women in our sample rely heavily on staples and legumes and have a particularly low consumption of animal source foods with less than 20 percent consuming meat and less than 5 percent consuming eggs. Overall, less than 40 percent consume green leafy vegetables and less than 20 percent consume vitamin A rich fruits and vegetables (Table 6.1). Less than one-third of women report an increase in food consumption during pregnancy (Table 6.2).

Child diet

To examine the diversity of diets for children less than 2 years of age, we constructed the WHO-recommended core and optional IYCF indicators as described in the table below (Table 6.3). Furthermore, we present results on maternal practices regarding response to the child's illness (diarrhea and fever/cough), including alterations to child feeding and provision of zinc and/or ORS during illness.

The majority of the IYCF practices is sub-optimal and is not significantly different between intervention and comparison groups: on average, only 39 percent initiate breastfeeding within one hour of birth and less than half exclusively breastfeed until 6 months of age. Among children 6-23.9 months of age, only around 45 percent receive the minimum dietary diversity of at least four food groups and less than 20 percent consumes iron-rich foods (Tables 6.4 and 6.5).

Over 90 percent of mothers report to have given colostrum and almost a quarter of the mothers report giving their babies pre-lacteal feeds, meaning any food or liquid other than colostrum in the first few days of life. Milk (other than breast milk) is the most common pre-lacteal feed (Table 6.6). As reported in the 24 hour recall, grains (cereals and tubers), dairy, and pulses (legumes and nuts) are the most common food groups given to children aged 6-8.9 months; less than a fifth consume vitamin A rich fruits and vegetables (Table 6.7). Approximately 60 to 65 percent are generally introduced semi-solid and solid food at the right time, but over 40 percent have late introduction of eggs and flesh foods (Table 6.8).

Child dietary diversity is reported based on food groups consumed in the previous 24 hours (Table 6.9, 6.10 and 6.11). Among children aged 6-23.9 months, only one-third of the children consume vitamin A rich fruits and vegetables. Consumption of eggs and flesh foods is alarmingly low at 7 and 15 percent, respectively. We observe a similar pattern among children 24 to 59.9 months of age (Table 6.9, 6.10 and 6.11). Almost no one (1-2 percent) consumes all three-color groupings of foods (Table 6.10).

About half the children who reported diarrhea in the last two weeks received ORS or zinc, but very few received both (Table 6.12). The intervention group seems to be worse in terms of treating children with diarrhea with ORS or zinc, but this difference is not statistically significant. Among mothers in *Suaahara* intervention areas, nearly twenty percent report giving the child with diarrhea less food to eat and nearly ten percent report giving less or nothing at all to drink (Table 6.13). When a child is ill with a fever or cough, over twenty-five percent of mothers in *Suaahara* intervention areas report giving less to eat and almost twenty percent report giving less or nothing at all to drink (Table 6.14). More than half of mothers report that in order to address child illness, the child should be taken to a health facility and less than twenty percent suggest feeding a child more food than usual and less than two percent specifically suggest that a child should receive an extra meal daily (Table 6.15). Among this small percentage, only about one-third (or 25 women) are aware that this should be for at least two weeks (Table 6.16).

6.2: Maternal dietary diversity

Table 6.1: Women's dietary diversity, by program group

Dietary diversity	Intervention N=2040	Comparison N=2040	All N=4080
Individual dietary diversity scores	Mean (SD) 3.9 (1.0)	Mean (SD) 3.7 (1.1)	Mean (SD) 3.8 (1.1)
Food groups	Percent	Percent	Percent
Starchy staples	99.9	99.9	99.9
Other fruits and vegetables	82.2	75.3	78.7**
Beans, lentils, and nuts	79.1	69.6	74.3
Dairy	48.9	35.5	42.2
Green leafy vegetables	36.1	42	39.1
Vitamin A-rich fruits & vegetables	16.9	22.3	19.6
Meat	18.7	19	18.9
Eggs	5.1	4.6	4.8
Fish	2.3	3.1	2.7

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. ** indicates P<0.001. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 6.2: Food consumption during pregnancy, by program group and pregnancy status

Food consumption during pregnancy	Intervention Percent	Comparison Percent	All Percent
Among all women (N=2,037-I, 2,037-C, 4,074-A)			
Less than usual	27.6	22.8	25.2
Same as usual	44.7	52.6	48.7
More than usual	27.7	24.6	26.2
Among currently pregnant women (N=119-I, 122-C, 241-A)			
Less than usual	30.3	17.2	23.7
Same as usual	38.7	54.1	46.5
More than usual	31.1	28.7	29.9
Among currently non-pregnant women (N=1,913-I, 1,912-C, 3,825-A)			
Less than usual	27.4	23.1	25.2
Same as usual	45.1	52.5	48.8
More than usual	27.6	24.4	26.0

6.3: Infant and young child feeding (IYCF) indicators:

6.3.1: Indicator definitions and computation

Table 6.3: IYCF indicator definitions, based on WHO recommendations^{xi}

Indicator Name	Definition	Numerator	Denominator
Early initiation of breastfeeding (0-23.9m)	Proportion of children born in the last 24 m who were put to the breast within 1 hour of birth	Children born in the last 24 m who were put to the breast within 1 hour of birth	Children 0-23.9m
Exclusive breastfeeding (0-5.9m)	Proportion of infants 0-5.9 months of age who are fed exclusively with breast milk	Infants 0-5.9 months of age who received only breast milk during the previous day	Infants 0-5.9m
Continued breastfeeding at 1 year (12-14.9m)	Proportion of children 12–14.9 months of age who are fed breast milk	Children 12-14.9 months of age who received breast milk during the previous day	Children 12-14.9m
Introduction of solid, semi-solid, or soft foods (6-7.9m)	Proportion of infants 6-7.9 months of age who receive solid, semi-solid, or soft foods	Children 6-7.9 months of age who received solid, semi-solid, or soft foods during the previous day	Children 6-7.9m
Minimum dietary diversity(≥ 4 food groups) (6-23.9m)	Proportion of children 6-23.9 months of age who receive foods from 4 or more food groups	Children 6-23.9 months of age who received foods from ≥ 4 food groups during the previous day	Children 6-23.9m
Minimum meal frequency (6-23.9m)	Proportion of breastfed and non-breastfed children 6–23.9 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more	Breastfed or non-breastfed children 6–23.9 months of age who received solid, semi-solid, or soft foods the minimum number of times or more during the previous day	Breastfed or non-breastfed children 6–23.9m
Minimum acceptable diet (6-23.9m)	Proportion of children 6–23.9 months of age who receive a minimum acceptable diet (apart from breast milk)	Breastfed children 6–23.9 months who had at least the minimum dietary diversity and the minimum meal frequency during the previous day	Breastfed children 6–23.9m
		Non-breastfed children 6–23.9 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day	Non-breastfed children 6–23.9m
Consumption of iron-rich or iron-fortified foods (6-23.9m)	Proportion of children 6–23.9 months of age who receive an iron-rich food or iron-fortified food that is especially designed for infants and young children, or that is fortified in the home	Children 6–23.9 months of age who received an iron-rich food or a food that was especially designed for infants and young children and was fortified with iron during the previous day	Children 6-23.9m
Child ever breastfed (0-23.9m)	Proportion of children born in the last 24 months who were ever breastfed	Children born in the last 24 months who were ever breastfed	Children 0-23.9m
Continued breastfeeding at 2 years (20-23.9m)	Proportion of children 20–23.9 months of age who are fed breast milk	Children 20–23.9 months of age who received breast milk during the previous day	Children 20-23.9m
Age appropriate breastfeeding (0-23.9m)	Proportion of children 0–23.9 months of age who are appropriately breastfed	Infants 0–5.9 months of age who received only breast milk during the previous day	Infants 0–5.9m
		Children 6–23.9 months of age who received breast milk, as well as solid, semi-solid, or soft foods, during the previous day	Children 6–23.9m
Predominant breastfeeding (0-5.9m)	Proportion of infants 0–5.9 months of age who are predominantly breastfed	Infants 0–5.9 months of age who received breast milk as the predominant source of nourishment during the previous day. Allows the infant to receive certain liquids (water and water-based drinks, fruit juice), ritual fluids and ORS, drops or syrups (vitamins, minerals, medicines) and does not allow the infant to receive anything else (in particular, non-human milk, food-based fluids)	Children 0-5.9m
Bottle feeding (0-23.9m)	Proportion of children 0–23.9 months of age who are fed with a bottle	Children 0–23.9 months of age who were fed with a bottle during the previous day	Children 0-23.9m

6.3.2: Overall IYCF patterns

Table 6.4: WHO recommended core IYCF indicators, by sex and program group

Core IYCF indicators	Intervention	Comparison	All
	Percent	Percent	Percent
Early initiation of breastfeeding (within 1 hour of birth) (0-23.9 m)			
All infants	37.6	40.4	39.1
Male infants	37.3	42.6	
Female infants	38.0	38.1	
Exclusive breastfeeding (0-5.9 m)			
All infants	46.0	52.5	49.4
Male infants	44.3	47.4	
Female infants	48.2	57.4	
Continued breastfeeding at 1 year (12-14.9 m)			
All children	100.0	99.3	99.6
Male children	100.0	98.7	
Female children	100.0	100.0	
Introduction of solid, semi-solid or soft food (6-7.9 m)			
All children	71.8	75.4	73.4
Male children	60.0	73.7	
Female children	82.2	77.4	
Minimum dietary diversity (≥4 food groups) (6-23.9 m)			
All children	47.1	44.1	45.6
Male children	44.1	45.5	
Female children	49.9	42.5	
Minimum meal frequency (6-23.9 m) ¹			
All children	69.7	74.8	72.2
Male children	67.8	73.2	
Female children	71.4	76.5	
Minimum acceptable diet (6-23.9 m) ²			
All children	36.1	36.2	36.2
Male children	32.8	35.8	
Female children	39.2	36.8	
Consumption of iron-rich food (6-23.9 m) ³			
All children	20.2	18.7	19.5
Male children	18.3	18.7	
Female children	22.1	18.7	

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 6.5: WHO recommended optional IYCF indicators, by sex and program group

Optional IYCF indicators	Intervention	Comparison	All
	Percent	Percent	Percent
Ever breastfed (0-23.9 m)			
All children	99.9	100.0	99.9
Male children	99.8	100.0	
Female children	100.0	100.0	
Continued breastfeeding at 2 years (20-23.9 m)			
All children	92.9	91.1	92.0
Male children	98.5	92.1	
Female children	88.6	90.1	
Age-appropriate breastfeeding (0-23.9 m)			
All children	82.3	83.5	82.9
Male children	80.3	82.9	
Female children	84.4	84.1	
Predominant breastfeeding (0-5.9 m)			
All children	62.0	68.2	65.2
Male children	63.2	62.9	
Female children	60.5	73.3	
Bottle feeding (0-23.9 m)			
All children	5.9	3.3	4.6
Male children	5.3	4.8	
Female children	6.5	1.6	

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

6.4: Breastfeeding practices

6.4.1: Breastfeeding and pre-lacteal feeding by program group

Figure 6.1: Exclusive breastfeeding among infants less than 6 months old, by age and program group

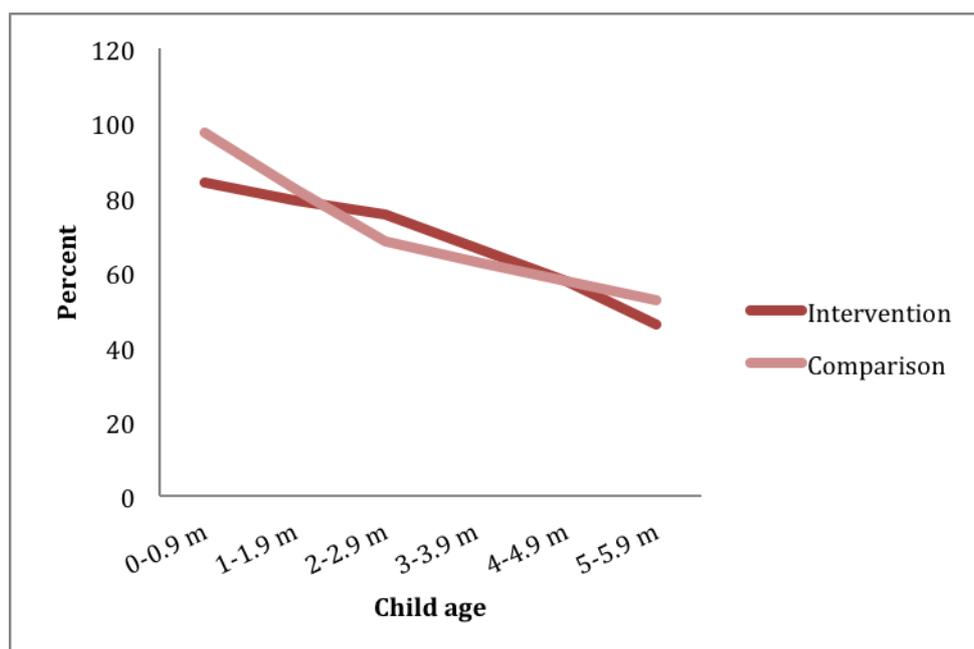


Table 6.6: Pre-lacteal feeding, by program group

Pre-lacteal feeding practices	Intervention	Comparison	All
	Percent	Percent	Percent
Colostrum given (N=4,075)	92.6	88.6	90.6
Any pre-lacteal given (N=4,080)	26.8	18.4	22.6
Liquids other than breast milk given			
Milk (other than breast milk)	50.7	43.3	47.7
Infant formula	19.7	15	17.8
Ghee	16.6	14.2	15.6
Sugar/glucose water	6.3	28.3	15.3
Honey	10.7	9.1	10
Plain water	7.8	2.1	5.5
Molasses/ <i>Sakhar</i>	6.3	0	3.7
Other	1.9	1.1	1.5
Tea/infusions	0	0.8	0.3
Fruit juice	0.2	0	0.1
Gripe water	0.2	0	0.1

6.5: Complementary feeding

6.5.1: Introduction of complementary foods among children 6-8.9 months old

Table 6.7: Food groups consumed by children 6-8.9 months old in the previous 24 hours, by program group

Food groups consumed in the last 24 hours	Intervention	Comparison	All
	N=119	N=106	N=225
	Percent	Percent	Percent
Grains (cereals and tubers)	79.8	80.2	80.0
Dairy	68.9	51.9	60.9
Pulses (legumes and nuts)	49.6	50.0	49.8
Other fruits and vegetables	16.8	25.5	20.9
Vitamin A rich fruits and vegetables	12.6	23.6	17.8
Flesh foods (meat, fish, poultry)	5.9	12.3	8.9
Eggs	1.7	2.8	2.2

Table 6.8: Timeliness of the introduction of complementary foods, by age and program group

Complementary food introduction	Intervention	Comparison	All
	Percent	Percent	Percent
Water and other liquids (N=1,938-I, 1,926-C, 3,864-A)			
Early	63.3	67.6	65.4
Timely	35.8	31.8	33.8
Late	1.0	0.7	0.8
Milk other than breast milk (N=1,882-I, 1,804-C, 3,686-A)			
Early	60.2	54.9	57.6
Timely	33.7	38.3	36.0
Late	6.1	6.9	6.5
Semi-solid food (N=1,805-I, 1,788-C, 3,593-A)			
Early	30.4	33.3	31.9
Timely	64.4	60.4	62.4
Late	5.2	6.3	5.7
Solid food (N=1,824-I, 1,813-C, 3,637-A)			
Early	16.2	22.2	19.2
Timely	66.3	64.4	65.4
Late	17.5	13.4	15.4
Eggs (N=1,480-I, 1,541-C, 3,021-A)			
Early	6.8	11.7	9.3
Timely	49.5	48.3	48.9
Late	43.8	40.0	41.9
Flesh foods (meat, fish, poultry) (N=1,558-I, 1,619-C, 3,177-A)			
Early	5.9	11.8	8.9
Timely	44.2	48.1	46.2
Late	49.9	40.2	44.9

Note: Early, timely, and late refer to introduction of foods prior to 6 months of age, 6-8.9 months of age, and after 9 months of age, respectively.

6.5.2: Dietary diversity among children 6-59.9 months of age

Table 6.9: Food group consumption among children 6-59.9 months in the last 24 hours, by program group

Food groups consumed in the last 24 hours	Intervention	Comparison	All
	Percent	Percent	Percent
6 to 23.9 m			
Grains (cereals and tubers)	95.2	95.8	95.5
Pulses (legumes and nuts)	70.4	65.4	67.9
Dairy	72.1	52.6	62.5
Other fruits and vegetables	48.6	50.0	49.3
Vitamin A rich fruits and vegetables	29.5	43.5	36.4
Flesh foods (meat, fish, poultry)	14.8	15.2	15.0
Eggs	7.3	6.5	6.9
24 to 59.9 m			
Grains (cereals and tubers)	100.0	98.8	99.9
Pulses (legumes and nuts)	78.7	66.7	72.7
Other fruits and vegetables	70.0	66.1	68.0
Dairy	63.9	48.5	56.2
Vitamin A rich fruits and vegetables	40.6	51.0	45.8
Flesh foods (meat, fish, poultry)	20.3	20.1	20.2
Eggs	6.1	6.2	6.2

Table 6.10: Consumption of green leafy vegetables, orange fleshed vitamin A rich foods, and animal source foods among children under 5 years of age in the previous 24 hours, by age and program group

Green, orange, and yellow food groups consumed in the last 24 hours	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Green leafy vegetables			
All	24.2	32.1	28.1
0-5.9 m	0.5	0.5	0.5
6-11.9 m	13.1	27.1	19.8
12-23.9 m	25.7	34.5	30.1
24-59.9 m	29.9	37.5	33.7
Orange fleshed vitamin A rich foods			
All	3.4	9.8	6.6
0-5.9 m	0.0	1.0	0.5
6-11.9 m	1.6	5.2	3.3
12-23.9 m	3.5	11.9	7.7
24-59.9 m	4.4	11.4	7.9
Any animal source foods			
All	62.9	52.8	57.8
0-5.9 m	29.4	24.2	26.8
6-11.9 m	73.0	59.0	66.3
12-23.9 m	70.4	58.6	64.5
24-59.9 m	63.1	54.1	58.6
All 3 (green, orange, and yellow foods)			
All	0.6	1.5	1.0
0-5.9 m	0.0	0.0	0.0
6-11.9 m	0.0	1.3	0.6
12-23.9 m	0.7	2.2	1.4
24-59.9 m	0.8	1.5	1.1

Table 6.11: Consumption of various types of animal source foods among children under 5 years of age in the previous 24 hours, by age and program group

Types of animal source foods	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Milk and milk products			
All	56.7	45.6	51.1
0-5.9 m	29.4	24.2	26.8
6-11.9 m	69.1	53.3	61.5
12-23.9 m	65.2	50.5	57.9
24-59.9 m	54.9	45.8	50.4
Eggs			
All	6.0	5.7	5.8
0-5.9 m	0.0	0.0	0.0
6-11.9 m	6.0	3.5	4.8
12-23.9 m	8.0	8.0	8.0
24-59.9 m	6.1	6.2	6.2
Fish			
All	1.8	2.1	2.0
0-5.9 m	0.0	0.0	0.0
6-11.9 m	1.2	0.9	1.0
12-23.9 m	2.2	1.7	2.0
24-59.9 m	2.1	2.9	2.5
Poultry			
All	8.0	6.6	7.3
0-5.9 m	0.5	0.0	0.3
6-11.9 m	4.0	5.2	4.6
12-23.9 m	7.6	6.5	7.1
24-59.9 m	10.2	8.1	9.1
Meat			
All	0.5	0.8	0.7
0-5.9 m	0.0	0.0	0.0
6-11.9 m	0.4	0.9	0.7
12-23.9 m	0.4	0.9	0.7
24-59.9 m	0.6	1.0	0.8

6.6: Child feeding during illness

Table 6.12: Treatment of child diarrhea, by program group and sex

Diarrhea treatment	Intervention	Comparison	All
	N=255	N=254	N=509
	Percent	Percent	Percent
ORS			
All children	34.9	42.9	38.9
Male children	39.4	48.9	44.2
Female children	30.1	36.4	33.2
Zinc			
All children	12.9	16.5	14.7
Male children	9.9	19.6	14.7
Female children	16.3	13.2	14.8
ORS and zinc			
All children	9.0	12.2	10.6
Male children	7.6	15.8	11.7
Female children	10.6	8.3	9.4
Homemade fluid			
All children	37.7	48.8	43.3
Male children	41.7	51.1	46.4
Female children	33.3	46.3	39.8
ORS or homemade fluid			
All children	52.6	63.4	60.0
Male children	57.6	67.7	62.6
Female children	47.2	58.7	52.9

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant. There are 265 male children and 244 female children in this sub-sample.

Table 6.13: Child feeding behavior during diarrhea, by program group

Child feeding during diarrhea	Intervention	Comparison	All
	N=255	N=254	N=509
	Percent	Percent	Percent
Amount given to eat during illness			
More than usual	7.5	14.6	11.0
About the same	62.8	63.0	62.9
Somewhat less	18.8	13.4	16.1
Much less	2.0	1.6	1.8
Nothing to eat	1.2	0.0	0.6
Not yet started feeding	7.8	7.5	7.7
Amount given to drink during illness			
More than usual	25.9	29.5	27.7
About the same	63.5	61.0	62.3
Somewhat less	6.3	9.1	7.7
Much less	0.8	0.4	0.6
Nothing to drink	3.5	0.0	1.8

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. A star in the grey shaded area indicates the difference found is statistically significant with a P value of at least <0.05. Absence of the star in the grey shaded area indicates that difference is statistically insignificant.

Table 6.14: Child feeding behavior during diarrhea, by program group and sex

Child feeding during diarrhea for male and female children	Intervention	Comparison	All
	Percent	Percent	Percent
Amount given to eat during illness (males)(N=132-I, 133-C, 265-A)			
More than usual	7.6	16.5	12.1
About the same	58.3	66.2	62.3
Somewhat less	21.2	11.3	16.2
Much less	2.3	0.0	1.1
Nothing to eat	0.8	0.0	0.4
Not yet started feeding	9.9	6.0	7.9
Amount given to drink during illness (males)			
More than usual	33.3	31.6	32.5
About the same	58.3	60.9	59.6
Somewhat less	5.3	7.5	6.4
Much less	0.0	0.0	0.0
Nothing to drink	3.0	0.0	1.5
Amount given to eat during illness (females)(N=123-I, 121-C, 244-A)			
More than usual	7.3	12.4	9.8
About the same	67.5	59.5	63.5
Somewhat less	16.3	15.7	16.0
Much less	1.6	3.3	2.5
Nothing to eat	1.6	0.0	0.8
Not yet started feeding	5.7	9.1	7.4
Amount given to drink during illness (females)			
More than usual	17.9	27.3	22.5
About the same	69.1	61.2	65.2
Somewhat less	7.3	10.7	9.0
Much less	1.6	0.8	1.2
Nothing to drink	4.1	0.0	2.1

Table 6.15: Child feeding behavior during fever/cough, by program group

Child feeding during fever/cough	Intervention	Comparison	All
	N=594 Percent	N=568 Percent	N=1,162 Percent
Amount given to eat during illness			
More than usual	3.9	9.9	6.8*
About the same	61.5	60.6	61.0
Somewhat less	23.2	19.5	21.4
Much less	3.5	1.6	2.6
Nothing to eat	1.0	0.4	0.7
Not yet started feeding	6.9	7.9	7.4
Don't know	0.0	0.2	0.1
Amount given to drink during illness			
More than usual	11.8	17.3	14.5
About the same	68.5	67.6	68.1
Somewhat less	15.8	12.0	13.9
Much less	1.5	1.8	1.6
Nothing to drink	2.4	1.2	1.8
Don't know	0.0	0.2	0.1

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups; * indicates P<0.05.

Table 6.16: Child feeding behavior during fever/cough, by program group and sex

Child feeding during fever/cough for male and female children	Intervention	Comparison	All
	Percent	Percent	Percent
Amount given to eat during illness (males) (N=314-I, 305-C, 619-A)			
More than usual	3.8	9.5	6.6
About the same	60.8	62.6	61.7
Somewhat less	21.3	19.0	20.2
Much less	4.1	1.6	2.9
Nothing to eat	0.6	0.3	0.5
Not yet started feeding	9.2	6.9	8.1
Don't know	0.0	0.0	0.0
Amount given to drink during illness (males)			
More than usual	12.1	19.3	15.7
About the same	70.7	67.2	69.0
Somewhat less	14.3	12.1	13.3
Much less	1.9	0.7	1.3
Nothing to drink	1.0	0.7	0.8
Don't know	0.0	0.0	0.0
Amount given to eat during illness (females) (N=280-I, 263-C, 543-A)			
More than usual	3.9	10.3	7.0
About the same	62.1	58.2	60.2
Somewhat less	25.4	20.2	22.8
Much less	2.9	1.5	2.2
Nothing to eat	1.4	0.4	0.9
Not yet started feeding	4.3	9.1	6.6
Don't know	0.0	0.4	0.2
Amount given to drink during illness (females)			
More than usual	11.4	14.8	13.1
About the same	66.1	68.1	67.0
Somewhat less	17.5	11.8	14.7
Much less	1.1	3.0	2.0
Nothing to drink	3.9	1.9	3.0
Don't know	0.0	0.4	0.2

Table 6.17: Maternal knowledge/beliefs regarding feeding to address child illness

Feed related modifications	Intervention	Comparison	All
	N=2,037	N=2,038	N=4,075
	Percent	Percent	Percent
Feed an extra meal daily	2.0	1.8	1.9
Go to health facility	53.2	65.1	59.2
Feed different types of foods	47.3	45.4	46.4
Give syrups/medicines	23.2	27.5	25.4
Feed more food than usual	17.7	16.1	16.9
Stop breastfeeding	21.5	6.3	13.9
Give more liquids than usual	15.7	12.0	13.9
Increase frequency of breastfeeding	0.2	12.8	6.5
Continue breastfeeding	11.3	0.2	5.8
Give traditional medicines	5.8	5.3	5.6
Feed fish and meat	3.2	4.9	4.1
Feed fruits	4.8	3.4	4.1
Feed vitamins	3.5	2.1	2.8
Feed as much food as usual	5.2	0.4	2.8
Give safe drinking/treated water	3.4	2.0	2.7
Give ORS	2.4	2.1	2.3
Give different types of liquids than usual	2.9	1.4	2.2
Feed eggs	0.9	2.8	1.9
Feed <i>lito</i> (traditional Nepali weaning food)	0.5	2.2	1.4
Give as much liquids as usual	1.2	1.0	1.1
Give carrot juice or rice scum	0.8	0.8	0.8
Do not know	0.2	1.0	0.6
Give less liquids than usual	0.7	0.3	0.5
Feed less food than usual	0.4	0.1	0.3
Give zinc tablets	0.3	0.3	0.3

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups; Percentages do not sum to 100 as this was a multiple response question.

Table 6.18: Maternal knowledge/belief regarding how long to feed an extra meal for child illness, by program group

Belief on how long to feed an extra meal (among mothers with ill child in the last 2 weeks who suggest feeding an extra meal)	Intervention	Comparison	All
	N=38	N=36	N=74
	Percent	Percent	Percent
Less than 2 weeks	63.2	69.4	66.2
For 2 weeks	2.7	2.7	2.7
Up to 1 month	26.3	25	25.8
More than 1 month	7.9	2.7	5.4
Duration of extra meal daily (average no. of days)	Mean (SD)	Mean (SD)	Mean (SD)
	16.6 (20.4)	11.1 (9.2)	13.8 (16.1)

7. Results: Maternal, Newborn, and Child Health Services

7.1: Summary findings

Maternal and newborn health services

Here, we present the results on use of health service facilities for pregnancy, delivery, and postnatal care. Key variables include number of antenatal care visits, amount of iron taken during pregnancy, and proportion of deliveries attended by a skilled health worker. Postnatal care variables include how soon and frequently mothers and their newborns were checked by a health professional.

More than half of all women in the sample report having received the recommended four antenatal care (ANC) visits by a health professional. Furthermore, about 68 percent of women report having received ANC from a skilled provider (Table 7.1). Although statistically not significant, these indicators appear to be better in *Suaahara* areas. Less than forty percent report having taken Iron Folic Acid (IFA) supplements for the full 180 days during pregnancy (Table 7.2).

Just over one-third of the women in the sample reported that a doctor, nurse, or midwife delivered the baby. Although not statistically significant, the findings indicate that among *Suaahara* intervention areas, a higher percentage of women report delivery assistance by a skilled provider compared to the comparison areas where only a third of the women reported the same (Table 7.3). Few women accessed postnatal care (PNC) (Table 7.4).

Child health services

For newborn care, variables include how soon and how frequently newborn babies were checked by a health professional. For child health services, mothers were asked whether or not they sought assistance from a health professional for child illness or difficulties related to child feeding, and if so, from whom. Mothers were also asked about their child's history of different immunizations; data were first recorded if this information was entered on the child's health card. In the majority of cases, a health card was unavailable and therefore data were recorded according to maternal recall. Proportions of index and non-index children who received specific vaccines at any time before the survey are reported, as is the proportion of children fully immunized according to national protocol.

Less than half of newborn infants received check-ups within two days (Table 7.4). For both diarrhea and fever/cough, the most common health service approached is the pharmacy or sub-health post (Table 7.5). While the coverage of vitamin A supplementation and deworming tablet is high, less than one percent of those children above 6 months of age have received iron syrup (Table 7.6). Over 70 percent of households use adequately iodized salt. About three in four children receive full vaccination coverage, defined as children who have received immunization for BCG, measles, and three doses each of DPT and polio (Table 7.8).

7.2: Maternal health services: prenatal, delivery, and postnatal care

Table 7.1: Use of antenatal care services, by program group

Antenatal care (ANC) services for mothers	Intervention	Comparison	All
	Percent	Percent	Percent
Number of ANC visits (N=2,035-I, 2,352-C, 4,075-A)			
Four or more visits	63.0	52.5	57.7
Three visits	14.8	17.8	16.3
Two visits	8.4	11.9	10.1
One visit	4.3	5.0	4.6
No visits	9.5	12.9	11.2
Mean number of visits			
Among women who received any ANC (N=1,843-I, 1,777-C, 3,620-A)	4.3	3.8	4.1
Among all women (N=2,037_I, 2,040_C, 4,077-A)	3.9	3.3	3.6
Received ANC from a skilled provider[§] (among women who received any ANC) (N=1,871-I, 1,818-C, 3,689-A)	75.2	61.4	68.3
Particular ANC providers			
Staff nurse/ANM	73.0	55.9	64.5
FCHV	30.9	38.1	34.5
Health assistant/AHW	25.9	28.3	27.1
MCH worker	22.2	28.8	25.5
Doctor	28.5	22.6	25.5
Village health worker (VHW)	6.5	3.0	4.8
Mothers' groups	0.1	0.2	0.2
Trained TBA	0.0	0.1	0.1
Untrained TBA	0.0	0.1	0.0
Other	0.0	0.1	0.0

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups; Percentages do not sum to 100 as this was a multiple response question.

[§] Skilled provider defined as doctor, staff nurse, ANM

Table 7.2: Use of iron and folic acid supplements during pregnancy, by program group

Supplementation for pregnant women	Intervention	Comparison	All
	N=2040 Percent	N=2040 Percent	N=4080 Percent
Iron/folic acid			
Number of days iron/folic acid taken (mean)	128.8	128.5	128.7
Received any during pregnancy	87.8	85.1	86.5
Received full course (180 days) during pregnancy	37.0	39.0	38.0
Deworming tablets	72.4	68.1	70.3

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

Table 7.3: Delivery assistance, by program group

Persons attending birth	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
SBA attended (defined as doctor/nurse/midwife)	42.5	31.7	37.1
Relative/friends/neighbor	57.8	66.0	61.9
Nurse/ANM	42.1	30.7	36.4
Doctor	18.8	15.7	17.3
FCHV	6.1	8.0	7.1
Health Assistant/AHW	4.9	7.0	5.9
Un-trained TBA	3.7	3.9	3.8
MCHW	2.4	2.5	2.5
Trained TBA	2.4	0.8	1.6
VHW	0.1	0.2	0.2
Mothers' group member	0.0	0.1	0.1

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups; Percentages do not sum to 100 as this was a multiple response question.

Table 7.4: Maternal and newborn postnatal care (PNC) visits, by program group

Postnatal care (PNC) services for mothers and newborns	Intervention	Comparison	All
	Percent	Percent	Percent
At least 3 PNC visits (N=2,040-I, 2,040-C, 4,080-A)	16.7	12.6	14.7
Mean number of visits			
Among women who received any PNC (N=1,026-I, 819-C, 1,845-A)	3.2	2.8	3.0
Among all women (N=2,035-I, 2,038-C, 4,073-A)	1.6	1.1	1.4
Postnatal health checks of new born children (N=2,022-I, 2,029-C, 4,051-A)			
Within one day of birth	47.5	39.1	43.3
Within two days of birth	0.9	0.3	0.6
Within three days of birth	0.7	0.4	0.6
Within seven days of birth	5.7	3.4	4.5
After seven days of birth	45.2	56.8	51.0

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

7.3 Child health services

Table 7.5: Access to and use of health services for children under 5 years of age, by program group

Access to and use of health services	Intervention	Comparison	All
	Percent	Percent	Percent
For poor appetite over a few days/weeks (N=2,039-I, 2,040-C, 4,079-A)			
Take to health facility	56.7	48.7	52.7
Take to traditional healer	7.1	4.0	5.5
Discuss with FCHV	0.4	0.3	0.4
For diarrhea (N=166-I, 159-C, 325-A)			
Pharmacy	42.2	40.3	41.2
Sub-health post	24.7	30.8	27.7
Health post	11.5	12.6	12.0
Private hospital/clinic/nursing home	7.2	12.0	9.5
Government hospital/clinic	9.0	9.4	9.2
FCHV	6.6	5.7	6.2
Traditional practitioner	4.2	4.4	4.3
PHC center	1.8	1.9	1.9
Shop	1.2	0.0	0.6
Outreach clinic	0.0	0.6	0.3
NGOs [§]	0.6	0.0	0.3
For fever/cough (N=344-I, 406-C, 750-A)			
Pharmacy	34.6	40.4	37.7
Sub-health post	24.1	20.7	22.3
Private hospital/clinic/nursing home	14.5	14.8	14.7
Health post	15.1	11.3	13.1
Government hospital/clinic	7.9	7.9	7.9
Traditional practitioner	6.4	7.1	6.8
FCHV	3.8	3.0	3.3
PHC center	2.0	2.5	2.3
NGOs [§]	0.3	1.0	0.5
Outreach clinic	0.3	0.5	0.4
Shop	0.0	0.7	0.4

[§] NGO refers to any non-government organization other than Family Planning Association of Nepal (FPAN) or United Mission to Nepal (UMN).

Table 7.6: Health cards and supplementation status, by program group

Health cards and supplements	Intervention	Comparison	All
	Percent	Percent	Percent
Health card (N=2,040-I, 2,040-C, 4,080-A)			
Yes, shown	35.7	25.3	30.5
Yes, but not shown	2.1	1.8	1.9
No card	62.2	72.9	67.5
Supplements (N=1,853-I, 1,842-C, 3,695-A)			
Vitamin A (6-59.9 m)	92.6	91.5	92
De-worming (12-59.9 m)	89.9	86.3	88.1
Iron syrup (6-59.9 m)	0.4	0.5	0.4
Iron syrup (6-23.9 m)	0.7	0.3	0.5

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

Table 7.7: Levels of iodization in salt used for household consumption, by program group

Salt iodization levels	Intervention	Comparison	All
	N=2,028	N=2,035	N=4,063
	Percent	Percent	Percent
Iodized (at least 15 PPM)	72.6	72.2	72.4
Insufficiently iodized (<15 PPM)	12.5	20.8	16.6
Not iodized	14.8	6.6	10.7
Salt not tested	0.1	0.4	0.3

Table 7.8: Immunization status, by program group

Immunizations (at any time before survey)	Vaccination card			Mother's report			Either source		
	Intervention	Comparison	All	Intervention	Comparison	All	Intervention	Comparison	All
	N=729	N=517	N=1,246	N=1,277	N=1,470	N=2,747	N=2,006	N=1,987	N=3,993
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Full coverage	77.9	72.0	75.4	88.8	87.5	88.1	73.2	75.5	74.4
Immunization									
BCG	92.9	92.8	92.9	98.3	98.9	98.6	96.3	97.3	96.8
Polio 1	91.2	85.5	88.8	99.5	99.2	99.3	96.5	95.6	96.0
Polio 2	88.7	79.7	83.8	98.9	97.7	98.3	94.5	93.0	93.7
Polio 3	77.9	70.8	75.0	97.7	96.0	96.8	90.5	89.4	90.0
DPT1/Hep B1	38.0	30.8	35.0						
DPT1/Hep B2	37.0	28.8	33.6						
DPT1/Hep B3	33.5	26.7	30.7						
DPT1/Hep B1/Hib1	53.1	55.7	54.2	97.3	96.8	97.1	81.3	86.1	83.7
DPT1/Hep B2/Hib2	49.8	51.3	50.4	96.8	94.8	95.7	79.7	83.4	81.6
DPT1/Hep B3/Hib3	44.4	45.3	44.8	94.4	92.0	93.2	76.3	79.9	78.1
Measles	49.7	43.9	47.3	90.8	89.1	89.9	75.9	77.4	76.6
Japanese Encephalitis	10.6	4.8	8.2	14.7	11.0	12.7	13.2	9.4	11.3

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

8. Results: Family Planning and maternal tobacco and alcohol use

8.1: Summary findings

Family planning

Information on family planning practices as well as knowledge about family planning include: mothers' report on the type of methods and products used to avoid pregnancy and whether they received counseling related to ensuring healthy timing and spacing of pregnancies. Grandmothers were also asked about their awareness of several family planning messages.

Only a third of the mothers reported using any method to avoid getting pregnant (Table 8.1). The vast majority of women recall having heard that the woman should consider a family planning method of her choice without interruption for two years between pregnancies and that it is best to wait at least two years between each pregnancy, but only a little over half of these same women have heard that a woman should wait until 20 years of age before becoming pregnant (Table 8.2). Among grandmothers, nearly all have heard that it is best for a woman to wait at least two years between pregnancies and over 90 percent have heard that it is best to wait until 20 years of age before trying to become pregnant (Table 8.3).

Maternal tobacco and alcohol use

Maternal behavior relating to tobacco and alcohol was also assessed as it can have an influential role in maternal health as well as the health of the child. Variables include mothers' report on whether they usually smoke cigarettes, use other tobacco products, or drink alcohol. Among those who reported engagement in these practices, we determine frequency of response.

Less than 10 percent of women use tobacco or smoke and less than fifteen percent drink alcohol, but among pregnant women the percentage is above 10 (Table 8.4). Although the percentage using tobacco or alcohol is low, among those who do engage in these activities the frequency is high. Among cigarette smokers, over ninety percent smoke four to seven days a week; the same is true of those who use tobacco in other ways. Among alcohol drinkers, over half consume more than once a week (Table 8.5).

8.2: Healthy spacing and timing of pregnancies (HTSP): knowledge and practice

Table 8.1: Methods used to avoid pregnancy, by program group

Methods to avoid pregnancy	Intervention	Comparison	All
	N=1,920 Percent	N=1,918 Percent	N=3,838 Percent
Mothers reporting use of any method to avoid pregnancy (among non-pregnant women)	35.4	29.5	32.4
Mothers report using at least one modern method to avoid pregnancy (including female sterilization, male sterilization, the pill, the IUD, injectables, implants, the female condom, the male condom, lactational amenorrhea method, the diaphragm, and foam/jelly)	35.4	29.5	32.4
Methods/products	N=679	N=565	N=1244
Injectable	34.3	32.8	33.5
Condom	9.9	18.9	14.8
Pill	11.9	13.4	12.7
Male sterilization	15.8	7.4	11.2
Female sterilization	11.3	10.9	11.1
IUD	6.0	7.1	6.6
Implants	7.1	4.9	5.9
Withdrawal	3.2	4.6	3.9
Rhythm method	1.1	1.3	1.2
Female condom	0.0	0.2	0.1
Other	0.4	0.3	0.3
Lactational amenorrhea method	0.0	0.0	0.0
Diaphragm	0.0	0.0	0.0
Foam/jelly	0.0	0.0	0.0

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

Table 8.2: Counseling on healthy timing and spacing of pregnancy (HTSP) received by the mother, by program group

Maternal report of receiving counselling regarding healthy timing and spacing of pregnancy	Intervention	Comparison	All
	Percent	Percent	Percent
Ever received any counselling on healthy timing and spacing of pregnancy (N=2,040-I, 2,040-C, 4,080-A)	40.1	26.2	33.1
Mother reports being counselled on specific messages: (N=817-I, 535-C, 1,352-A)			
Consider using a family planning method of your choice without interruption for 2 years between pregnancies	91.8	90.8	91.3
Best to wait at least 2 years between each pregnancy	83.2	87.7	85.0
Best for a woman to wait until 20 to get pregnant	53.0	56.5	54.4
All 3 of these key HTSP messages	50.2	52.0	50.9

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

Table 8.3: Grandmother’s knowledge regarding healthy timing and spacing of pregnancies, by program group

Grandmother’s knowledge regarding HTSP	Intervention	Comparison	All
	N=927	N=926	N=1,853
	Percent	Percent	Percent
Best to wait at least 2 years between pregnancies	98.7	96.0	97.4
Best to wait until 20 years old before trying to become pregnant	92.9	92.1	92.5

8.3: Maternal use of tobacco and alcohol

Table 8.4: Mothers’ use of tobacco and alcohol, by program group and pregnancy status

Tobacco and alcohol usage	Intervention Percent	Comparison Percent	All Percent
Among all women (N=2040-I, 2040-C, 4080-A)			
Smoking	6.6	10	8.3
Other tobacco (chewing, hookah, pipes)	5.6	7.5	6.5
Alcohol	10.4	16.2	13.3
Among pregnant and lactating women (N=1,683-I, 1,653-C, 3,336-A)			
Use of tobacco	5.3	7.4	6.4
Alcohol	10.5	15.9	13.2

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

Table 8.5: Frequency of women’s tobacco and alcohol usage, by program group

Frequency of use	Intervention Percent	Comparison Percent	All Percent
Cigarette smoking (N=134-I, 202-C, 336-A)			
Regularly (4-7 days per week)	97.0	87.1	91.1
Often (more than once a week)	1.5	7.9	5.4
Sometimes (more than once a month)	0.0	5.0	3.0
Rarely (less than once a month)	1.5	0.0	0.6
Other tobacco use (N=114-I, 151-C, 265-A)			
Regularly (4-7 days per week)	93.9	93.4	93.6
Often (more than once a week)	5.3	4.6	4.9
Sometimes (more than once a month)	0.9	2.0	1.5
Rarely (less than once a month)	0.0	0.0	0.0
Alcohol consumption (N=212-I, 330-C, 542-A)			
Regularly (4-7 days per week)	29.3	34.2	32.3
Often (more than once a week)	22.6	26.7	25.1
Sometimes (more than once a month)	22.6	28.2	26.0
Rarely (less than once a month)	25.5	10.9	16.6

9. Results: Water, Sanitation, and Hygiene (WASH)

9.1: Summary findings

Information related to water includes access to, distance from, and treatment of drinking water. Household access to toilets, water, and ash/soap, stool disposal, and hand washing practices are some of the important sanitation and hygiene variables. We also collected information on mothers' knowledge regarding how to protect a young child from intestinal worms.

Overall, nearly 90 percent of women report having access to an improved source of drinking water and less than 10 percent of women living in *Suaahara* intervention areas report needing 30 minutes or more to obtain drinking water (Table 9.1). Less than 15 percent of women report that their household treats water. Among those who treat water, boiling is the most common treatment method (Table 9.2).

More than half of the households in the sample report having access to toilets, water, and soap/ash. Among households in *Suaahara* intervention areas, over 70 percent have water available at the area identified as the primary place for hand washing, but only about half have soap or ash available (Table 9.3). About half of the households practice open defecation. Two-thirds of women in *Suaahara* intervention areas report having a toilet in the household; however, over forty percent still report having their children under 5 years of age defecate in the open (Table 9.4) and another twenty percent improperly dispose by doing nothing, burying, or throwing the stools in the yard (Table 9.5). Only about one-third report dropping stools of a young child into a toilet.

Nearly three-quarters of mothers report that giving de-worming tablets to children is an effective means of protecting them against intestinal worms. While this is encouraging, there are still some misbeliefs: over half of mothers reported that not giving a child sweets or chocolates is another means of protecting children against intestinal worms (Table 9.6).

When asked to demonstrate or explain appropriate hand washing practices, less than 20 percent perform all five key behaviors; less than 10 percent hygienically hand dry by using a clean cloth or air drying (Table 9.7). When asked at what point in the day they wash their hands, less than twenty percent of mothers mention all five critical times. More than 80 percent report hand washing before eating and defecation and about 60 percent after cleaning a young child's bottom, but only 42% mention this important practice before cooking/preparing food and less than one-third before feeding a child (Table 9.8). Findings from one study (ICDDR,B) suggest that second only to washing hands after defecation, hand washing before cooking and preparing foods may be the most important of the 4 remaining critical times for hand-washing. For those reporting hand washing at each particular time, more than three-quarters of the mothers report the frequency to be every time (Table 9.9).

9.2: Water

Table 9.1: Sources of drinking water, by program group

Sources of water	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Any improved source of drinking water	89.0	87.0	88.0
Individual improved sources			
Public tap/stand pipe	48.9	53.1	51.0
Piped into yard/plot	20.4	17.0	18.7
Tubewell or borehole	16.3	14.3	15.3
Piped into dwelling	2.8	1.6	2.2
Protected well	0.5	1.0	0.8
Bottled water	0.1	0.0	0.0
Non-improved sources			
Surface water (river/dam/lake/pond/stream)	6.7	7.4	7.0
Stone tap/dhara	3.7	4.7	4.2
Unprotected well	0.5	0.9	0.7
Unprotected spring	0.1	0.1	0.1
Time to obtain drinking water (in minutes)			
Water on premises	37.0	26.8	31.9
Less than 30 minutes	56.3	57.0	56.6
30 minutes or longer	6.7	16.2	11.5
Use of water source			
All year round	95.5	93.3	94.4
Only in the rainy season	4.4	6.4	5.4
Only in the dry season	0.1	0.3	0.2

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

Table 9.2: Treatment of drinking water, by program group

Treatment	Intervention	Comparison	All
	Percent	Percent	Percent
Any treatment of water (N=2,040-I, 2,040-C, 4,080-A)	12.9	13.0	12.9
Any appropriate treatment (defined as boiling, bleaching, straining, filtering, and solar disinfecting) (N=2,040-I, 2,040-C, 4,080-A)	12.5	12.6	12.6
Treatment methods reported (N=314-I, 289-C, 603-A)			
Boil it	61.5	56.4	58.9
Water filter	36.3	24.2	30.2
Strain through a cloth	14.5	22.7	18.6
Stand and settle/sedimentation	5.7	2.7	4.2
Add bleach/chlorine	1.2	2.7	1.9
Solar disinfection/SODIS	0.8	0.8	0.8

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. Individual treatment percentages do not sum to 100 as this was a multiple response question.

9.3 Sanitation and hygiene

Table 9.3: Toilet facilities, hand washing supplies (soap and ash), and garbage disposal, by program group

Toilet facilities and supplies	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Access to toilets			
Facility at the household (reported by women)	65.3	70.9	68.1
Facility at the household (observed)*	64.0	69.5	66.7
Shared facility in community	4.7	5.8	5.3
Type of household toilet facilities (N=1,301-I, 1,399-C, 2,700-A)			
Improved sanitation facility	91.9	90.1	91.0
Pit latrine	56.3	84.6	69.9
Flush or pour flush toilet	42.7	15.3	29.5
Composting toilet	0.6	0.2	0.4
Bucket	0.4	0.0	0.2
Garbage disposal			
Dumped (open space/street/indiscriminately/kitchen garden/river/stream/canal/forest/jungle/field/pond)	55.3	47.3	51.3
Composted	33.5	41.3	37.4
Pit	22.0	16.8	19.4
Burned	7.5	3.0	5.3
Collected	0.7	0.6	0.7
Supplies available at household handwashing area			
Water*	70.8	59.5	65.2
Soap/ash	53.8	46.5	50.2
Water and soap/ash	49.1	39.6	44.3

Note: * indicates a few missing values; Total N of less than 4,080 for these variables but not more than 20 missing.

Table 9.4: Defecation practices, by program group

Defecation practices (reported)	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Open defecation			
'Household doesn't usually use toilet' OR 'under 5s openly defecate' OR 'Stools disposed of improperly'	56.8	58.1	57.4
'Household doesn't usually use toilet' OR 'under 5s openly defecate'	48.6	47.8	48.2
Under 5 open defecation	42.0	43.1	42.6
Toilet access and usage			
Household members usually use toilet	67.8	72.8	70.3
Toilet facility in the household	65.3	70.9	68.1
Shared toilet facility in the village	4.7	5.8	5.3

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups.

Table 9.5: Stool disposal practices, by program group

Practices for disposal of young child's stool (reported)	Intervention	Comparison	All
	N=1,453	N=1,451	N=2,904
	Percent	Percent	Percent
Rinse/wash away in open field	47.5	36.4	41.9
Drop in the toilet	30.4	30.1	30.2
Nothing	13.5	20.1	16.8
Bury it	3.1	5.7	4.4
Use for compost	2.8	3.7	3.3
Throw in the yard	1.5	3.0	2.2
Rinse/wash away in drainage system	1.2	1.1	1.2

Table 9.6: Maternal knowledge regarding the prevention of intestinal worms, by program group

Methods for protecting children	Intervention	Comparison	All
	N=2,035	N=2,040	N=4,075
	Percent	Percent	Percent
Give deworming tablets	76.4	66.8	71.6
Don't feed child sweets/chocolates	52.5	48.6	50.5
Wash child's hands	9.8	15.3	12.5
Give child treated water	14.6	8.4	11.5
Wash fruits and vegetables	12.8	9.3	11.0
Wash hands before feeding child	10.4	9.2	9.8
Don't feed child raw foods	8.7	3.4	6.1
Wash hands before preparing food	4.5	7.0	5.7
Cut nails	4.2	3.0	3.6
Don't know	1.8	4.7	3.3
Don't feed child dirty, stale, or contaminated foods	2.6	3.1	2.9
Child should wear sandals	2.2	3.0	2.6
Maintain cleanliness of child/avoid child playing with dirt	1.9	1.5	1.7
Child should wear pants/panties	0.8	1.4	1.1

Note: Percentages do not sum to 100 as this was a multiple response question.

9.3.1: Hand washing

Table 9.7: Appropriate hand washing practices, by demonstration vs. explanation and program group

Handwashing behaviors	Practices demonstrated			Practices explained		
	Intervention	Comparison	All	Intervention	Comparison	All
	N=1,749	N=1,826	N=3,575	N=290	N=213	N=503
	Percent	Percent	Percent	Percent	Percent	Percent
All five key behaviors	15.4	6.9	11.2	4.7	2.8	3.6
Individual behaviors						
Uses clean/running water	93.0	86.2	89.1	95.0	82.3	88.8
Uses soap or ash	60.1	47.9	53.1	71.0	69.4	70.2
Rubs hands at least 3 times	66.7	76.9	72.6	91.2	88.1	89.7
Washes both hands	75.6	92.1	85.1	90.8	95.4	93.0
Dries hands hygienically*	8.5	3.8	5.8	22.2	8.4	15.4

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. * Drying hands hygienically includes using a clean cloth or air drying.

Table 9.8: Knowledge regarding hand washing at five critical times, by program group

Recall of critical times for handwashing	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
All five critical times	17.9*	8.3	13.1
Individual times			
After defecation	88.0	85.5	86.8
Before eating	80.4	81.7	81.1
After cleaning a young child's bottom	65.6	56.6	61.1
Before cooking/preparing food	50.4	33.0	41.7
Before feeding a child	35.1	27.3	31.2

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. * indicates P<0.05.

Table 9.9: Appropriate hand washing practices and knowledge of five critical times, by program group

Five key hand washing practices and recall of five critical times	Intervention	Comparison	All
	Percent	Percent	Percent
Demonstrated and recalled (N=1826-I, 1749-C, 3575-A)	3.8	0.2	2.0**
Explained and recalled (N=213-I, 290-C, 503-A)	0.9	0.0	0.4

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. ** indicates P<0.001.

Table 9.10: Frequency of hand washing at five critical times, by program group

Five critical times for handwashing	Intervention	Comparison	All
	Percent	Percent	Percent
After defecation (N=1,795-I, 1,745-C, 3,540-A)			
Every time	94.9	97.1	96.0
Most of the time	4.5	2.7	3.6
Sometimes	0.7	0.2	0.4
Rarely	0.0	0.0	0.0
After cleaning a young child's bottom (N=1,339-I, 1,155-C, 2,494-A)			
Every time	94.0	96.1	95.0
Most of the time	4.9	3.4	4.2
Sometimes	1.1	0.5	0.8
Rarely	0.2	0.0	0.1
Before cooking/preparing food (N=1,028-I, 674-C, 1,702-A)			
Every time	72.6	87.7	78.6
Most of the time	17.9	10.4	14.9
Sometimes	8.7	1.6	5.9
Rarely	0.9	0.3	0.7
Before eating (N=1,641-I, 1,667-C, 3,308-A)			
Every time	87.4	91.1	89.3
Most of the time	9.5	7.7	8.6
Sometimes	2.8	1.1	1.9
Rarely	0.4	0.1	0.2
Before feeding a child (N=716-I, 557-C, 1,273-A)			
Every time	85.3	86.5	85.9
Most of the time	10.3	9.5	10.0
Sometimes	3.9	3.6	3.8
Rarely	0.4	0.4	0.4

Table 9.11: Mothers' reported use of soap or ash in the last 24 hours for hand washing after defecation and at one more of the five critical times, by program group

Handwashing with soap or ash at two critical times	Intervention	Comparison	All
	N=2040	N=2040	N=4080
	Percent	Percent	Percent
After defecation and after cleaning a young child's bottom	29.6	17.9	23.8
After defecation and before cooking/preparing food	8.3	2.4	5.3*
After defecation and before eating	10.3	9.5	9.9
After defecation and before feeding a child	4.7	2.9	3.8

Notes: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups. * indicates $P < 0.05$.

10. Results: Agriculture/Homestead Food Production

10.1: Summary findings

Various agricultural domains were captured in this survey: land use; agricultural inputs and services; and agricultural production, and consumption. Together, these provide an overview of agricultural practices and highlight the potential role of proposed *Suaahara* interventions to improve agricultural production and to increase consumption of nutritious foods by infants and young children.

For land use, we report on land access, ownership, and use of different parcels of land leased or owned by the household. Information on decision-making regarding agricultural production and labor inputs was also sought. We also report on whether households received and used a variety of agricultural inputs from various sources. Finally, information was gathered on the production of major field crops and fruits and vegetables. Information on decision-making regarding production, consumption, sale, and use of income from agricultural products was also obtained. Information regarding the ownership of animals and production of animal source foods was also captured.

Almost all households interviewed own land, but the landholdings on average are about half a hectare. While the primary use of land is to cultivate crops through rain-fed irrigation, about a third report leaving the land fallow (Table 10.1). Only 6 percent of men and 3 percent of women reported interaction with an extension worker and even less availability of and access to village model farmers (Table 10.2) which is to be expected given that at baseline, *Suaahara's* agricultural interventions had not yet started.

While about half of households report growing green leafy vegetables, many fewer grow fruits and vegetables. Among animal products, milk is the most popular (in production and consumption) with half of households reporting that they produced milk, followed by poultry and meat, at 23 and 12 percent, respectively. Taken together, the households in our sample favor production of field crops, whereas the production of fruits, vegetables, and animal products is low (Figures 10.1 and 10.2 and Table 10.3 and 10.4).

10.2: Agricultural land, inputs, and assets

Table 10.1: Land access and use, by program group

Land characteristics	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Mean (SD)	Mean (SD)	Mean (SD)
Total land owned (in hectares)	0.5 (1.0)	0.5 (0.7)	0.5 (0.9)
Household cultivated land (hectares)	0.4 (0.6)	0.4 (0.6)	0.4 (0.6)
	Percent	Percent	Percent
Households with access to any land	97.0	99.6	98.3
	N=1,978	N=2,032	N=4,010
Location of land			
At homestead	96.2	95.1	95.6
Village/ward within VDC	80.0	78.7	79.4
Another ward within VDC	24.8	18.5	21.6
Ward outside the VDC but within the district	8.4	4.8	6.6
Outside the district	5.1	3.6	4.3
Outside Nepal	0.1	0.0	0.0
Ownership status			
Owns with deed	55.3	59.6	57.5
Family property (other than HH member)	31.1	27.0	29.0
Rent/ <i>adiya</i> /mortgage/borrow	9.2	6.4	7.7
Owns without deed	3.9	3.0	3.4
Allocated by an authority	0.5	3.9	2.3
Main use of land (in hectares)			
Cultivated crops (included kitchen garden)	77.0	79.9	78.5
Only use for HH living	7.0	6.2	6.6
Fallow	7.8	9.9	8.8
Rented/leased out/ <i>adiya</i> out/mortgaged out	3.9	2.9	3.4
Used for livestock/cowshed	2.1	0.0	1.0
Other purpose	0.8	0.0	0.4
Orchard/tea garden	0.1	0.3	0.2
Gave it free of cost	0.9	0.3	0.6
Virgin/never used land	0.0	0.3	0.2
Pasture/meadow	0.1	0.2	0.1
Pond/lake	0.1	0.0	0.1
Flower garden	0.1	0.0	0.1
Main source of water (in hectares)			
Rain	45.9	54.1	50.0
Dam/canal	20.2	17.0	18.5
River/stream	2.6	4.9	3.8
Deep tubewell/ borehole	8.3	1.0	4.6
Well/pond / Well water	0.8	1.9	1.4
Tap water	0.4	0.5	0.5
Rain harvesting	0.5	0.5	0.5
Shallow tubewell	0.5	0.3	0.4
Spring water	0.2	0.1	0.1
Other	0.1	0.0	0.0

Table 10.2: Contact with extension workers in agriculture, livestock, and fisheries, by program group

Agriculture/livestock/fisheries personnel	Intervention Percent N=2,040	Comparison Percent N=2,040	All Percent N=4,080
Men meeting with: (N=1264-I, N=1152-C, N=2416-A)			
Agriculture/livestock/fisheries extension worker	5.8	5.6	5.7
Village model farmers	2.9	2.5	2.7
Women meeting with: (N=2040-I, 2040-C, 4080-A)			
Agriculture/livestock/fisheries extension worker	2.7	3.2	2.9
Village model farmers	1.1	0.6	0.9

10.3 Agricultural production

Figure 10.1: Field crops grown by households, by program group

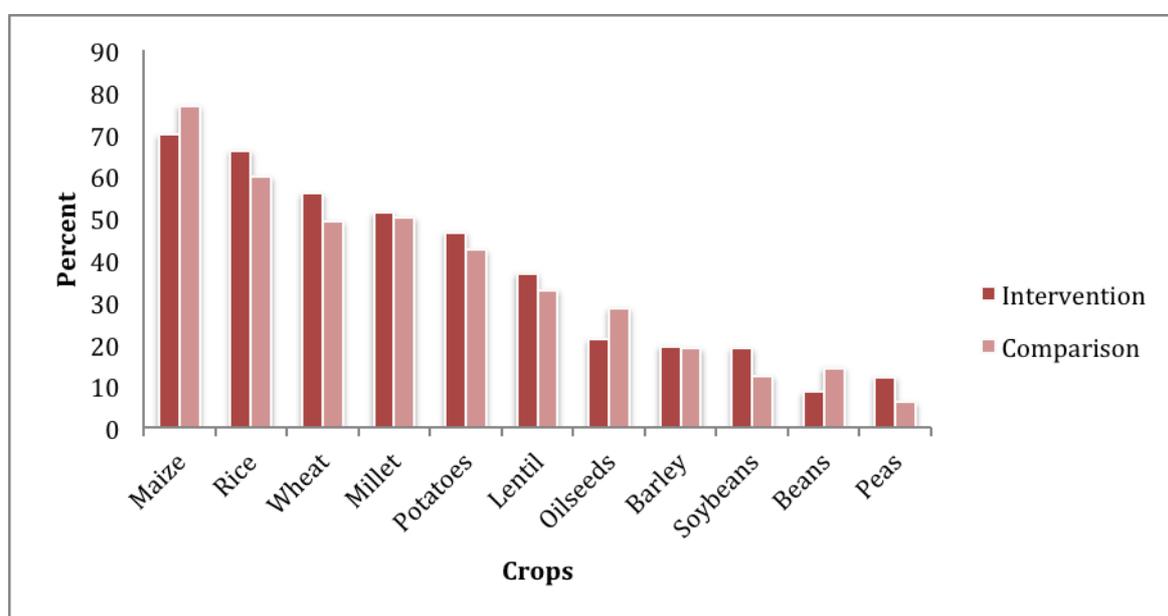


Figure 10.2: Fruits and vegetables grown by households, by program group

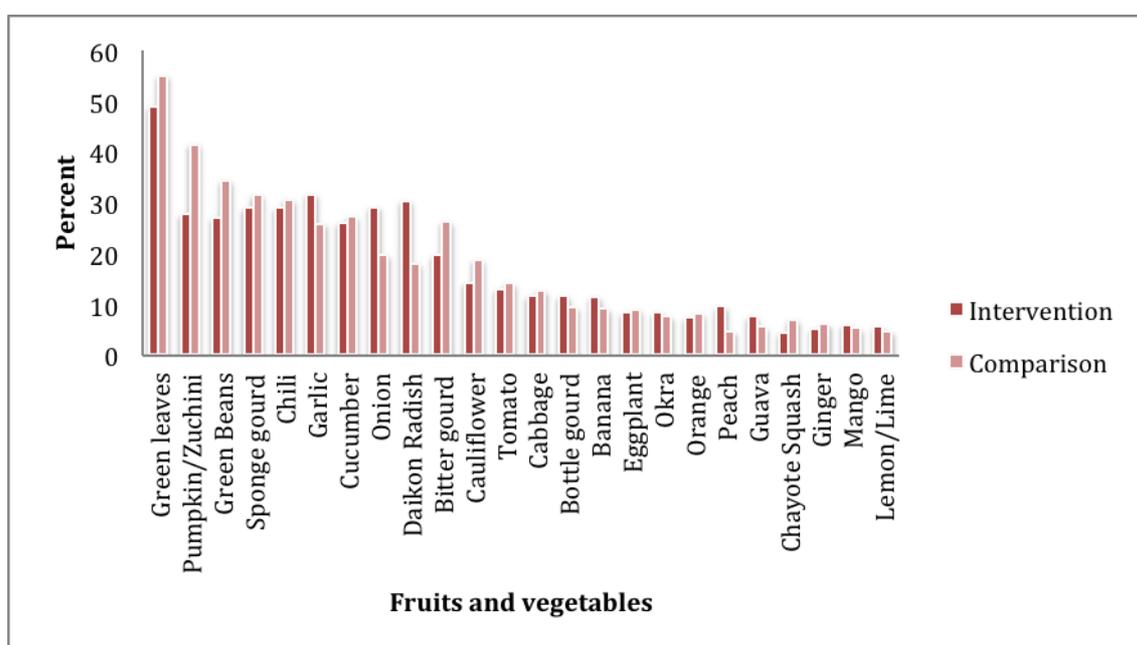


Table 10.3: Household ownership of animals, by program group

Animals	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Large animals			
Cattle/buffalo/oxen/cow/yak	78.2	83.6	80.9
Horse	0.3	1.7	1.0
Donkey/Mule	0.2	1.2	0.7
Small animals			
Goat	58.2	66.4	62.3
Guinea fowl/pigeon/duck/hen/poultry	49.7	58.8	54.2
Bees/beeives	7.9	8.0	8.0
Pig	6.4	9.6	8.0
Rabbit	0.8	4.7	2.8
Sheep	1.7	3.5	2.6
Fish pond/aquaculture	0.9	0.3	0.6
Other	0.1	0.0	0.0

Table 10.4: Quantity of animal products produced, by program group

Animal products produced (for producing HHs only)	Intervention	Comparison	All
	Mean (Kg)	Mean (Kg)	Mean (Kg)
Milk (N=1,150-I, 900-C, 2,050-A)	667.9	475.7	583.5
Animal meat/offal (N=229-I, 244-C, 473-A)	33.1	21.9	27.3
Poultry meat/offal (N=477-I, 394-C, 871-A)	13.6	12.2	13.0
Leather/wool (N=19-I, 41-C, 60-A)	19.2	9.4	12.5
Honey (N=106-I, 97-C, 203-A)	3.6	4.3	3.9
Eggs (N=510-I, 533-C, 1,043-A)*	190.0	184.2	187.0

Note: Eggs are measured in pieces/number, not kilograms.

Table 10.5: Quantity of vegetables produced, by program group

Vegetables produced (for producing HH only)	Intervention	Comparison	All
	Mean (Kg)	Mean (Kg)	Mean (Kg)
Green leafy vegetables (N=997-I, 1121-C, 2,118-A)	716.7	255.0	472.3
Capsicum/bell pepper (N=2-I, 4-C, 6-A)	7.5	493.0	331.2
Coriander (N=96-I, 28-C, 124-A)	185.9	75.1	100.1
Cabbage (N=238-I, 260-C, 498-A)	93.1	56.3	73.9
Bottle gourd (N=232-I, 191-C, 423-A)	52.8	61.4	56.7
Ginger (N=106-I, 125-C, 231-A)	19.0	85.0	54.7
Pumpkin/zucchini (N=562-I, 838-C, 1,400-A)	42.1	53.8	49.1
Tomato (N=266-I, 289-C, 555-A)	44.6	46.7	45.7
Cucumber (N=531-I, 555-C, 1086-A)	34.9	43.5	39.3
Daikon radish (N=368-I, 620-C, 988-A)	30.7	39.8	34.1
Okra/lady finger (N=173-I, 156-C, 329-A)	13.8	50.9	31.4
Onion (N=595-I, 403-C, 998-A)	33.6	22.7	29.2
Eggplant (N=170-I, 184-C, 354-A)	22.8	29.3	26.2
Sponge gourd (N=591-I, 643-C, 1,234-A)	19.2	23.6	21.5
Green beans (N=553-I, 701-C, 1,254-A)	16.7	25.0	21.3
Bitter gourd (N=402-I, 535-C, 937-A)	18.7	22.6	21.0
Carrots (N=26-I, 39-C, 65-A)	28.5	9.9	17.3
Garlic (N=646-I, 528-C, 1,174-A)	8.3	13.4	10.6
Turmeric (N=125-I, 25-C, 150-A)	13.8	6.1	7.4
Chili (N=591-I, 625-C, 1,216-A)	5.3	8.9	7.1

Table 10.6: Quantity of fruit produced, by program group

Fruit produced (for producing households only)	Intervention	Comparison	All
	Mean (Kg)	Mean (Kg)	Mean (Kg)
Apple (N=15-I, 127-C, 142-A)	55.6	231.1	212.6
Mango (N=123-I, 108-C, 231-A)	261.0	76.4	174.7
Jack Fruit (N=45-I, 25-C, 70-A)	128.1	164.1	141.0
Pear (N=79-I, 52-C, 131-A)	98.6	160.3	123.1
Orange/tangerine (N=151-I, 166-C, 317-A)	82.0	157.8	121.7
Plum (N=81-I, 42-C, 123-A)	103.8	42.4	82.8
Peach (N=195-I, 96-C, 291-A)	65.6	66.2	65.8
Co-co yam (N=49-I, 40-C, 89-A)	40.6	52.5	46.0
Walnut (N=40-I, 31-C, 71-A)	37.4	56.5	45.7
Guava (N=155-I, 114-C, 269-A)	46.8	37.6	42.9
Papaya (N=53-I, 92-C, 145-A)	38.0	38.0	38.0
Lemon/lime (N=113-I, 83-C, 196-A)	33.1	43.6	37.6
Pomegranate (N=40-I, 22-C, 62-A)	41.3	22.5	34.6
Lychee (N=14-I, 14-C, 28-A)	32.7	30.1	31.4
Pineapple (N=23-I, 11-C, 34-A)	18.0	32.2	22.6

Table 10.7: Vegetables consumed, sold, and stored among producing households, by program group

Vegetables	Intervention	Comparison	All
	Percent	Percent	Percent
Okra/lady finger (N=173-I, 156-C, 329-A)			
Consumed	98.3	98.2	98.3
Sold	0.5	1.1	0.8
Stored	0.1	0.1	0.1
Sponge gourd (N=591-I, 643-C, 1234-A)			
Consumed	95.0	94.9	95.0
Sold	0.5	0.6	0.5
Stored	0.2	0.0	0.1
Eggplant (N=170-I, 184-C, 354-A)			
Consumed	96.8	92.9	94.8
Sold	1.3	2.1	1.7
Stored	0.0	0.7	0.4
Carrots (N=26-I, 39-C, 65-A)			
Consumed	94.2	94.8	94.6
Sold	3.5	0.0	1.4
Stored	1.5	4.7	3.4
Bitter melon (N=402-I, 535-C, 937-A)			
Consumed	93.7	94.0	93.9
Sold	2.0	1.3	1.6
Stored	0.4	1.3	0.9
Green leafy vegetables (N=997-I, 1121-C, 2118-A)			
Consumed	94.4	94.5	94.4
Sold	1.0	1.4	1.3
Stored	0.5	0.9	0.7
Green beans (N=553-I, 701-C, 1254-A)			
Consumed	94.6	93.4	94.0
Sold	1.9	2.9	2.5
Stored	1.0	1.2	1.1
Cauliflower (N=291-I, 382-C, 673-A)			
Consumed	92.5	93.0	92.7
Sold	5.9	2.9	4.2
Stored	0.2	2.7	1.6
Daikon radish (N=368-I, 620-C, 988-A)			
Consumed	93.4	91.8	92.8

Sold	2.0	1.1	1.7
Stored	0.7	2.7	1.5
Cucumber (N=531-I, 555-C, 1086-A)			
Consumed	91.3	89.6	90.4
Sold	3.9	4.0	4.0
Stored	0.2	1.2	0.7
Bottle gourd (N=232-I, 191-C, 423-A)			
Consumed	89.1	90.1	89.6
Sold	2.4	3.6	2.9
Stored	0.1	0.0	0.1
Tomato (N=266-I, 289-C, 555-A)			
Consumed	89.4	88.7	89.4
Sold	6.6	6.6	6.6
Stored	0.0	1.2	0.6
Chili (N=591-I, 625-C, 1216-A)			
Consumed	90.3	88.2	89.2
Sold	1.8	1.9	1.8
Stored	12.3	6.9	9.5
Pumpkin/zucchini (N=562-I, 838-C, 1400-A)			
Consumed	91.9	82.9	86.5
Sold	0.8	0.8	0.8
Stored	0.7	10.9	6.8
Cabbage (N=238-I, 260-C, 498-A)			
Consumed	89.4	79.8	84.4
Sold	7.3	4.0	5.6
Stored	1.1	12.5	7.0
Onion (N=595-I, 403-C, 998-A)			
Consumed	82.0	85.3	83.3
Sold	2.4	1.8	2.2
Stored	12.7	10.1	11.7
Garlic (N=646-I, 528-C, 1174-A)			
Consumed	68.8	70.1	69.4
Sold	1.2	0.7	1.0
Stored	27.7	27.5	27.6
Coriander (N=96-I, 28-C, 124-A)			
Consumed	81.9	65.1	68.9
Sold	0.3	7.9	6.2
Stored	14.0	25.6	23.0
Ginger (N=106-I, 125-C, 231-A)			
Consumed	77.8	57.0	66.5
Sold	5.5	24.6	15.8
Stored	8.9	14.5	11.9
Turmeric (N=125-I, 25-C, 150-A)			
Consumed	68.4	65.1	65.7
Sold	8.2	2.5	3.5
Stored	15.7	29.9	27.5
Capsicum/bell pepper (N=2-I, 4-C, 6-A)			
Consumed	100.0	1.5	34.3
Sold	0.0	98.5	65.7
Stored	0.0	0.0	0.0

Table 10.8: Fruit consumed, sold, and stored, by program group

Fruits (among producing HHs only)	Intervention	Comparison	All
	Percent	Percent	Percent
Pineapple (N=23-I, 11-C, 34-A)			
Consumed	96.7	87.5	93.8
Sold	0.0	0.0	0.0
Stored	0.0	9.1	2.9
Co-co yam (N=49-I, 40-C, 89-A)			
Consumed	93.8	92.8	93.4
Sold	0.0	0.4	0.2
Stored	0.3	2.5	1.3
Pomegranate (N=40-I, 22-C, 62-A)			
Consumed	90.8	88.3	89.9
Sold	4.3	0.0	2.8
Stored	1.0	0.0	0.6
Walnut (N=40-I, 31-C, 71-A)			
Consumed	95.0	78.8	87.9
Sold	0.0	13.3	5.8
Stored	3.1	0.3	1.9
Plum (N=81-I, 42-C, 123-A)			
Consumed	89.2	79.8	86.0
Sold	0.7	2.3	1.3
Stored	0.0	0.0	0.0
Papaya (N=53-I, 92-C, 145-A)			
Consumed	82.5	87.7	85.8
Sold	0.5	0.0	0.2
Stored	0.0	0.0	0.0
Peach (N=195-I, 96-C, 291-A)			
Consumed	86.5	82.1	85.0
Sold	0.4	2.1	1.0
Stored	0.3	0.7	0.4
Guava (N=155-I, 114-C, 269-A)			
Consumed	83.3	83.5	83.4
Sold	1.9	0.0	1.1
Stored	0.2	0.0	0.1
Orange/tangerine (N=151-I, 166-C, 317-A)			
Consumed	85.7	78.4	81.9
Sold	7.3	14.2	11.0
Stored	0.0	0.0	0.0
Lemon/lime (N=113-I, 83-C, 196-A)			
Consumed	82.2	79.9	81.2
Sold	3.9	4.0	3.9
Stored	1.5	1.4	1.5
Mango (N=123-I, 108-C, 231-A)			
Consumed	78.1	79.4	78.7
Sold	0.9	1.6	1.2
Stored	0.0	1.0	0.5
Pear (N=79-I, 52-C, 131-A)			
Consumed	74.4	81.0	77.0
Sold	1.8	2.1	1.9
Stored	0.2	0.0	0.1
Lychee (N=14-I, 14-C, 28-A)			
Consumed	85.5	67.0	76.3
Sold	13.1	0.0	6.5
Stored	0.0	0.0	0.0
Apple (N=15-I, 127-C, 142-A)			
Consumed	84.9	66.3	68.2
Sold	14.7	9.6	10.2

Stored	0.0	15.0	13.5
<hr/>			
Jack fruit (N=45-I, 25-C, 70-A)			
Consumed	67.4	47.6	60.3
Sold	10.3	0.0	6.6
Stored	0.0	3.5	1.3
<hr/>			

11. Results: women's empowerment in agriculture

11.1: Summary findings

Women's Empowerment in Agriculture Index

This survey uses the Women's Empowerment in Agriculture Index (WEAI), a new tool designed to measure empowerment, agency, and inclusion of women in the agricultural sector in an effort to enable the identification of ways to overcome obstacles and constraints related to women's role in agricultural growth. The WEAI assesses women's control over critical aspects of life in the household, community, and economy. The index aims to increase understanding of the connections between women's empowerment, food security, and agricultural growth. It measures the roles and extent of women's engagement in the agriculture sector in five domains: (1) decisions about agricultural production, (2) access to and decision-making power over productive resources, (3) control over use of income, (4) leadership in the community, and (5) time use. It also measures women's empowerment relative to men within their households. This aggregate index is composed of two sub-indexes: the five domains of empowerment sub-index (5DE) and the gender parity sub-index (GPI).

The 5DE sub-index, which receives 90 percent of the weight in the overall WEAI, measures empowerment across the five domains of production, resources, income, leadership, and time. Each domain is weighted equally, as is true for the indicators within each domain. This index measures empowerment rather than disempowerment; a woman is defined as empowered in 5DE if she has adequate achievements in four of the five domains or is empowered in some combination of the weighted indicators that reflect 80 percent total adequacy (Table 11.1). The gender parity sub-index measures relative inequality; it reflects the percentage of women who are as empowered as the men in their households. For households with gender disparity, the GPI sub-index shows the gap that needs to be closed. The GPI sub-index is able to measure gender parity in empowerment within the household by looking at the answers given to identical questions by a woman and a man in the same household. By definition, households without a primary adult male are excluded from this measure, and thus the aggregate WEAI uses the mean GPI value of dual-adult households.

Therefore, the WEAI is based on both sub-indexes and shows both the degree to which women are empowered in their households and communities across the five domains and the degree of inequality between women and men within the household. Measuring each sub-index results in a number ranging from 0 to 1; higher values in the 5DE score indicate greater empowerment and higher values in the GPI score indicate greater gender parity. The total WEAI score is a weighted sum of the 5DE and GPI.

Women's Empowerment in Agriculture Index and survey findings

In this sample, the 5DE sub-index reveals that 43 percent of men are empowered whereas only 12 percent of women are empowered in the five domains of agricultural production. The intensity of disempowerment among the disempowered is much greater for women as well. This is seen because the adequacy score for men is 65 and only 53 for women. Furthermore, the GPI sub-index shows that nearly three-quarters of Nepali women in the sample are without any gender parity with respect to empowerment in the household (Table 11.2).

Within the 5DE sub-index, each domain contributes to empowerment of this sample to a different degree. For women, disempowerment is spread across the five domains as the range of contribution is from 18 to 24. However, for men, the contribution of the different domains to disempowerment is more diverse. Control of use of income contributes only 8 percent, whereas production and leadership domains each account for 27 and 28 percent, respectively (Table 11.3). A graphical representation of the disempowerment sub-index further highlights the relative contribution of the five different domains through the ten indicators. The size of the bars indicates the extent of disempowerment and the colors within each bar represent the absolute contribution of each indicator to the overall disempowerment index for women and men respectively. Women and men appear to be disempowered in different ways: the

workload, control over income, access to and decisions over credit, and autonomy in production indicators contribute more towards women's disempowerment compared to men's (Figure 11.1).

Disaggregated indicators of women's empowerment

The WEAI helps identify key constraints to women's empowerment in agriculture and it also provides additional information about various indicators and how these vary by program group. Regarding activities related to household production, around 90 percent of women are involved in food crops production and nearly the same amount in raising livestock. However, less than 20 percent of women are involved in wage and salary employment or nonfarm economic activity (Table 11.4). Among women involved in household productive activities, the majority report to have at least some input into decision-making for these activities (Table 11.5).

Regarding resources, only a small percentage of households access credit. About one-third have taken cash or in-kind credit from friends or relatives and about one-quarter from informal lenders, the two most commonly reported sources for credit (Table 11.6).

Women have less control over decision-making regarding income than they do for decision-making more generally. In food crop farming, cash crop farming, livestock raising, and fishing at least 1 in 4 women report to have no input at all in decisions on income generated (Table 11.7).

With respect to leadership, we conducted further analysis looking at women's participation in groups and women's level of comfort speaking in public. Women's participation in community groups is quite low. In many instances, women report that groups do not exist. Even when they exist, usually less than 10 to 15 percent of women are members or "active" members. Mothers' groups are the most common but also are not available for about 30% of surveyed women (Table 11.8). The majorities of women report that they are not at all comfortable, have great difficulty, or have little difficulty speaking in public. Only about 20 percent of women report to be very comfortable or mostly comfortable to speak up to help decide community infrastructure, ensure proper wage payments for public works, or protest official misbehavior (Table 11.9).

Measured via 24 hour recall, women are resting on average ten hours a day, engaging in both agricultural and domestic labor about four hours each with the remaining six hours devoted to personal care, care for others, and leisure activities (Table 11.10).

Table 11.1: Weights used in calculation of the five domains of empowerment sub-index

Domain	Indicator	Weight
Production	Input in productive decisions	1/10
	Autonomy in production	1/10
Resources	Ownership of assets	1/15
	Purchase, sale, or transfer of assets	1/15
	Access to and decisions about credit	1/15
Income	Control over use of income	1/5
Leadership	Group member	1/10
	Speaking in public	1/10
Time	Workload	1/10
	Leisure	1/10

Source: Alkire et. al. 2010.^{xii}

Table 11.2: Summary of WEAI and sub-index scores, by program group and sex

Women's Empowerment in Agriculture Index	Intervention		Comparison		All	
	Women	Men	Women	Men	Women	Men
	Percent	Percent	Percent	Percent	Percent	Percent
Five domains of empowerment sub-index	N=1,361	N=653	N=1,422	N=485	N=2,783	N=1,138
Disempowered headcount	90.2	58.5	86.8	55.3	88.5	57.1
Empowered headcount	9.8	41.5	13.2	44.7	11.5	42.9
Inadequacy score (among disempowered, the percent of domains with inadequate achievement,)	48.1	35.5	45.4	34.4	46.7	35.0
Adequacy score (among disempowered, the percent of domains with adequate achievement,)	51.9	64.5	54.6	65.6	53.3	65.0
Disempowerment index (ratio combining disempowered headcount and inadequacy score)	0.4	0.2	0.4	0.2	0.4	0.2
5DE index (ratio of degree of empowerment in the 5 domains)	0.6	0.8	0.6	0.8	0.6	0.8
Gender parity sub-index	N=570		N=435		N=1,005	
Women with no gender parity (percent)	74.0		73.6		73.8	
Women with gender parity (percent)	26.0		26.4		26.2	
Average empowerment gap (percent)	33.0		32.7		32.9	
GPI (ratio)	0.76		0.76		0.76	
Overall WEAI Scores (ratio)	0.585		0.621		0.604	

Table 11.3: Five domains of empowerment, by dimension and sex

Statistics	Production		Resources			Income	Leadership		Time	
	Input in productive decisions	Autonomy in production	Ownership of assets	Purchase, sale, or transfer of assets	Access to and decisions on credit	Control over use of income	Group member	Speaking in public	Workload	Leisure
Indicator Weights	0.1	0.1	0.0667	0.0667	0.0667	0.2	0.1	0.1	0.1	0.1
Women										
Censored headcount (1)	0.2	0.7	0.1	0.4	0.7	0.4	0.8	0.2	0.6	0.2
Percent contribution	3.9	16.6	2.4	6.3	10.7	17.7	18.5	5.0	14.6	4.3
Contribution (2)	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0
Percent contribution by dimension	20.5		19.4			17.7	23.5		18.9	
Men										
Censored headcount (1)	0.1	0.5	0.0	0.2	0.3	0.1	0.5	0.0	0.2	0.1
Percent contribution	4	23.1	1.3	5.5	11.5	8.1	26.4	1.2	12.2	6.7
Contribution (2)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Percent contribution by dimension	27.1		18.3			8.1	27.6		18.9	

Notes: (1) Defined as proportion inadequate in each category; (2) censored headcount times with appropriate weight.

Figure 11.1: Contribution of each indicator to disempowerment, by sex

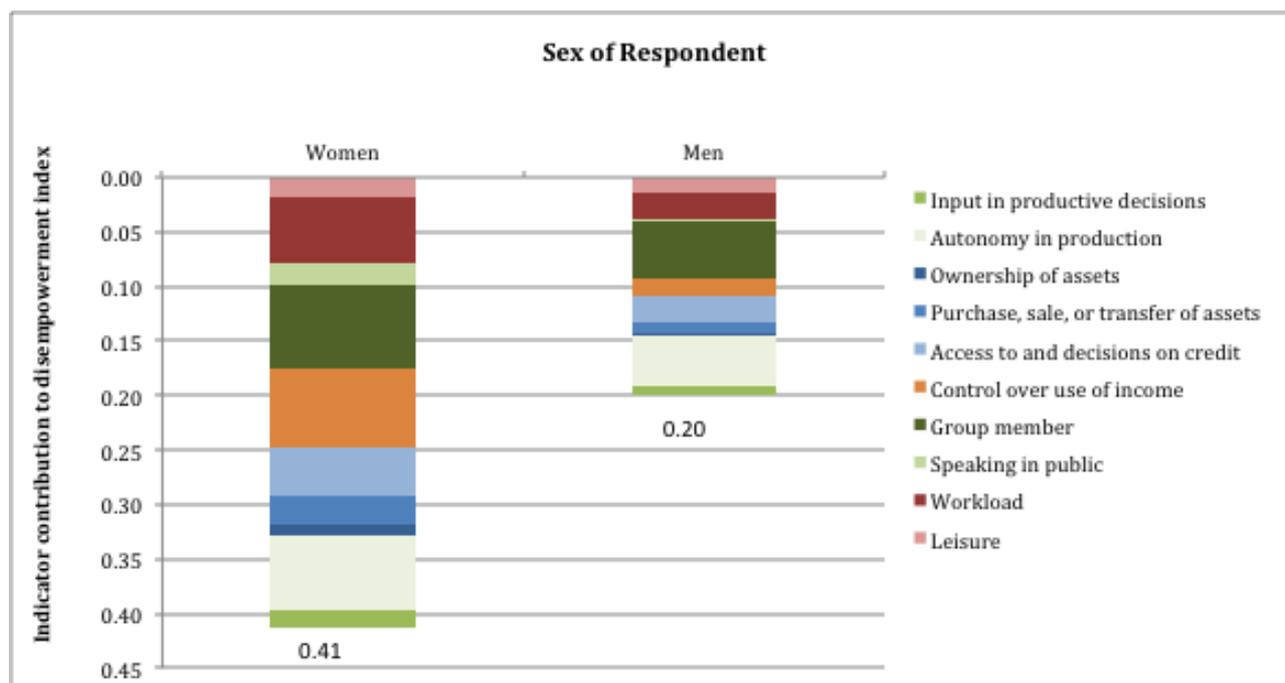


Table 11.4: Women's participation in household productive activities, by program group

Household productive activities	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Food crop farming	87.0	91.3	89.1
Livestock raising	84.0	88.9	86.5
Poultry	48.2	58.8	53.5
Cash crop farming	50.6	51.7	51.2
Wage and salary employment (agriculture and non-agriculture)	17.0	20.7	18.9
Nonfarm economic activities	10.3	8.0	9.1
Fishing	1.4	2.5	2.0

Table 11.5: Women's decision-making in household productive activities, by program group

Degrees of input	Intervention	Comparison	All
	Percent	Percent	Percent
Fishing (N=29-I, 51-C, 80-A)			
No input	10.3	11.8	11.3
Input into very few decisions	17.2	11.8	13.8
Input into some decisions	34.5	25.5	28.8
Input into most decisions	17.2	37.3	30.0
Input into all decisions	20.7	13.7	16.3
Cash crop farming (N=1,033-I, 1,054-C, 2,087-A)			
No input	7.4	5.8	6.6
Input into very few decisions	16.7	11.7	14.1
Input into some decisions	35.4	27.8	31.6
Input into most decisions	24.4	27.2	25.8
Input into all decisions	16.2	27.5	21.9
Food crop farming (N=1,774-I, 1,862-C, 3,636-A)			
No input	8.1	4.5	6.3
Input into very few decisions	15.4	11.1	13.2
Input into some decisions	30.7	25.9	28.3
Input into most decisions	27.7	31.6	29.7
Input into all decisions	18.1	26.9	22.6
Livestock raising (N=1,714-I, 1,813-C, 3,527-A)			
No input	6.6	5.9	6.2
Input into very few decisions	16.6	10.1	13.3
Input into some decisions	27.5	27.3	27.4
Input into most decisions	31.2	31.5	31.3
Input into all decisions	18.1	25.2	21.8
Non-farm economic activities (N=210-I, 163-C, 373-A)			
No input	6.7	4.3	5.6
Input into very few decisions	13.8	15.3	14.5
Input into some decisions	21.4	28.8	24.7
Input into most decisions	38.6	26.4	32.2
Input into all decisions	19.5	25.2	22.0
Poultry (N=983-I, 1,199-C, 2,182-A)			
No input	5.5	5.4	5.5
Input into very few decisions	14.5	9.4	11.7
Input into some decisions	27.7	25.8	26.6
Input into most decisions	31.6	30.3	30.9
Input into all decisions	20.8	29.1	25.3
Wage and salary employment (agriculture and non-agriculture) (N=346-I, 423-C, 769-A)			
No input	1.7	0.7	1.2
Input into very few decisions	3.5	1.9	2.6
Input into some decisions	13.0	9.9	11.3
Input into most decisions	27.5	32.6	30.3
Input into all decisions	54.3	54.9	54.6

Table 11.6: Household access to credit reported by women, by program group

Sources of credit (cash and in-kind)	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Friends or relatives	31.9	32.6	32.2
Informal lenders	22.2	28.8	25.5
Savings and credit cooperatives/groups	12.4	15.1	13.7
Women's groups	12.6	13.0	12.8
Formal lenders	8.4	2.6	5.5
Nongovernmental organizations	1.0	1.8	1.4

Table 11.7: Women's control over income generated by household productive activities, by program group

Degrees of input	Intervention	Comparison	All
	Percent	Percent	Percent
Fishing (N=18-I, 7-C, 25-A)			
No input	33.3	28.6	32.0
Input into very few decisions	22.2	14.3	20.0
Input into some decisions	11.1	28.6	16.0
Input into most decisions	11.1	14.3	12.0
Input into all decisions	22.2	14.3	20.0
Livestock raising (N=807-I, 726-C, 1533-A)			
No input	30.6	25.2	28.1
Input into very few decisions	17.8	12.4	15.3
Input into some decisions	22.8	20.0	21.5
Input into most decisions	14.6	17.6	16.1
Input into all decisions	14.1	24.8	19.2
Cash crop farming (N=169-I, 220-C, 389-A)			
No input	24.9	27.7	26.5
Input into very few decisions	21.3	13.6	17.0
Input into some decisions	26.0	22.3	23.9
Input into most decisions	8.9	17.3	13.6
Input into all decisions	18.9	19.1	19.0
Food crop farming (N=471-I, 354-C, 825-A)			
No input	25.9	26.8	26.3
Input into very few decisions	21.9	13.8	18.4
Input into some decisions	24.4	18.4	21.8
Input into most decisions	13.2	18.1	15.3
Input into all decisions	14.7	22.9	18.2
Poultry (N=356-I, 383-C, 739-A)			
No input	22.2	20.6	21.4
Input into very few decisions	12.6	10.7	11.6
Input into some decisions	25.6	19.8	22.6
Input into most decisions	18.5	20.9	19.8
Input into all decisions	21.1	27.9	24.6
Nonfarm economic activities (N=209-I, 155-C, 364A)			
No input	8.1	11.6	9.6
Input into very few decisions	14.8	16.8	15.7
Input into some decisions	22.0	23.2	22.5
Input into most decisions	32.5	23.9	28.9
Input into all decisions	22.5	24.5	23.4
Wage and salary employment (agriculture and non-agriculture) (N=345-I, 416-C, 761-A)			
No input	2.3	1.0	1.6
Input into very few decisions	3.2	3.6	3.4
Input into some decisions	13.3	8.2	10.5
Input into most decisions	24.6	28.4	26.7

Table 11.8: Women's membership in community groups, by program group

Community groups	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Mothers' groups			
Member	16.2	19.0	17.6
Active member	7.0	9.2	8.1
Not a member	37.5	53.3	45.4
Group doesn't exist	39.3	18.5	28.9
Other women's groups			
Member	11.0	7.8	9.4
Active member	5.3	4.7	5.0
Not a member	18.0	15.9	17.0
Group doesn't exist	65.8	71.7	68.7
Land/forest users			
Member	14.1	4.5	9.3
Active member	2.1	1.7	1.9
Not a member	41.6	50.6	46.1
Group doesn't exist	42.3	43.2	42.8
Water users			
Member	11.8	3.0	7.4
Active member	1.4	1.2	1.3
Not a member	30.7	30.0	30.3
Group doesn't exist	56.1	65.8	61.0
Credit/microfinance			
Member	7.0	3.1	5.0
Active member	2.9	3.9	3.4
Not a member	19.6	13.1	16.3
Group doesn't exist	70.5	79.9	75.2
Agriculture/livestock/fisheries			
Member	5.4	2.5	4.0
Active member	2.3	2.4	2.3
Not a member	18.7	21.2	20.0
Group doesn't exist	73.6	73.9	73.8
Civic group or charitable group			
Member	1.6	0.6	1.1
Active member	0.4	0.5	0.5
Not a member	23.6	28.0	25.8
Group doesn't exist	74.4	70.9	72.7
Mutual help/insurance			
Member	1.1	0.5	0.8
Active member	0.6	0.4	0.5
Not a member	4.4	3.0	3.7
Group doesn't exist	94.0	96.0	95.0
Religious groups			
Member	1.0	0.4	0.7
Active member	0.4	0.3	0.3
Not a member	5.6	4.2	4.9
Group doesn't exist	92.9	95.2	94.0
Trade/business association			
Member	0.3	0.0	0.2
Active member	0.0	0.1	0.0
Not a member	1.2	1.2	1.2
Group doesn't exist	98.4	98.7	98.6

Table 11.9: Women's comfort regarding speaking in public, by program group

Women's comfort levels with speaking in public	Intervention	Comparison	All
	Women	Women	
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
To help decide on community infrastructure			
Very comfortable	2.6	1.9	2.2
Mostly comfortable	17.9	18.9	18.4
With a little difficulty	26.1	25.1	25.6
With great difficulty	25.8	33.2	29.5
Not at all	27.6	21.0	24.3
To ensure property wage payments for public works			
Very comfortable	2.5	2.5	2.5
Mostly comfortable	21.7	20.4	21.1
With a little difficulty	26.2	23.3	24.7
With great difficulty	24.1	32.7	28.4
Not at all	25.5	21.2	23.4
To protest misbehavior of authorities/officials			
Very comfortable	3.2	1.9	2.6
Mostly comfortable	17.4	17.4	17.4
With a little difficulty	20.2	21.0	20.6
With great difficulty	23.4	27.1	25.2
Not at all	35.8	32.7	34.2

Table 11.10: Women's time allocated for work and leisure, by program group

Work and leisure activities (in hours)	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Mean (SD)	Mean (SD)	Mean (SD)
Sleeping/resting	9.8 (2.3)	10.2 (2.4)	10.0 (2.4)
Agricultural labor	4.0 (3.6)	4.3 (3.6)	4.2 (3.6)
Domestic labor	4.2 (2.2)	4.0 (2.4)	4.1 (2.3)
Care for others	2.2 (1.8)	2.3 (2.1)	2.2 (1.9)
Personal care (eating/drinking/hygiene)	1.8 (0.8)	1.7 (0.9)	1.8 (0.8)
Leisure including social and religious gatherings	1.4 (1.9)	1.0 (1.8)	1.2 (1.9)
Other labor	0.4 (1.6)	0.3 (1.4)	0.3 (1.5)
Other	0.1 (.9)	0.1 (1.0)	0.1 (2.3)
School and homework	0.0 (0.3)	0.0 (0.3)	0.0 (0.3)

12. Results: Behavior Change Communication

12.1: Summary findings

Maternal child feeding knowledge and perceptions

To assess mothers' knowledge and perceptions related to child feeding, this survey focuses on knowledge of ideal breastfeeding practices, such as giving colostrum to the baby or how soon after birth to breastfeed, and appropriate introduction and feeding frequency of complementary foods. Other variables include exposure to IYCF messages and mothers' knowledge of best IYCF practices, hand washing, and feeding the sick child.

Most mothers report having heard messages on the importance of early initiation of breastfeeding but only half have heard about not giving prelacteals. Even fewer have heard about not giving water, liquids, or foods before six months of age. Less than 30 percent have heard messages about how to feed the sick child (Table 12.1). Regarding what to do if the mother thinks she does not have sufficient breast milk, more than half of respondents felt that mothers should give animal milk to the child. Many also felt that mothers eating more nutritious foods would help increase milk supply. Only about 10 percent suggest breastfeeding more often/frequently and less than 2 percent suggested breastfeeding the child on demand (Table 12.2). For introduction of water and other clear liquids, nearly half of mothers suggested a time before six months of age. On knowledge of the introduction of complementary foods, over half of mothers reported a late age for introduction of eggs and meats (Table 12.3).

Maternal access to information

Another key variable for assessing potential for various behavior change communication strategies is to examine the use of different forms of mass media that increase exposure to health, nutrition, and agricultural messages.

When asked about major sources for receiving nutrition information, ten to twenty percent of mothers reported health facilities, radio/FM, and television (Table 12.4). These same sources seem to be the predominant ways health information is received as well (Table 12.5). Information on agriculture is not often heard, with radio/FM appearing as the only source of information for about 10 percent of the sample (Table 12.6). Over 60 percent of mothers noted radio/FM as the preferred method for receiving information on health and nutrition (Table 12.7).

Grandmothers' knowledge and perceptions

About 65 percent of grandmothers indicated that women should eat more than usual during pregnancy, but only 13 percent mentioned consulting health workers to ensure safe and healthy pregnancy (Table 12.8). Around 80 percent of grandmothers indicated awareness that mothers should give colostrum to a newborn child, but nearly one-third of grandmothers suggested a time period of more than the first hour for initiation of breastfeeding (Table 12.9). Over half of grandmothers mentioned an age less than 6 months old for introduction of water and other clear liquids and nearly the same for milk other than breast milk. On the other hand, about a quarter believed solid foods could not be introduced until seven months or later; over one-third believed that eggs and meat cannot be offered to a child until s/he is at least twelve months of age (Table 12.9). Grandmothers showed awareness of maternal need to eat more than usual during pregnancy but less than a quarter mentioned resting more and less than 10 percent recalled other actions for a safe and healthy pregnancy and delivery such as receiving tetanus injections and delivering in a health clinic (Table 12.10).

12.2: Maternal child feeding knowledge and perceptions

Table 12.1: Mothers' reported exposure to IYCF messages, by program group

IYCF message	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Babies should be fed only breast milk up to 6 months of age	88.1	83.3	85.7
Babies should be put to the breast immediately after birth	86.9	82.8	84.8
Hands should be washed with soap/ash and water before feeding young children	77.8	81.3	79.5
Young children should be fed mashed family foods after 6 months of age	68.8	59.2	64.0
Nothing should be put into a baby's mouth before colostrum or breast milk	60.3	42.9	51.6
Young children should be introduced to animal source foods after 6 months of age	51.0	45.6	48.3
Babies should not be given water, other liquids, or other foods except breastmilk up to 6 months of age	42.7	32.5	37.6
How to feed a child when s/he is sick	29.9	22.4	26.2

Table 12.2: Mothers' knowledge about breastfeeding, by program group

Breastfeeding factors	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Feed colostrum/first yellowish milk to baby	93.1	88.7	90.9
What to do if mother thinks she has insufficient breast milk			
Feed animal milk to the child	74.0	72.7	73.3
Mother needs to eat more nutritious foods	58.5	49.0	53.8
Mother needs to drink more water/liquid	39.3	38.0	38.7
Give other liquids/tinned milk (lactogen)/foods	21.3	31.9	26.6
Mother needs to eat more food	26.4	15.3	20.9
Breastfeed more often/frequently	10.0	8.8	9.4
Feed <i>lito</i>	9.3	5.1	7.2
After emptying one breast, switch to the other	4.0	0.8	2.4
Feed <i>cerelac</i>	1.7	2.1	1.9
Breastfeed the child on demand	2.1	1.2	1.6
Feed <i>jaulo</i>	1.6	1.4	1.5
Stop breastfeeding	0.2	0.1	0.1
Benefits of breastfeeding exclusively for the first 6 months			
Breast milk contains everything a baby needs	68.6	64.9	66.7
Protects baby from illness	53.1	54.7	53.9
Helps baby grow better	56.9	40.9	48.9
Breast milk is clean, safe, convenient	19.6	12.8	16.2
Breast milk is affordable	1.2	11.2	6.2
Young child unable to eat and digest other foods	2.6	7.0	4.8
Reduces health care costs	5.4	0.6	3.0
Don't know	2.1	2.9	2.5
Mother less likely to get pregnant	1.4	0.5	1.0
Mother's menstrual cycle delayed	0.8	0.3	0.6
No reason	0.2	0.9	0.5

Table 12.3: Mothers' knowledge about introduction of complementary foods, by program group

Food type and age groups	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Water and other clear liquids			
0-2.9 m	13.1	22.3	17.7
3-5.9 m	26.4	31.7	29.0
6-6.9 m	57.7	44.2	51.0
7-9.9 m	2.2	1.4	1.8
10-11.9 m	0.2	0.1	0.1
12 m and up	0.4	0.3	0.3
Milk (all other than breast milk)*			
0-2.9 m	7.6	10.7	9.1
3-5.9 m	22.1	27.8	25.0
6-6.9 m	65.8	55.6	60.7
7-9.9 m	3.5	4.2	3.9
10-11.9 m	0.3	0.5	0.4
12 m and up	0.8	1.2	1.0
Semi-solid foods*			
0-2.9 m	1.0	2.7	1.8
3-5.9 m	13.7	20.3	17.0
6-6.9 m	77.6	66.4	72.0
7-9.9 m	6.7	7.4	7.0
10-11.9 m	0.3	0.8	0.6
12 m and up	0.8	2.5	1.6
Solid Foods			
0-2.9 m	0.3	0.1	0.2
3-5.9 m	6.1	12.7	9.4
6-6.9 m	65.2	62.6	63.9
7-9.9 m	16.1	13.3	14.7
10-11.9 m	2.6	2.3	2.4
12 m and up	9.9	9.1	9.5
Eggs*			
0-2.9 m	0.0	0.0	0.0
3-5.9 m	3.0	7.2	5.1
6-6.9 m	43.2	37.8	40.5
7-9.9 m	18.6	18.5	18.5
10-11.9 m	5.7	7.5	6.6
12 m and up	29.6	29.1	29.4
Meat*			
0-2.9 m	0.0	0.0	0.0
3-5.9 m	2.0	6.9	4.5
6-6.9 m	39.0	36.0	37.5
7-9.9 m	16.0	16.7	16.4
10-11.9 m	5.1	7.7	6.4
12 m and up	38.0	32.7	35.3

Note: * indicates that there are 1 or 2 missing values instead of the full 4,080.

12.3: Information sources

Table 12.4: Mothers' reported sources for nutrition information, by program group

Reported sources for nutrition information	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Radio/FM	21.6	18.0	19.8
Health facility (hospital, clinic, health post, sub-health post)	18.5	13.7	16.1
Television	15.5	8.2	11.9
FCHV	7.0	8.4	7.7
Brochure/leaflet/poster/banner	7.8	7.0	7.4
Billboard/wall painting	6.9	2.8	4.9
Mothers' groups	2.6	3.1	2.9
Counselling card	2.2	2.8	2.5
Newspaper/magazine	3.0	1.4	2.2
Flipchart	2.1	2.1	2.1
Community or village gatherings	1.0	1.2	1.1
Loudspeaker	0.5	0.6	0.6
Church/religious gathering and meetings	0.1	0.2	0.2
Street drama	0.2	0.2	0.2
Movie theatre/cinema	0.1	0.1	0.1
Village model farmer	0.1	0.0	0.0

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 12.5: Mothers' reported sources of health information, by program group

Reported sources for health information	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Radio/FM	25.9	24.3	25.1
Health facility (hospital, clinic, health post, sub-health post)	26.2	22.5	24.3
Television	19.1	10.4	14.8
FCHV	9.1	11.9	10.5
Brochure/leaflet/poster/banner	9.4	8.0	8.7
Billboard/wall painting	8.9	4.1	6.5
Mothers' groups	3.7	3.6	3.7
Newspaper/magazine	3.3	2.5	2.9
Counselling card	2.3	3.3	2.8
Flipchart	2.3	2.3	2.3
Community or village gatherings	1.5	1.5	1.5
Loudspeaker	1.1	1.6	1.4
Street drama	0.3	0.3	0.3
Church/religious gathering and meetings	0.2	0.2	0.2
Movie theatre/cinema	0.1	0.2	0.1
Village model farmer	0.1	0.1	0.1

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 12.6: Mothers' reported sources of information on agriculture/homestead food production, by program group

Reported sources of information on agriculture/homestead food production	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Radio/FM	12.4	10.9	11.6
Television	7.6	3.9	5.7
Brochure/leaflet/poster/banner	1.2	1.2	1.2
Counselling card	0.4	1.9	1.2
Community or village gatherings	1.0	1.3	1.1
Billboard/wall painting	1.2	0.7	0.9
Newspaper/magazine	1.0	0.6	0.8
Mothers' groups	0.4	1.1	0.8
Health facility (hospital, clinic, health post, sub-health post)	0.3	1.0	0.6
FCHV	0.3	0.6	0.5
Flipchart	0.3	0.7	0.5
Village model farmer	0.6	0.3	0.4
Movie theatre/cinema	0.0	0.1	0.1
Loudspeaker	0.2	0.2	0.2
Church/religious gathering and meetings	0.1	0.2	0.1
Street drama	0.1	0.2	0.1

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 12.7: Mothers' preferred sources of information on health and nutrition, by program group

Preferred sources	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Radio/FM	62.6	64.2	63.4
FCHV	36.5	45.7	41.1
Health facility (hospital, clinic, health post, sub-health post)	39.2	39.7	39.4
Television	44.2	28.9	36.6
Community or village gatherings	8.3	9.5	8.9
Mothers' groups	4.1	7.5	5.8
Newspaper/magazine	7.0	4.2	5.6
Brochure/leaflet/poster/banner	2.0	4.2	3.1
Loudspeaker	3.3	1.8	2.6
Health related worker	2.6	0.1	1.3
Relatives/friends/neighbors	2.0	0.3	1.1
Billboard/wall painting	1.0	0.5	0.8
Church/religious gathering and meetings	0.3	0.5	0.4
Street drama	0.5	0.3	0.4
Non Governmental Organization	0.3	0.3	0.3
Counselling card	0.2	0.4	0.3
Village model farmer	0.2	0.1	0.1
Movie theatre/cinema	0.0	0.1	0.0
Flipchart	0.0	0.0	0.0

Note: Percentages do not sum to 100 as this was a multiple response question.

12.4: Grandmothers' knowledge and perceptions

Table 12.8: Grandmothers' knowledge and perceptions of maternal health and nutrition, by program group

Grandmothers' knowledge regarding maternal health and nutrition	Intervention	Comparison	All
	Percent	Percent	Percent
Maternal diet during pregnancy	N=927	N=926	N=1,853
Less than usual	3.9	8.6	6.3
Same as usual	28.5	29.9	29.2
More than usual	67.6	61.5	64.5
Actions to ensure a safe and health pregnancy and delivery	N=925	N=923	N=1,848
Eat nutritious food	33.1	33.2	33.2
Rest more	24.7	24.3	24.5
Eat more food	16.2	12.8	14.5
Consult health workers	16.3	10.7	13.5
Take tetanus injections	10.0	3.7	6.8
Take vitamins and minerals	6.8	5.0	5.9
Deliver in a health clinic	6.6	3.5	5.0
Do not carry heavy things	2.8	1.7	2.3
Personal hygiene	0.3	0.2	0.3

Note: Percentages on actions to ensure a safe and healthy pregnancy and delivery do not sum to 100 as this was a multiple response question.

Table 12.9: Grandmother's knowledge and perceptions regarding breastfeeding, by program group

Child health and nutrition influencing factors	Intervention	Comparison	All
	Percent	Percent	Percent
Child health and nutrition influencing factors	N=927	N=926	N=1853
Mother should give colostrum to baby	80.9	77.9	79.4
Breastfeeding initiation			
Immediately	32.6	22.7	27.6
Within 1 hour	37.3	40.9	39.1
Between 1-23.9 hours	28.8	32.8	30.8
1 day later	0.2	2.8	1.5
2 or more days later	1.1	0.8	0.9

Table 12.10: Grandmothers' knowledge and perceptions about introducing complementary foods, by program group

Age groupings	Intervention	Comparison	All
	N=927	N=925	N=1,852
	Percent	Percent	Percent
Water and other clear liquids			
0-2.9 m	15.5	25.5	20.5
3-5.9 m	30.7	33.5	32.1
6-6.9 m	52.0	40.3	46.2
7-9.9 m	1.3	0.4	0.9
10-11.9 m	0.0	0.1	0.1
12 m and up	0.4	0.1	0.3
Milk (all types of milk other than breast milk)			
0-2.9 m	12.5	13.6	13.1
3-5.9 m	30.2	33.8	32.0
6-6.9 m	54.1	47.5	50.8
7-9.9 m	2.2	3.8	3.0
10-11.9 m	0.0	0.2	0.1
12 m and up	1.1	1.1	1.1
Semi-solid foods			
0-2.9 m	0.9	1.8	1.4
3-5.9 m	20.2	27.5	23.8
6-6.9 m	71.7	61.1	66.4
7-9.9 m	5.7	6.3	6.0
10-11.9 m	0.2	1.1	0.7
12 m and up	1.3	2.3	1.8
Solid Foods			
0-2.9 m	0.0	0.1	0.1
3-5.9 m	8.7	16.1	12.4
6-6.9 m	60.6	60.5	60.6
7-9.9 m	16.4	11.7	14.0
10-11.9 m	2.4	2.0	2.2
12 m and up	11.9	9.6	10.8
Eggs			
0-2.9 m	0.0	0.0	0.0
3-5.9 m	2.9	6.6	4.8
6-6.9 m	36.1	28.1	32.1
7-9.9 m	19.0	20.6	19.8
10-11.9 m	4.9	10.5	7.7
12 m and up	37.1	34.2	35.7
Meat			
0-2.9 m	0.2	0.1	0.2
3-5.9 m	2.4	5.5	3.9
6-6.9 m	31.7	28.6	30.2
7-9.9 m	14.1	19.6	16.9
10-11.9 m	4.6	8.7	6.7
12 m and up	46.9	37.6	42.3

13. Results: Household economic indicators

13.1: Summary findings

Household characteristics

The baseline survey included a variety of variables that capture different domains of socioeconomic status (SES) including ownership of house and land as well as housing quality (e.g., the materials used to construct the house). Household assets measured include different types of household goods and productive assets, means of transportation, and agriculture-related goods. Other key variables in this section include household economic events, and assistance provided.

Nearly all households surveyed own their house and land. Over 80 percent of dwellings have electricity. The walls are mostly rudimentary and the floors are predominantly natural (Table 13.1). Some household assets, such as a bed, mobile phone, or clock are owned by more than 60 percent of households, whereas other assets including a stove/gas oven, sofa, fan, or refrigerator are owned by less than 20 percent. Nearly all own basic agricultural tools, but only a small percentage have sprayers, carts, tube wells, and other vital agricultural inputs (Table 13.2). In rural Nepal, events that have an influence on a household's economic status are not uncommon. Receipt of an educational scholarship for a child and an increase in remittances are the two most common positive events. On the other hand, about a quarter of households report that a short-term illness of a household member or crop loss from droughts, floods, and other weather-related events have negatively affected the household's economic situation (Table 13.3). Most households did not receive social assistance; medicine, seeds, or cash transfers (other than *Bal Samrakshan/Anudan*) (Table 13.4).

Food security

To measure household food insecurity, the FANTA Household Food Insecurity Access Scale (HFIAS) was used. Questions relate to food sufficiency and hunger at the household level and are asked for a reference period of the 30 days preceding the survey. The scale provides a score out of 27 (9 questions x 3 frequencies), categorizing households by degree of food insecurity. Lower scores indicate greater food security.

Per the HFIAS, over 70 percent of surveyed households are food secure. Whereas nearly twenty percent of *Suaahara* households worry about food, a very low percentage of households have confronted other food insecurity conditions in the past 30 days. The HFIAS score is much higher in intervention areas than in comparison areas (Table 13.5). There are several explanations for why the food security results in this survey differ substantially from those in the 2011 NDHS. First, the respondent for this survey module is the mother of the index child, but NDHS respondents are primarily men and could be any household member above 12 years of age. Second, this survey has a food security recall period of 30 days and the NDHS recall is 12 months. Third, the months of data collection for the *baseline* survey were during the rainy season when major crops, such as maize, would have just been harvested; this magnifies the fact that the recall period is shorter and may be why our findings indicate a much lower level of food insecurity.

Childcare arrangements

Childcare variables included mothers' primary location for work, amount of time away from the child, and who the primary alternate caregiver is.

About half of mothers usually work away from home (while the other half work at home). Regardless, only about 10 percent of mothers report being away from the child for more than seven hours a day (Table 13.6). When the mother is away from the child, in at least 70 percent of the cases, the child is left with a relative who is at least 12 years of age. The alternate caregiver primarily watches and feeds the child (Table 13.7).

13.2: Household characteristics

Table 13.1: House ownership and dwelling characteristics, by program group

Home ownership and characteristics	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Home			
Ownership	92.6	95.4	94.0
Electricity available	88.6	78.8	83.7
Main material of walls*			
Natural walls	3.9	12.5	8.2
Rudimentary walls	65.1	66.7	65.9
Finished walls	31.0	20.9	25.9
Main material of floors*			
Natural flooring	82.6	90.2	86.4
Rudimentary flooring	0.2	0.2	0.2
Finished flooring	17.2	9.6	13.4
Main material of roof*			
Natural roofing	8.2	22.4	15.3
Rudimentary roofing	0.3	12.1	6.2
Finished roofing	91.6	65.5	78.6
Energy source for lighting			
Electricity	79.0	61.0	70.0
Solar panel	10.1	19.5	14.8
Kerosene/paraffin/oil lamp	6.2	8.3	7.3
Torch	3.9	9.2	6.6
Firewood	0.7	1.8	1.3
Candles	0.2	0.1	0.1
Diesel	0.1	0.1	0.1
Fuel source for cooking			
Firewood	79.5	92.9	86.2
Liquefied propane gas (LPG)	10.9	3.9	7.4
Animal dung	6.9	0.1	3.5
Biogas	2.2	2.8	2.5
Wooden dust	0.3	0.2	0.3
Electricity	0.1	0.0	0.1
Kerosene	0.1	0.1	0.1
Dried leaves/straw/shrub	0.1	0.0	0.1
Natural gas	0.0	0.1	0.1
Agricultural crop	0.1	0.0	0.0

Notes: * indicates that some values were missing and the total does not equal 4,080; in this table the smallest N is 4,067.

Table 13.2: Household asset ownership, by program group

Assets	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Household assets:			
Bed	89.2	85.7	87.5
Mobile telephone	81.6	80.8	81.2
Clock	73.5	65.1	69.3
Radio	41.3	43.6	42.5
Cupboard	43.7	34.2	39.0
Table/chair	45.3	29.2	37.3
Television	41.8	27.0	34.4
Stove/gas burner	25.4	15.3	20.4
DVD player	25.0	15.0	20.0
Fan	23.1	14.2	18.7
Sewing machine	10.9	8.9	9.9
Sofa	10.5	6.3	8.4
Audio cassette/CD player	9.9	5.0	7.5
Refrigerator	6.9	2.2	4.5
Computer	4.1	2.0	3.0
Handloom for weaving	1.6	3.4	2.5
Landline phone	2.0	1.4	1.7
Means of transport			
Bicycle/cycle rickshaw	21.2	14.7	17.9
Motorcycle/scooter	5.8	3.2	4.5
Van	0.0	0.1	0.0
Boat/canoe	0.0	0.1	0.1
Agriculture assets:			
Agricultural tools	97.0	98.1	97.6
Solar energy panel	17.2	25.3	21.2
Hand tube well/rower pump	14.8	8.4	11.6
Fishing net	4.1	7.4	5.7
Machine sprayer	5.9	4.7	5.3
Fodder cutting machine	6.1	3.5	4.8
LLP for irrigation	4.5	2.7	3.6
Tube well (shallow, deep)/motor pump	1.3	0.6	1.0
Bullock cart/horse cart	1.0	0.8	0.9
Tractor/power tiller/ small tractor	1.0	0.7	0.9
Trolley/trailer	0.9	0.4	0.7
Swing basket	0.3	1.2	0.7
Spraying machine for water	0.7	0.7	0.7
Manual wooden thresher/treadle pump (for irrigation)	0.6	0.3	0.5
Thresher	0.5	0.3	0.4
Generator	0.1	0.2	0.2
Reaper harvester	0.1	0.0	0.0

Table 13.3: Economic events, by program group

Economic events	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Households experiencing any event	81.3	89.4	85.3
Event			
Short term illness (<3 m) of any HH member	16.7	38.1	27.4
Scholarship (stipend for child's education)	22.5	29.5	26.0
New birth	24.8	26.5	25.6
Loss of crop from weather (e.g. flooding, drought)	19.3	28.4	23.9
Loss of crop from other (e.g. plant disease, insects, animals)	17.3	19.2	18.2
Loss of small livestock/poultry/aquaculture (e.g. theft/death/disease)	16.4	20.1	18.2
Loss of cattle/large livestock (e.g., theft/death/disease)	14.9	15.7	15.3
New or increased remittances	12.6	13.5	13.1
Accident/injury of any HH member	5.8	8.3	7.0
Chronic/long term illness (> 3 m) of another HH member	3.1	5.6	4.4
New job for any HH member	5.3	3.1	4.2
Chronic/long term illness (> 3 m) of income earning HH member	2.3	5.6	3.9
Damage to house/dwelling or any productive assets (e.g. theft, fire, landslide, heavy rains)	2.3	2.5	2.4
Marriage including giving dowry	2.7	1.6	2.1
Gain from business activities	1.4	2.5	1.9
Profits from agriculture related activities	1.9	1.9	1.9
Death of another HH member	1.5	1.9	1.7
Loss of storage crop (e.g. damage, theft)	1.9	1.0	1.4
Conflict, dispute, legal problems	1.6	1.0	1.3
Assistance from NGOs	1.7	0.9	1.3
Business failure	0.9	1.6	1.3
Loss of employment of any HH member	1.5	0.8	1.1
Inheritance	1.3	0.8	1.0
Death of an income earning HH member	1.0	0.7	0.9
Receipt of dowry	0.8	0.8	0.8
Other	0.7	0.7	0.7
Large gift/lottery winnings	0.4	0.2	0.3
Civil conflict/war/political unrest	0.1	0.1	0.1
Divorce	0.0	0.0	0.0

Table 13.4: Social assistance received by households, by program group

Type of assistance/aid	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Educational assistance/Scholarship for study or training	20.0	28.0	24.0
Medicine other than mass distribution	20.9	18.8	19.9
Seeds	12.2	12.5	12.4
Cash transfer other than <i>Bal Samrakshan/Anudan</i>	12.6	9.9	11.3
School feeding program (take home or in school)	8.9	9.4	9.1
Food for work programs	4.5	5.0	4.7
Mosquito nets	7.4	0.2	3.8
Specialized kinds of foods for individuals (e.g. children, the sick as well as pregnant or lactating women)	2.4	5.1	3.7
Vocational training	2.7	1.6	2.1
Clothes/shoes	1.0	2.8	1.9
Fertilizer (e.g., chemical, organic)	2.1	0.6	1.4
One time/sporadic/periodic food assistance	0.6	1.4	1.0
Animals (e.g. livestock/poultry/fish)	1.4	0.4	0.9
Housing	0.3	1.0	0.7
Cash for work programs	1.0	0.4	0.7
Agricultural inputs other than seeds, fertilizer or agricultural tools	0.3	0.7	0.5
Inputs for care of animals (e.g. fodder, medicine, shelter)	0.3	0.6	0.4
Agricultural tools	0.3	0.4	0.4
Water purification (e.g., filters, chlorine)	0.1	0.5	0.3
Monthly/regular food rations	0.3	0.1	0.2
Workman's compensation	0.1	0.2	0.1

13.3: Food security

Table 13.5: Household food insecurity by program group

Aspects of food insecurity	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Mean (SD)	Mean (SD)	Mean (SD)
Household Food Insecurity Access Scale (HFIAS)			
Scores (Range 0-24)	0.95 (2.5)*	1.94 (3.5)	1.44 (3.0)
	Percent	Percent	Percent
Prevalence			
Food secure	81.9	65.4	73.7
Mild food insecurity	9.9	20.1	15.0
Moderate food insecurity	6.1	12.2	9.2
Severe food insecurity	2.0	2.3	2.1
Conditions			
Worry about food	19.4	33.3	26.4
Unable to eat preferred foods	12.9	28.8	20.9
Eat just a few kinds of food	8.2	20.3	14.3
Eat foods they really do not want to eat	6.7	15.2	10.9
Eat a smaller meal	3.3	5.0	4.1
Eat fewer meals in a day	1.8	3.4	2.6
No food of any kind in the house	1.4	1.8	1.6
Went to sleep at night hungry	1.2	1.5	1.3
Spent a whole day without eating anything	0.4	0.7	0.6
Domains			
Anxiety and uncertainty	22.2	36.8	29.5
Insufficient quality	8.0	15.7	11.9
Insufficient food intake and its physical consequences	1.8	2.1	1.9

Note: Grey shading indicates statistical testing on these variables was performed to test the difference between intervention and comparison groups; * denotes P<0.05

13.4: Childcare arrangements

Table 13.6: Maternal place of work and time away from child, by program group

Maternal factors influencing childcare	Intervention	Comparison	All
	N=2,040	N=2,040	N=4,080
	Percent	Percent	Percent
Mothers' usual place of work			
Home	55.9	48.8	52.4
Away from home	44.1	51.2	47.7
Time child is away from mother per day (work/non-work)			
Less than 1 hour	9.3	6.0	7.7
1 to 2.9 hours	37.1	49.6	43.3
3 to 6.9 hours	42.3	36.1	39.2
7 to 9.9 hours	10.9	8.2	9.6
10 hours or more	0.4	0.1	0.3

Table 13.7: Alternate childcare when mother is away, by program group

Childcare arrangements when mother is away	Intervention	Comparison	All
	Percent	Percent	Percent
Childcare providers (N=2,039-I, 2,039-C, 4,078-A)			
Relative >12 y	70.0	70.5	70.3
Relative <12 y	12.0	14.5	13.2
Nonrelative >12 y	12.6	6.3	9.4
Left Alone	4.7	5.3	5.0
School teacher/staff	0.0	2.5	1.2
Nonrelative <12 y	0.8	1.0	0.9
Childcare activities (N=1,944-I, 1,931-C, 3,875-A)			
Watching	97.4	98.1	97.8
Feeding	72.7	64.7	68.7
Playing	36.3	29.0	32.6
Bathing	23.6	12.7	18.1
Teaching	5.5	4.4	4.9

14. Community characteristics

14.1: Summary findings

Included in this section are findings relating to the primary sources of income, existence of different types of community groups, availability of key facilities, availability of key health and agricultural staff, and major economic events that have occurred in the previous 10 years.

Nearly all wards report agricultural/livestock activities as the main source of income. In difficult economic times, reliance on casual labor increases (Table 14.1). According to the interview with ward leaders, almost 90 percent of wards have active mothers' groups. This finding is inconsistent with the results reported in the empowerment module administered to women, in which women report mothers' groups to exist in about 70 percent of wards. Other groups active in at least half of the wards are water and land/forest user groups (Table 14.2). Lack of access to basic facilities such as schools, banks, health centers, post offices, etc. is quite common among the wards in this sample (Table 14.3). Nearly all wards have an FCHV, but some core health and agricultural staff are unavailable. Agricultural extension workers can only be found in about one-third of wards and village model farmers in about 15 percent (Table 14.4). In the past ten years, over half of the wards have experienced crop loss due to flooding, drought, or other major climatic events and the same amount from plant disease or insects. Damage to houses or dwellings from theft, fire, heavy rains, or other similar causes have also affected over half of the wards. On the other hand, over half of the wards have seen a new road built in the previous ten years (Table 14.5).

14.2: Community characteristics

Table 14.1: Main income sources in wards, by program group

Main sources of income	Intervention	Comparison	All
	N=120	N=120	N=240
	Percent	Percent	Percent
Generally			
Agriculture	99.2	99.2	99.2
Livestock	57.5	57.5	57.5
Casual labor	50.0	47.5	48.8
Business	17.5	20.0	18.8
Poultry	5.8	6.7	6.3
Fisheries	2.5	0.0	1.3
Construction	0.8	0.8	0.8
Tourism	0.8	0.0	0.4
Transport	0.0	0.0	0.0
Industry	0.0	0.0	0.0
Other	0.0	0.0	0.0
During difficult economic times			
Casual labor	64.2	52.5	58.3
Livestock	53.3	53.3	53.3
Agriculture	63.3	34.2	48.8
Business	12.5	10.8	11.7
Construction	3.3	14.2	8.8
Poultry	6.7	6.7	6.7
Other	1.7	3.3	2.5
Transport	0.8	3.3	2.1
Fisheries	2.5	0.0	1.3
Industry	0.8	1.7	1.3
Tourism	1.7	0.0	0.8

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 14.2: Active groups in the ward, by program group

Groups	Intervention	Comparison	All
	N=120	N=120	N=240
	Percent	Percent	Percent
Mothers' group	87.5	90.0	88.8
Land/forest user groups	69.2	77.5	73.3
Water user groups	67.5	57.5	62.5
Civic group or charitable group	42.5	54.2	48.3
Credit/Microfinance group	48.3	36.7	42.5
Women's group (other than groups mentioned above)	45.8	38.3	42.1
Agricultural/livestock/fisheries producer groups (including marketing groups)	40.0	43.3	41.7
Sanitation and hygiene committees	21.7	19.2	20.4
Religious group	20.0	19.2	19.6
Football/sports club	19.2	18.3	18.8
Mutual help or insurance group (including burial societies)	10.8	11.7	11.3
Peer Educators	10.0	5.0	7.5
Other	5.8	6.7	6.3
Trade and business association	5.0	2.5	3.8
Drama group	1.7	2.5	2.1

Table 14.3: Availability of key facilities in the ward, by program group

Key facilities	Intervention	Comparison	All
	N=120	N=120	N=240
	Percent	Percent	Percent
Government primary school (grade 1-5)	58.3	54.2	56.3
Local basic food depot/shop	35.0	24.2	29.6
Bus stop	23.3	28.3	25.8
Government lower-secondary school (grade 1-8)	25.0	22.5	23.8
All weather road/paved road	23.3	19.2	21.3
Private primary school (grade 1-5)	22.5	13.3	17.9
Government secondary school (grade 1-10)	16.7	17.5	17.1
Farmers' wholesale market	15.8	10.8	13.3
Sub-health post	10.8	12.5	11.7
Internet access/cafe	16.7	5.8	11.3
Government primary school (grade 1-5)	12.5	9.2	10.8
Post office	8.3	12.5	10.4
Electric supply from the main grid	8.3	8.3	8.3
Private lower-secondary school (grade 1-8)	11.7	4.2	7.9
Police station	10.0	5.0	7.5
Livestock related office	7.5	7.5	7.5
Private hospital/clinic	8.3	5.8	7.1
Temporary but regular market	8.3	5.0	6.7
Private secondary school (grade 1-10)	9.2	3.3	6.3
Health post	6.7	5.0	5.8
Others	2.5	6.7	4.6
Private Bank	5.0	2.5	3.8
Agricultural related office	1.7	4.2	2.9
Private primary school (grade 1-5)	3.3	1.7	2.5
PHC center	2.5	0.8	1.7
Fishery related office	2.5	0.8	1.7
NGO health center	0.8	1.7	1.3
Government bank	1.7	0.8	1.3
Government hospital	0.0	1.7	0.8

Table 14.4: Availability of core health and agriculture staff, by program group

Key health and agricultural staff	Intervention	Comparison	All
	N=120	N=120	N=240
	Percent	Percent	Percent
FCHV	97.5	100.0	98.8
Health Assistant/AHW	61.7	42.5	52.1
MCHW/ANM	68.3	35.8	52.1
Village health worker	53.3	31.7	42.5
Agriculture/livestock/fishery extension worker (NGO/government)	38.3	18.3	28.3
Untrained traditional birth attendants (UTBA)	35.0	16.7	25.8
Trained traditional birth attendants (TBA)	24.2	13.3	18.8
Village model farmer	14.2	16.7	15.4
Nongovernmental (NGO) health worker/volunteer	10.0	19.2	14.6
Nurse/staff nurse	5.0	8.3	6.7
Doctors	5.8	4.2	5.0
Others	0.0	0.8	0.4

Table 14.5: Major economic events occurring in the wards, by program group

Economic events in the previous ten years	Intervention	Comparison	All
	N=120	N=120	N=240
	Percent	Percent	Percent
Loss of crop (e.g. flooding, drought)	55.8	65.8	60.8
New road	60.0	59.2	59.6
Damage to houses/dwellings or any productive assets (e.g. theft, fire, soil/water erosion, heavy rains)	57.5	58.3	57.9
Loss of crop (e.g. plant disease, insects, animals)	49.2	59.2	54.2
Loss of small livestock/poultry/aquaculture (e.g. theft/death/disease)	40.8	54.2	47.5
Loss of cattle/large livestock (e.g. theft/death/disease)	44.2	50.0	47.1
Sharp changes in food prices	31.7	50.0	40.8
New school	28.3	20.0	24.2
Loss of key social services (e.g. health post, school, etc.)	20.8	18.3	19.6
Human epidemic/disease	10.8	12.5	11.7
New employment opportunities	12.5	10.8	11.7
Agricultural development project	7.5	12.5	10.0
Loss of storage crop (e.g. damage, theft)	10.0	7.5	8.8
New health facility	4.2	4.2	4.2
Other	1.7	1.7	1.7

15. Female Community Health Volunteers

15.1: Summary findings

Key findings in this section include: the demand for FCHV services, their level of training, how regularly they coordinate with other health and agricultural staff, level of job motivation and satisfaction, knowledge regarding child health and nutrition including IYCF, and access to information.

Services and activities

Main FCHV activities are: provision of pregnancy and postnatal related advice and care; distribution of iron and folic acid supplements, vitamin A capsules, and family planning products; and giving information on family planning and ARI (Table 15.1). FCHVs said women approached them for family planning advice, antenatal care, advice for the care of the child including what to do when the child was ill, and iron and folic acid supplements (Table 15.2). Nearly all FCHVs report coordinating with other FCHVs and health assistants, and over half also report coordinating with village health workers and maternal, newborn, and child health workers. There is very little coordination (less than 10 percent reporting) with actors such as agricultural extension workers, NGO workers, and those from ministries of water and sanitation, local development, and education (Table 15.3).

Training

More than three-quarters of FCHVs report having ever received training on health and nutrition, but this percentage drops by half when asked about training in the last year. It is not common for FCHVs to report training on the measurement of children, water, sanitation, facilitation of mother's groups, and counseling methods. However, training is often outdated. More than half of FCHVs report training in vitamin A and mineral supplementation and hygiene/hand washing in the last year (Table 15.4). Overall, job motivation seems to be quite high with the vast majority of FCHVs strongly agreeing or agreeing with most statements. Interestingly, there is a fairly even split among FCHVs: about half feel they are already receiving adequate training and the other half disagreeing (Table 15.5).

Knowledge and beliefs about child health and nutrition

When recalling important times for a caregiver to wash hands, half or less mention before eating or preparing food/cooking. Only about one-third of the FCHVs reports treating water before drinking. In relation to helping a child recover from illness, only about half report that more foods or liquids should be given and the recommended practice of feeding an extra meal was only noted by about one-third of FCHVs (Table 15.6). Nearly all FCHVs report that mothers should give colostrum to the baby. About 60 percent said that breastfeeding should start within the first hour of birth. If the mother believes she is not providing the baby with enough breast milk about half reported that she should breastfeed more often/frequently. Nearly one-third reported that in this situation, the mother should feed animal milk to the child (Table 15.7). Regarding introducing complementary foods, over one-third and one-half of FCHVs noted a time period after 6 months of age for introduction of eggs and meat or fish, respectively (Table 15.8).

Access to information

More than half of the FCHVs reported health facilities, radio/FM, flipcharts, and mothers' groups as sources of health information in the last 30 days (Table 15.9). More than half of FCHVs said that health facilities and flipcharts are the two most important sources of information on nutrition in the previous month (Table 15.10). Few FCHVs received information on agriculture/homestead food production in the previous 30 days. The most frequent source of information was radio/FM (Table 15.11). More than half of FCHVs indicated a preference for receiving health and nutrition information via health facilities, radio/FM, and television (Table 15.12).

15.2: FCHV services and activities

Table 15.1: Main services provided by FCHVs, by program group

Main FCHV activities	Intervention	Comparison	All
	N=115	N=117	N=232
	Percent	Percent	Percent
Provide pregnancy-related advice/care	87.8	82.9	85.3
Distribute iron and folic acid supplements to pregnant/postpartum women	77.4	80.3	78.9
Distribute vitamin A capsules to children/postpartum women	61.7	73.5	67.7
Provide information on immunizations	62.6	61.5	62.1
Distribute family planning products (pills, condoms, etc.)	57.4	60.7	59.1
Provide information on family planning	50.4	56.4	53.5
Provide information on ARI	54.8	44.4	49.6
Provide postnatal related advice/care	53.9	43.6	48.7
Check on immunization of children	38.3	38.5	38.4
Provide information on child nutrition	36.5	35.0	35.8
Conduct mothers' group meetings	40.0	29.1	34.5
Provide newborn advice/care	34.8	32.5	33.6
Distribute essential basic drugs	32.2	35.0	33.6
Treat basic ailments of children	26.1	36.8	31.5
House visits	28.7	33.3	31.0
Provide information on hygiene	38.3	23.1	30.6
Provide delivery related advice/care	28.7	29.9	29.3
Provide referrals to health facilities	30.4	28.2	29.3
Provide information on maternal nutrition	29.6	27.4	28.5
Census/identification of young children under 5 y of age	18.3	20.5	19.4
Check to see if women are pregnant	13.9	22.2	18.1
Take anthropometric measurements	8.7	12.8	10.8
Provide advice on breastfeeding	10.4	9.4	9.9
Provide information on common ailments	13.0	6.8	9.9
Distribute other health commodities	5.2	11.1	8.2
Provide information on water and sanitation	10.4	5.1	7.8
Attend trainings	9.6	5.1	7.3
Treat basic ailments of adults	4.4	5.1	4.7
Coordinate with other health workers	1.7	4.3	3.0
Other	4.4	1.7	3.0
Distribute Chlorhexidine lotion (<i>Kawach</i>)	2.6	1.7	2.2
Distribute <i>MATRI SURAKCHHYA CHAKKI</i> to prevent postpartum haemorrhage	2.6	1.7	2.2
Coordinate with government/NGO non-health workers	0.9	0.9	0.9

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 15.2: Use of FCHV system, by program group

Health issues for which people go to the FCHV	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Family planning advice	73.9	73.7	73.8
Antenatal care	47.8	47.5	47.6
Treatment or advice regarding children's illness	43.5	48.3	45.9
For iron/folic acid supplements	42.6	47.5	45.1
Provide newborn advice/care	12.2	9.3	10.7
Pregnancy test	7.0	7.6	7.3
Vitamin A supplementation	7.0	7.6	7.3
Postnatal care	5.2	5.9	5.6
Delivery care	7.0	3.4	5.2
Advice on feeding children 6-59.9 m	5.2	4.2	4.7
Have not yet come to receive services	1.7	6.8	4.3
De-worming tablets	3.5	3.4	3.4
Breastfeeding advice	3.5	2.5	3.0
Treatment or advice regarding men's health	4.4	0.9	2.6
To receive primary health care	2.6	0.9	1.7
To receive information on child vaccinations	0.9	0.9	0.9
To receive advice on abortion	1.7	0.0	0.9

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 15.3: Collaboration with other health, nutrition, and agricultural actors, by program group

Staff with whom FCHV collaborated in previous 3 months	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Another FCHV	97.4	97.5	97.4
Health assistant/AHW	95.7	96.6	96.1
MCHW	73.9	81.4	77.7
Village health worker	56.5	67.8	62.2
Doctor	16.5	5.1	10.7
Trained TBA	13.9	5.9	9.9
Staff nurse	13.9	4.2	9.0
Other government health worker	7.8	7.6	7.7
Agriculture extension worker	11.3	1.7	6.4
Livestock extension worker	4.4	2.5	3.4
Department of Water and Sanitation	5.2	1.7	3.4
NGO health/nutrition worker	2.6	3.4	3.0
Ministry of Education	6.1	0.0	3.0
Ministry of Health	5.2	0.0	2.6
NGO agriculture/food security worker	3.5	0.9	2.2
Ministry of Local Development	0.9	2.5	1.7
Fishery extension worker	0.9	0.0	0.4
National Planning Commission	0.9	0.0	0.4

Note: Percentages do not sum to 100 as this was a multiple response question.

15.3: Inputs to FCHV capacities

Table 15.4: Training experience among FCHVs, by program group

Training topics	Intervention	Comparison	All
	N=115	N=117	N=232
	Percent	Percent	Percent
Ever trained:			
Vitamin A and mineral supplementation	98.3	97.4	97.8
Antenatal care	97.4	96.6	97.0
Management of respiratory infection (including pneumonia)	97.4	95.7	96.6
Hygiene/handwashing	97.4	92.3	94.8
Management of child diarrhea	95.7	93.2	94.4
Family planning	97.4	91.5	94.4
Newborn care	96.5	88.9	92.7
Immunization	95.7	84.6	90.1
Initiation of breastfeeding	96.5	76.1	86.2
Timely introduction of complementary foods	92.2	79.5	85.8
Delivery care	90.4	79.5	84.9
How to set up mothers' groups	89.6	80.3	84.9
Postnatal care	87.8	77.8	82.8
Exclusive breastfeeding	89.6	74.4	81.9
Anemia	87.8	67.5	77.6
Adequacy/quality of children's diet	86.1	65.8	75.9
Facilitating mothers' groups	73.0	60.7	66.8
Counselling methods for groups	64.4	54.7	59.5
Water	59.1	55.6	57.3
Sanitation	60.9	46.2	53.5
Measuring weight and height/length of children	46.1	59.8	53.0
Counselling methods for individuals	54.8	46.2	50.4
Trained within past 1 year (among those ever trained):			
Vitamin A and mineral supplementation	62.0	71.9	67.0
Hygiene/handwashing	66.1	44.4	55.5
Immunization	51.8	55.6	53.6
Newborn care	54.1	45.2	49.8
Antenatal care	50.0	46.0	48.0
Postnatal care	47.5	40.7	44.3
Initiation of breastfeeding	46.0	39.3	43.0
Delivery care	41.4	40.9	41.1
Timely introduction of complementary foods	47.2	33.3	40.7
Measuring weight and height/length of children	45.3	37.1	40.7
Exclusive breastfeeding	45.6	33.3	40.0
Management of respiratory infection (including pneumonia)	46.4	30.4	38.4
Management of child diarrhea	41.8	32.1	37.0
Adequacy/quality of children's diet	36.4	24.7	31.3
Sanitation	41.4	16.7	30.7
Family planning	30.4	24.3	27.4
Anemia	25.7	22.8	24.4
How to set up mothers' groups	27.2	18.1	22.8
Water	26.5	13.9	20.3
Facilitating mothers' groups	25.0	14.1	20.0
Counselling methods for groups	20.3	10.9	15.9
Counselling methods for individuals	15.9	11.1	13.7

Table 15.5: Job motivation and satisfaction, by program group

Statements on job motivation and satisfaction	Intervention	Comparison	All
	N=115	N=117	N=232
	Percent	Percent	Percent
Contributing to improve conditions of community			
Strongly agree	72.2	64.1	68.1
Agree	27.8	32.5	30.2
Somewhat agree	0.0	3.4	1.7
Disagree	0.0	0.0	0.0
Strongly disagree	0.0	0.0	0.0
Receive adequate training			
Strongly agree	19.1	16.2	17.7
Agree	37.4	29.1	33.2
Somewhat agree	18.3	26.5	22.4
Disagree	17.4	23.9	20.7
Strongly disagree	7.8	4.3	6.0
Have a lot of pressure; workload keeps increasing			
Strongly agree	67.0	56.4	61.6
Agree	27.8	41.9	34.9
Somewhat agree	3.5	1.7	2.6
Disagree	0.9	0.0	0.4
Strongly disagree	0.9	0.0	0.4
Work is motivating and I am enjoying it			
Strongly agree	59.1	56.4	57.8
Agree	39.1	41.0	40.1
Somewhat agree	1.7	2.6	2.2
Disagree	0.0	0.0	0.0
Strongly disagree	0.0	0.0	0.0
FCHV systems values the work that we do in communities			
Strongly agree	42.6	29.1	35.8
Agree	54.8	62.4	58.6
Somewhat agree	2.6	7.7	5.2
Disagree	0.0	0.9	0.4
Strongly disagree	0.0	0.0	0.0
Efforts valued by the people in the community			
Strongly agree	29.6	29.6	28.9
Agree	67.8	65.8	66.8
Somewhat agree	2.6	5.1	3.9
Disagree	0.0	0.9	0.9
Strongly disagree	0.0	0.0	0.0
Feel confident performing well as an FCHV			
Strongly agree	71.3	61.5	66.4
Agree	28.7	38.5	33.6
Somewhat agree	0.0	0.0	0.0
Disagree	0.0	0.0	0.0
Strongly disagree	0.0	0.0	0.0
Find it difficult to get adequate support from FCHV system			
Strongly agree	8.7	9.4	9.1
Agree	40.9	35.0	37.9
Somewhat agree	9.6	25.6	17.7
Disagree	33.9	26.5	30.2
Strongly disagree	6.1	3.4	4.7
Overall satisfied with work			
Strongly agree	62.6	54.7	58.6
Agree	35.7	42.7	39.2
Somewhat agree	1.7	1.7	1.7
Disagree	0.0	0.9	0.4
Strongly disagree	0.0	0.0	0.0

15.4: FCHV knowledge and beliefs regarding child health and nutrition

Table 15.6: Awareness of key health and nutrition practices, by program group

Actions to promote child health and nutrition	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Times when mother/caregiver should wash hands			
Before feeding the child	72.2	67.0	69.5
After defecation	63.5	71.2	67.4
After cleaning the child's bottom	56.5	68.6	62.7
Before eating	49.6	49.2	49.4
Before preparing food/cooking	36.5	32.2	34.3
Treat water before drinking	32.2	30.5	31.3
Activities to help a child recover from illnesses*			
Give more liquids than usual	53.0	48.7	50.9
Feed more food than usual	38.3	60.7	49.6
Increase frequency of breastfeeding	41.7	50.4	46.1
Go to health facility	42.6	49.6	46.1
Feed different types of foods	38.3	31.6	34.9
Feed an extra meal daily	31.3	31.6	31.5
Give syrups/vitamins	21.7	23.9	22.8
Continue breastfeeding	19.1	10.3	14.7
Give safe drinking/treated water	6.1	15.4	10.8
Give ORS	7.8	12.8	10.3
Give different types of liquid than usual	11.3	9.4	10.3
Give zinc tablets	6.1	8.6	7.3
Feed nutritious food (fish/meat/egg/liver/vegetables/etc.)	7.0	5.1	6.0
Give as much liquid as usual	5.2	5.1	5.2
Give carrot juice or rice scum	1.7	2.6	2.2
Feed as much food as usual	2.6	0.9	1.7
Give less liquids than usual	1.7	1.7	1.7
Give traditional medicine	0.9	2.6	1.7
Other	0.9	2.6	1.7
Feed less food than usual	0.0	0.9	0.4
Stop breastfeeding	0.0	0.0	0.0

Note: Percentages do not sum to 100 as this was a multiple response question; * indicates N is smaller because of 1 missing value in comparison group

Table 15.7: Knowledge of key breastfeeding practices, by program group

Breastfeeding practices	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Give colostrum to the baby	98.3	99.2	98.7
Start breastfeeding:			
Immediately after birth	43.5	29.7	36.5
Within 1 hour	53.0	67.8	60.5
After 1 hour but within 1 day	3.5	2.5	3.0
Actions if mother thinks her baby is not getting enough breastmilk			
Mother needs to eat more nutritious food	75.7	83.1	79.4
Mother needs to drink more water/liquid	57.4	70.3	64.0
Breastfeed more often/more frequently	63.5	40.7	51.9
Mother needs to eat more food	47.8	33.9	40.8
Feed animal milk to the child	20.9	35.6	28.3
Breastfeed the child on demand	16.5	18.6	17.6
Give other liquids/foods	9.6	15.3	12.5
After emptying one breast, switch to the other	5.2	10.2	7.7
Other	7.0	3.4	5.2

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 15.8: Knowledge of introduction of complementary foods, by program group

Food types	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Water or other clear liquids			
Early	11.3	15.3	13.3
Timely	87.8	84.8	86.3
Late	0.9	0.0	0.4
Milks other than breast milk			
Early	12.2	10.2	11.2
Timely	87.8	89.8	88.8
Late	0.0	0.0	0.0
Semi-solid foods			
Early	7.0	4.2	5.6
Timely	89.6	95.8	92.7
Late	3.5	0.0	1.7
Solid foods			
Early	3.5	0.9	2.2
Timely	63.5	72.0	67.8
Late	33.0	27.1	30.0
Eggs			
Early	2.6	0.0	1.3
Timely	60.9	70.3	65.7
Late	36.5	29.7	33.1
Animal meat/fish*			
Early	1.7	0.0	0.9
Timely	47.0	59.0	53.0
Late	51.3	41.0	46.1

Notes: Early, timely, and late refer to introduction of foods prior to 6 months of age, 6-8.9 months of age, and after 9 months of age respectively; * indicates N is smaller because 1 missing value in comparison group.

15.5: Sources of information

Table 15.9: Sources of information on health among FCHVs, by program group

Media sources	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Health facility (hospital, clinic, post)	80.9	75.4	78.1
Radio/FM	58.3	59.3	58.8
Flipchart	53.9	61.0	57.5
Mothers' groups	55.7	50.9	53.2
FCHV	49.6	37.3	43.4
Television	44.4	33.9	39.1
Brochure, leaflet, poster, banner	39.1	36.4	37.8
Counselling card	18.3	36.4	27.5
Billboards	20.9	31.4	26.2
Community or village gatherings	18.3	10.2	14.2
Newspaper/magazine	13.0	5.1	9.0
Loudspeakers	3.5	2.5	3.0
Church or religious meetings	3.5	0.9	2.2
Street drama	0.0	3.4	1.7
Village model farmer	0.9	0.9	0.9
Movie theatre/cinema	0.0	0.9	0.4

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 15.10: Sources of information on nutrition among FCHVs, by program group

Media sources	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Health facility (hospital, clinic, post)	67.8	67.8	67.8
Flipchart	46.1	55.1	50.6
Radio/FM	44.4	53.4	48.9
Mothers' groups	47.0	47.5	47.2
FCHV	38.3	32.2	35.2
Brochure, leaflet, poster, banner	30.4	32.2	31.3
Television	32.2	25.4	28.8
Counselling card	16.5	29.7	23.2
Billboards	16.5	24.6	20.6
Community or village gatherings	13.9	9.3	11.6
Newspaper/magazine	12.2	3.4	7.7
Loudspeakers	2.6	1.7	2.2
Movie theatre/cinema	0.0	0.9	0.4
Church or religious meetings	0.9	0.0	0.4
Street drama	0.0	0.9	0.4
Village model farmer	0.9	0.0	0.4

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 15.11: Sources of information on agriculture/homestead food production among FCHVs, by program group

Media sources	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Radio/FM	24.4	33.1	28.8
Television	17.4	13.6	15.5
Mothers' groups	13.9	11.0	12.5
Flipchart	7.0	7.6	7.3
FCHV	6.1	6.8	6.4
Community or village gatherings	7.0	5.1	6.0
Health facility (hospital, clinic, post)	3.5	7.6	5.6
Newspaper/magazine	5.2	2.5	3.9
Village model farmer	4.4	3.4	3.9
Brochure, leaflet, poster, banner	1.7	5.1	3.4
Counselling card	2.6	4.2	3.4
Billboards	1.7	0.9	1.3
Movie theatre/cinema	0.0	0.0	0.0
Loudspeakers	0.0	0.0	0.0
Church or religious meetings	0.0	0.0	0.0
Street drama	0.0	0.0	0.0

Note: Percentages do not sum to 100 as this was a multiple response question.

Table 15.12: Preferred sources of information for health and nutrition among FCHVs, by program group

Media sources	Intervention	Comparison	All
	N=115	N=118	N=233
	Percent	Percent	Percent
Health facility	80.9	83.9	82.4
Radio/FM	79.1	80.5	79.8
Television	60.0	51.7	55.8
FCHV	13.9	8.5	11.2
Newspaper/magazine	8.7	9.3	9.0
Flipchart	3.5	13.6	8.6
Mother's groups	8.7	8.5	8.6
Community or village gatherings	7.8	5.9	6.9
Brochure, leaflet, poster, banner	3.5	9.3	6.4
Billboard	5.2	7.6	6.4
Loudspeaker	3.5	3.4	3.4
Training	0.9	5.9	3.4
Counselling card	0.9	1.7	1.3
Institutions/organizations	0.9	1.7	1.3
Street drama	0.9	0.9	0.9
Church or religious meetings	0.9	0.0	0.4

Note: Percentages do not sum to 100 as this was a multiple response question.

16. Annexes

16.1: Questionnaire modules

MEN'S QUESTIONNAIRE MODULES:

Module 1: Household Roster

Module 2: Household Economics

Section A: Socioeconomic Status

Section B: Remittances

Section C: Economic Events

Module 3: Social Assistance

Module 4: Agricultural Practices and Use of Land

Section A: Land Use

Section B: Field Crop Production and Sale

Section C: Animal Ownership

Section D: Animal Products

Section E: Practices and Inputs

Section F: Agriculture and Livestock Related Training

Module 5: Empowerment

Section A: Role in Household Decision-making for Production and Income Generation

Section B: Access to Capital

Section C: Access to Credit

Section D: Access to Agriculture/Livestock/Fisheries Personnel

Section E: Individual Leadership and Influence

Section F: Decision-making

Section G: Time Allocation

Module 6: Observations

Module 1: Household Roster

This module was the household composition that is standard for any household survey. This provided us with the information about household members and size, the sex of the household head, and the marital status, primary and secondary occupations, and education levels of the household members.

This background information is important for describing the survey population, comparing the survey population to other surveys, and assessing changes in the survey population composition itself, if any, between baseline and endline.

Module 2: Household Economics

This module consisted of three sections: (a) socioeconomic status, (b) remittances, and (c) economic events. Socioeconomic status (SES) is an underlying determinant of child nutrition status. Detailed information on the household's living structure and household assets was collected to assess household SES. Section B captured remittances, given how constant migration flows into and out of Nepal are. Section C requested detailed information on economic events – positive or economic – happening in the previous 12 months.

Knowing the baseline situation on household SES, will help capture critical underlying factors that might influence the effect of the program inputs and will help to enable interpretation of any negative changes between the baseline and endline survey. Measuring remittances coming into or being sent out of the household is vital as it is yet another aspect of income and cash flow vital in establishing overall household and community level SES. Furthermore, it is reasonable to believe that during the life of the program, a household or community may experience an economic shock that, in turn, may influence child nutritional status. Capturing information on such economic shocks was therefore critical to any assessment of impact.

If indeed households in the program areas experience economic shocks, this might explain any lack of a positive impact on IYCF practices or nutritional status that might be observed at endline.

Module 3: Social Assistance

In this module information was collected as to whether in the previous 12 months anyone in the household received assistance, if it was still being received, and who was providing the assistance. Food aid, agricultural support, medicine, housing, and educational or occupational aid were all enquired about.

Awareness of what other types of social assistance the household may be receiving is important when trying to assess the impact of one particular intervention, i.e. *Suaahara*.

Module 4: Agricultural Practices and Use of Land

This module uses six subsections to obtain an overview of land use and agricultural practices at the household level. We assessed land ownership and use of land for agricultural purposes, as well as labor inputs and decision-making regarding agricultural land. Additionally, agricultural production and use of agricultural products-either for consumption or sale-is assessed as is agricultural decision making. Lastly inputs and services for agricultural purposes are also assessed.

A key *Suaahara* objective is to improve availability and consumption of micronutrient rich foods via homestead food production in the household. Examining land access and use as well as agricultural practices provides critical information for *Suaahara* interventions to improve availability and consumption of high quality foods.

Module 5: Empowerment

Research has shown that women's control over assets and women's status, more broadly, is an important determinant of child nutrition. The Women's Empowerment in Agriculture Index (WEAI) is a new validated tool comprised of two sub-indices: one sub-index measures five domains of women's empowerment and the other sub-index measures gender parity. Adapting this tool to the Nepali context, we measured men's: role in household decision-making for production and income-generation activities; access to capital; access to credit; access to agriculture/livestock/fisheries personnel; individual leadership and influence in the community through group membership for example; household decision-making; and allocation of time between various leisure and work activities using a 24 hour recall.

Compiling this type of information from men is important for assessing gender parity. Given *Suaahara's* emphasis on addressing gender exclusion throughout its various interventions, awareness of where, when, and how this exclusion occurs as well as how men's and women's answers to questions regarding these various empowerment domains will be crucial for programming.

Module 6: Observations

At the end of the interview, some household observations were made to assess the quality of dwelling arrangements, which is yet another socio-economic indicator. Spot checks were also done to examine whether the household had a toilet, its cleanliness, and whether human or animal feces were found in or near the compound. Finally salt testing was done to test whether the household was using iodized salt or not.

These observations are quite important as they allow for comparison with information being reported in the interview, for example regarding whether or not the household has a toilet. Furthermore, cleanliness in the home is an important component of WASH and may point to areas in need of intervention or indicate reasons why a different WASH intervention is not achieving desired results.

MOTHER'S QUESTIONNAIRE MODULES:

Module 1: Child Health and Childcare

Section A: Child Health

Section B: Childcare Arrangements

Module 2: Infant and Young Child Feeding (IYCF) Practices

Section A: Dietary Recall

Section B: Child Feeding

Module 3: Household Food Security and Maternal Dietary Diversity

Section A: Household Food Security

Section B: Mothers Dietary Recall

Module 4: Empowerment

Section A: Role in Household Decision-making for Production and Income Generation

Section B: Access to Capital

Section C: Access to Credit

Section D: Access to Agriculture/Livestock/Fisheries Extension Worker

Section E: Individual Leadership and Influence

Section F: Decision-making

Section G: Time Allocation

Module 5: Information Access**Module 6: Maternal Health**

Section A: Antenatal Care

Section B: Delivery and Postnatal Care

Section C: Tobacco and Alcohol

Section D: Family Planning

Module 7: Infant and Young Child Feeding (IYCF) Knowledge, Attitudes, and Perceptions**Module 8: Water, Sanitation and Hygiene**

Section A: Water

Section B: Sanitation

Section C: Hygiene

Module 9: Anthropometry and Hemoglobin

Section A: Mother's Weight, Height, and Hemoglobin Measurements

Section B: Children's Anthropometric Measurements

Section C: Children's Hemoglobin Measurements (index child and non-index child)

Module 10: Grandmother's Perspective on Maternal and Child Health and Nutrition

Module 1: Child Health and Childcare

This module assesses both child health and childcare arrangements. In Section A, the child's immunization and supplementation status was captured as was basic preventive health seeking behaviors among caregivers, including attendance growth monitoring and promotion sessions. Illness (diarrhea/fever/cough) history is also assessed in this module, and messages received regarding illnesses, and in particular nutrition related messages during illness are assessed. This module also captured information on child appetite, which is important to assess in relation to overall child feeding, but also in relation to parental responsiveness to poor appetite and other feeding problems. In Section B questions about childcare arrangements were asked to assess how often the child is left with an alternate caregiver; the age, sex, and relations of that caregiver; and what care activities the alternate caregiver may engage in.

Child immunization and history of recent disease are an integral part of any child health and nutrition survey. This information is important given that disease is a key determinant of a child's nutritional status. Both preventive care and timely curative management, such as additional feeding and continuation of breastfeeding, are keys to addressing this issue. Furthermore, childcare has also been shown to be a key factor influencing a young child's nutritional status. If *Suaahara* interventions related to child diet, health,

and nutrition are to be effective, awareness of who is caring for the child at different points of the day is important.

Module 2: Infant and Young Child Feeding (IYCF) Practices

This module had two components: Section A was a 24 hour dietary recall of foods consumed by the child and Section B covered an array of child feeding topics. We collected a detailed report of breastfeeding and complementary feeding practices to enable computation of the WHO-recommended IYCF indicators as well as to assess IYCF practices in greater detail. These types of modules are standard nutrition- and feeding-related survey and the DHS also collects similar information.

This module is directly related to *Suaahara's* major objectives and thus measures the outcomes of the overall initiative. From the breastfeeding and complementary feeding information, we will be able to estimate all the WHO-recommended IYCF indicators, such as early initiation of breastfeeding, exclusive breastfeeding, continuation of breastfeeding, introduction of complementary feeding, dietary diversity, etc. A more diversified diet is associated with a number of improved outcomes, including child anthropometric status and micronutrient status, desired *Suaahara* program impacts. Therefore, the dietary recall of the child was taken.

Module 3: Household Food Security and Maternal Dietary Diversity

In this module, we collected information on household food security as well as mother's dietary diversity. In Section A, we used the Food and Nutrition Technical Assistance (FANTA) project Household Food Insecurity Access Scale (HFAS), a set of 9 validated questions for measuring food insecurity. This is the same scale that is used in the Nepal DHS. In Section B, we used a 24 hour recall to assess maternal dietary diversity.

Household food security has been shown to be associated with 1) growth of infants and young children and 2) infant feeding practices, which are main indicators for *Suaahara*. The maternal dietary diversity sub-module is a proxy measure of maternal food access and consumption; once again, her dietary diversity is associated with anthropometrics and a host of health and nutritional outcomes and is therefore important. It was vital to understand how such maternal household food security and dietary factors may mediate the impact of *Suaahara* in the program areas.

Module 4: Empowerment

This module, similar to the empowerment module in the men's questionnaire included many sub-modules capturing: women's role in household decision-making for production and income-generation activities; access to capital; access to credit; access to agriculture/livestock/fisheries personnel; individual leadership and influence in the community through group membership for example; household decision-making; and allocation of time between various leisure and work activities using a 24 hour recall. These are all key components of the WEAI and therefore, necessary for measuring women's empowerment.

As mentioned, earlier research has demonstrated clearly that women's control over assets and women's status, more broadly, is an important determinant of child nutrition. Research globally and in other countries has also demonstrated that participation in credit groups and community/social networks empowers women and enhances their capability to make better decisions regarding child welfare. Women's decision-making power in matters related to household issues and child health, as well as ownership of assets and control over purchasing, may be a crucial component of addressing child undernutrition in Nepal.

Module 5: Information Access

This module is intended to provide data both on exposure to health, nutrition, and agriculture/home gardening information via different media channels, and assess preference for source of media for receiving health/nutrition messages.

Gathering data on exposure to media information is important, because *Suaahara* may use multiple communication channels to deliver IYCF-related messages to caregivers and to mobilize civil society in relation to IYCF and nutrition.

Module 6: Maternal Health

This module included four subsections, one each on antenatal care, delivery and postnatal care, alcohol and tobacco use, and family planning. In the first two subsections, we collected information about the nature and extent of contacts caregivers had with the healthcare system, during both pregnancy and the postnatal period and about the kinds of support and advice that caregivers received during and after childbirth. We further gathered information about maternal use of cigarettes, other forms of tobacco, and alcohol and lastly asked a series of questions to assess maternal awareness of messages on healthy spacing and timing of pregnancies and awareness and usage of family planning methods and products.

Child nutrition is influenced by a caregiver's exposure to prenatal care and nutrition inputs during pregnancy. In addition, maternal exposure to information about infant feeding, particularly breastfeeding, begins at the pregnancy period. Information on antenatal as well as delivery and postnatal care can generate clues as to why mothers are able or not to successfully breastfeed their infants exclusively in the first six months of life, as well as meet other recommended IYCF practices. This information is crucial given *Suaahara's* goal to improve nutrition during the first 2 years of life. Furthermore, use of tobacco and alcohol can contribute to poor maternal health and nutrition, which is in turn known to influence child health and nutrition. Finally, the family planning information is important to gather as spacing and timing of pregnancies influences both maternal and child health and is one of the five key *Suaahara* intervention areas.

Module 7: Infant and Young Child Feeding (IYCF) Knowledge, Attitudes, and Perceptions

This module gathered detailed information regarding maternal knowledge, attitudes and perceptions related to benefits of breastfeeding, introduction of complementary foods, giving a baby colostrum, reasons for child malnutrition, and what to do regarding feeding for an ill child. We further gathered information as to whether or not a mother had ever heard key IYCF messages.

Suaahara aims at improving caregivers' knowledge as a route to improving IYCF practices and child nutrition. Caregivers' knowledge and attitudes about IYCF may be factors in the pathway toward adopting better IYCF-related practices. Changes between baseline and endline in the knowledge, attitude, and practice after controlling for other factors, such as background characteristics, education, and economic status, may indicate the effects of the intervention.

Module 8: Water, Sanitation and Hygiene

Basic water, sanitation, and hygiene practices and knowledge were also assessed. For Section A on water, information was collected on both water sources and treatment. For Section B on sanitation, we asked about access to toilets and practices regarding child defecation and disposal of child stools. For Section C on hygiene, most of the questions related to handwashing practices including when this done, availability of supplies, and a demonstration. We also gathered information on waste disposal and maternal knowledge of how to protect a child from getting worms.

Given that WASH is one of the five key intervention areas for *Suaahara* programming, this information should help to guide the program and also allow for comparison of practices between baseline and endline.

Module 9: Anthropometry and Hemoglobin

In this module we have taken length/height and weight measurements of children under 5 years of age and the hemoglobin measurements of index and non-index children between 6 and 59.9 months of age. We also took the height and weight of mothers and checked their hemoglobin levels. All hemoglobin measurements were appropriately adjusted for altitude, maternal pregnancy status, and smoking.

This module is directly related to the main impact indicator of *Suaahara*, as these measurements are the only way to assess stunting, wasting, and underweight among the under 5 population and to assess maternal BMI. The hemoglobin measurements are the standard way for assessing anemia, another aspect of *Suaahara*'s primary impact indicator.

Module 10: Grandmother's Perspective on Maternal and Child Health and Nutrition

In this module grandmothers, with preference given to the paternal grandmother when available, were asked a series of questions regarding child health and nutrition as well as maternal diet, health, and nutrition.

Research globally has indicated that other influential household members, such as grandmothers in the South Asian context, may play an important role in decisions which influence maternal and child health and nutrition. Therefore, it is important to assess a grandmother's knowledge and beliefs in key areas in order to make effective programming decisions for which household members to target with particular interventions. In assessing whether or not interventions are effective, it will also be important to note if the role of the grandmother in the house may be a factor supporting or hindering *Suaahara* interventions.

FEMALE COMMUNITY HEALTH VOLUNTEER (FCHV) QUESTIONNAIRE MODULES:

Module 1: Demographics and Socioeconomic Status

Module 2: FCHV Related Work Activities

Module 3: Demand for Services

Module 4: Exposure to Training

Module 5: Contacts with Others

Module 6: Knowledge of *Suaahara* Messages

Module 7: Motivation, Job Satisfaction, Self-Efficacy, and Confidence

Module 8: Supervisory Support

Module 9: Information Access

Module 10: Observations

Module 1: Demographics and Socioeconomic Status

This module provided us with the information about the FCHVs education level, literacy, and non-FCHV work engagement. We also gathered some information to assess socio-economic status including the household's living structure and household assets

This background information is important for describing the FCHV population and assessing any basic demographic or socio-economic changes in the FCHV population composition itself between baseline and endline. Knowing the baseline situation on FCHV SES, will help capture critical underlying factors that might influence the effect of the program inputs, at least for those programming aspects, which will go through FCHVs.

Module 2: FCHV Related Work Activities

We gathered detailed information in this module on the FCHVs main activities in this role, main activities during home visits, overall time commitment to being an FCHV, and her facilitation of mothers groups.

This baseline information can help to know in what ways interventions through FCHVs may be successful and which types of interventions may require other actors to ensure success. Additionally, awareness of how FCHVs time is used may indicate if and how *Suaahara* programming could be incorporated or not into existing FCHV activities. It also begins to highlight if and where mothers groups are active, another potential avenue especially for BCC.

Module 3: Demand for Services

This module focused on gathering information on the key services/issues that FCHVs are approached about by men and women and what an FCHV does when approached about child feeding problems.

Similar to the above module, the information from this module can help *Suaahara* be aware of how to effectively use FCHVs in programming. If there are certain health and nutrition areas for which the community relies on the FCHV, perhaps messages on these should go through FCHVs. It is also important to know if FCHVs are providing accurate information and suggestions to address child feeding so that consistent messages are being given to rural mothers related to IYCF.

Module 4: Exposure to Training

Using a long list of health, nutrition, and other types of training related to being an effective health volunteer, this module assesses the areas in which training has ever occurred versus occurred in the last year lending evidence to the types of training that are lacking.

If *Suaahara* plans to use FCHV as a mechanism of reaching the communities with important health and nutrition information, it is necessary to understand the areas in which further training of FCHVs may be necessary. Furthermore, if FCHVs in a particular ward lack knowledge of important practices *Suaahara* will be promoting, they could be roadblocks to effective implementation at the household level. For instance, if FCHVs have not been trained on WASH, for instance, then promoting WASH practices without first training FCHVs may be a risky strategy as the FCHV may be promoting or demonstrating by example different practices.

Module 5: Contacts with Others

This module sought to ascertain how regularly FCHVs are interacting with other health, nutrition, agriculture, and community development workers in their community.

If *Suaahara* aims for joint programming, it is vital to understand which networks are already strong and which are not. It will also be important to do a baseline and endline comparison to see if multi-sectoral programming has in any way encouraged great multi-sectoral collaboration at the local level in *Suaahara* program areas.

Module 6: Knowledge of *Suaahara* Messages

This module gathered detailed information regarding FCHV knowledge, attitudes and perceptions related to various *Suaahara* intervention areas. Some of the topics assessed include: best practices related to handwashing, benefits of breastfeeding, introduction of complementary foods, giving baby colostrum, reasons for child malnutrition, feeding an ill child, and awareness and promotion of family planning methods. Furthermore, we gathered information on FCHV use of tobacco and alcohol.

Suaahara aims at improving caregivers' knowledge as a route to improving IYCF practices and child nutrition. If FCHVs are a common person approached for advice related to child health and nutrition and knowledge and attitudes about IYCF contribute to one adopting better IYCF-related practices, and then ensuring that FCHVs have appropriate information in all areas contribution to child health and nutrition is vital. Changes between baseline and endline in FCHV knowledge, attitude, and practice after controlling for other factors, such as background characteristics, education, and economic status, may indicate reasons for effects of the intervention being seen or not.

Module 7: Motivation, Job Satisfaction, Self-Efficacy, and Confidence

Using a series of questions and asking for degree of agreement, this module aimed to assess what motivates one to work as an FCHV and how satisfied FCHVs are with their work.

Knowing how an FCHV is motivated as well as what aspects may be demotivating about their work, could lend important insights as to how best *Suaahara* can approach FCHVs for programming support.

Module 8: Supervisory Support

This module tried to assess who is supervising the work of FCHVs, how often, and what may be positive or negative about the current structure of supervision.

Although this information may not be something *Suaahara* can directly act upon, it lends further insights as to the opportunities and threats that may be persistent in working with FCHVs as an implementing partner.

Module 9: Information Access

Similar to the module asked to mothers during the survey, this module is intended to provide data both on exposure to health, nutrition, and agriculture/home gardening information via different media channels and preference for source of media for receiving health/nutrition messages.

Gathering data on exposure to media information is important, because *Suaahara* may use multiple communication channels to deliver key messages and to mobilize civil society. FCHV access to information is important; as the ward level person approached often about basic child health and nutrition information, *Suaahara* will want to ensure that its messages are reaching the FCHVs.

Module 10: Observations

At the end of the interview, some observations were made to assess the quality of dwelling arrangements, yet another socio-economic indicator. Spot checks were also done to examine whether the household had a toilet, its cleanliness, and whether human or animal feces were found in or near the compound. The FCHV was also asked to demonstrate or explain the steps involved in handwashing. Finally salt testing was done to test whether the FCHV household was using iodized salt or not.

These observations are quite important as an observation or demonstration can also lend insights that an interview question and response would not capture. Assessing FCHV practices is important, given their important role in the community; messages coming from them are one thing but their behavior should line up to best practices as they are role models watched by other mothers.

COMMUNITY LEADERS QUESTIONNAIRE MODULES:

- Module 1: Composition of Interviews
 - Module 2: Ward Access to Key Facilities
 - Module 3: Ward Access to Key Health and Agricultural Staff
 - Module 4: Migration
 - Module 5: Livelihood and Poverty
 - Module 6: Social Capital
 - Module 7: Leadership
 - Module 8: Economic Events
 - Module 9: Local Prices
-

Module 1: Composition of Interviews

This module was used to track who was invited and who attended the interview for which community leaders related to health, nutrition, and agriculture could join. The sex and role in the community of each participant was recorded.

As is typical in most surveys, this basic information was gathered to keep track of the perspective from which the remaining information gathered comes.

Module 2: Ward Access to Key Facilities

This module simply aimed to assess whether the particular ward in the survey had schools, health facilities, banks, a police station, an agricultural office, and other key facilities. We also enquired as to how far away these facilities were located, in instances in which the ward did not have one.

Information of this type can help to assess the overall development level of a particular ward. Programmatically, it is also important as it indicates which delivery mechanisms are available for use in different parts of Nepal.

Module 3: Ward Access to Key Health and Agricultural Staff

This module collected data on how many doctors, village health workers, NGO workers, agricultural extension workers, and other important health and agricultural staff were available at the ward level.

This information is important given that basic child health and nutritional needs cannot be met without key staff. It indicates to *Suaahara* where there may be important gaps in delivery mechanisms available and which aspects of the program will be more easily implementable in particular wards than others.

Module 4: Migration

This module only asked four questions and was primarily aimed at capturing population dynamics related to migration into and out of the ward in the last 1 and 5 years.

In attempting to create change at the local level, it is important to understand community dynamics and how fluid the population is.

Module 5: Livelihood and Poverty

In this module we asked for detailed information on the main sources of income, size of farms of households, amount of landlessness, average daily wages, and other basic demographics.

This information provides an overview of the demographics and socio-economic situation in particular wards, which provides a background understanding both for analyzing what is happening in these communities as well as for planning interventions there.

Module 6: Social Capital

In this module, information was gathered on active groups, the size of the groups, how long they have been in existence, and how often the group meets.

As *Suaahara* plans many types of interventions using various BCC strategies and diverse community entry points, awareness of which types of social groups are most common, how large they are, and how regularly they meet could help to channel some of the intervention strategies.

Module 7: Leadership

Leaders participating in the group interview were asked questions about leadership in their community, including how inclusive it is and on what types of development initiatives are community members allowed participate.

Knowing who is in control in a community and how hierarchical or not the leadership structure is can help to guide *Suaahara* programming decisions especially related to point of entry in the community.

Module 8: Economic Events

We requested information on economic events – positive or economic – happening in the previous 10 years in the community, as these types of events can really influence a community's development.

During *Suaahara* implementation, some communities may experience an economic shock that, in turn, may influence maternal or child health or nutritional status. Capturing information now and at endline on the frequency of such economic shocks was therefore critical to any assessment of impact. These economic events may help explain any lack of a positive impact in a certain area that might be observed at endline.

Module 9: Local Prices

In this module community leaders debated and came to agreement regarding the price of a list of items including agricultural item, food items, and many other miscellaneous items.

This type of information helps to ascertain the socio-economic status and development level of a particular community.

16.2: Sample size calculations

All sample size calculations were carried out using STATA 12 software. Sample sizes were estimated to detect changes assuming random sampling within each cluster using the *sampsi* command. Two different sample size estimates were obtained. The first was to detect changes in the prevalence of stunting among children under five years of age and the second was to detect changes in the prevalence of anemia for children between 6 months and five years of age.

Stunting and anemia

The following assumptions were used:

1. A baseline prevalence of stunting of 41 percent (based on the 2011 NDHS) and a reduction of 5 percentage points.
2. A baseline prevalence of anemia of 46 percent (based on the 2011 NDHS) and a reduction of 6 percentage points
3. An α of 0.05
4. A one sided test

STATA Output (Stunting from 41 to 36.5 percent)

```
. sampsi 0.41 0.365, alpha(0.05) n1(2040) n2(2040) one-sided
```

Estimated power for two-sample comparison of proportions

Test Ho: $p_1 = p_2$, where p_1 is the proportion in population 1 and p_2 is the proportion in population 2

Assumptions:

alpha = 0.0500 (one-sided)

$p_1 = 0.4100$

$p_2 = 0.3650$

sample size $n_1 = 2040$

$n_2 = 2040$

$n_2/n_1 = 1.00$

Estimated power:

power = 0.8987

STATA Output (Stunting from 41 to 35 percent)

```
. sampsi 0.41 0.35, alpha(0.05) n1(2040) n2(2040) one-sided
```

Estimated power for two-sample comparison of proportions

Test Ho: $p_1 = p_2$, where p_1 is the proportion in population and p_2 is the proportion in population

Assumptions:

alpha = 0.0500 (one-sided)

$p_1 = 0.4100$

$p_2 = 0.3500$

sample size $n_1 = 2040$

$n_2 = 2040$

$n_2/n_1 = 1.00$

Estimated power:

power = 0.9886

STATA Output (Anemia from 46 to 40 percent)

. sampsi 0.46 0.4, alpha(0.05) n1(1465) n2(1465)

Estimated power for two-sample comparison of proportions

Test $H_0: p_1 = p_2$, where p_1 is the proportion in population and p_2 is the proportion in population

Assumptions:

alpha = 0.0500 (two-sided)

$p_1 = 0.4600$

$p_2 = 0.4000$

sample size $n_1 = 1465$

$n_2 = 1465$

$n_2/n_1 = 1.00$

Estimated power:

power = 0.9006

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