

MELA RESEARCH

Baseline Coverage Survey for
the Independent Prospective
Evaluation of the Integrated
Community Case Management
(ICCM) in Ethiopia

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ACRONYMS

ARI:	Acute Respiratory Infection
BCG:	Bacillus of Calmette and Guerin
CI:	Catalytic Initiative
CIDA:	Canadian International Development Agency
EA:	Enumeration Areas
EPHA:	Ethiopia Public Health Association
HEP:	Health Extension Program
HEW:	Health Extension Worker
ICCM :	Integrated Community Case Management
IIP:	The Institute for International Programs
ITN:	Insecticide Treated Net
JHU:	Johns Hopkins University
MDG:	Millennium Development Goal
MUAC:	Mid upper arm circumference
NGO:	Non-governmental Organization
ORHB:	Oromia Regional Health Bureau
ORS:	Oral Rehydration Salt
ORT:	Oral Rehydration Therapy
PLC:	Private Limited Company
PPS:	Probability proportion to size
PSU:	Primary sampling unit
RHF:	Recommended Home Fluid
SAM:	Severe Acute malnutrition
SD:	Standard Deviation
SMM:	Severe Moderate malnutrition
UK:	United Kingdom
UNICEF:	United Nations Children Fund
USA:	United States of America
VIP:	Ventilated improved pit
WHO:	World Health Organization

EXECUTIVE SUMMARY

Background

Ethiopia has made a commitment to achieve the MDG 4 target of reduction in child mortality by 2015 demonstrated through the launching of the national Health Extension Program (HEP) in 2004. More recently the country adopted the scale-up of an integrated community case management (ICCM) of common childhood illnesses with support from development partners including CIDA and UNICEF. To assess the effectiveness of this initiative in accelerating reduction in under-five mortality, CIDA and UNICEF are also supporting the Institute for International Programs at Johns Hopkins University to conduct an independent impact evaluation of the ICCM program in Jimma and West Haraghe zones of the Oromia region. As part of this evaluation, Mela Research PLC, a private Ethiopian firm was contracted by UNICEF Ethiopia to conduct a baseline coverage survey with technical assistance from IIP-JHU. The baseline coverage survey was conducted between December 2010-February 2011 in rural area of Jimma and West Haraghe zones of the Oromia region.

The overall aim of this baseline survey was to provide baseline data that will be used as a basis for an evaluation of the integrated community case management of childhood illnesses in Ethiopia. The survey in particular assesses coverage of child health interventions, nutritional status of under-five children, and socio-economic status inequalities in coverage of child health interventions.

Design of the survey

The intervention and comparison *Woredas* have been randomly selected through an adapted, restricted randomization process, balanced by the presence of malaria, food security and geographic location. The Oromia Regional Health Bureau (ORHB) has committed to at least an 18-month phase-in between the identified intervention and comparison areas in Jimma and West Haraghe zones. Intervention *Woredas* will implement HEP+ICCM while the comparison *Woredas* will continue to offer services included in the routine HEP. For the purpose of this survey and report, the intervention areas are called "Phase 1 area" while the comparison "Phase 2 area". Implementation of the program in the two evaluation zones began immediately after this survey. An end-line surveys will also be conducted approximately 24 months after the baseline.

This baseline survey employed a two-stage cluster sample design stratified by zone and woreda. The clusters were represented by census enumeration areas (EAs). The EA selection was done by the Central Statistical Agency of Ethiopia based on the parameters provided by the survey team. The selection was based on the 2007 Population census frame. The survey targeted 3200 households, in 31 rural Woredas of the two zones. Participants in this survey included heads of households, all women 15-49 years of age and caretakers of children under the age of five years residing in the sampled households. In addition anthropometric measures ,height, weight and middle upper-arm circumference (MUAC) were taken from all children under the age of five in the selected households. The survey successfully collected data from 3,150 households, which resulted in a response rate of 98.4%. In these households 3,105 women in the reproductive age and 2,846 caretakers of children under-five

were interviewed. Women aged 15-49 provided information on their birth history and some health issues. Mothers or caretakers of children under-five provided health information for their children age 0-59 months residing in the sampled households. Height, weight and MUAC measurements were taken from 2,687 children age 0-59 months.

The survey obtained ethical clearance from the Ethiopia Public Health Association (EPHA) and Johns Hopkins Bloomberg School of Public Health Institutional Review Boards.

Main results of the survey

Household demographic composition:

- The vast majority of households (82.3%) were headed by males - 82.3% in phase 1 area and 82.2% in phase 2 areas.
- The mean age of the household members was 20.2 years, indicative of a young population. About 17% of the population were under 5 years of age and women age 15-49 years comprised 39% of the population.
- The average household size was 5.4 persons - 5.3 in phase 1 and 5.5 in phase 2 areas. About a tenth of the households in both areas reported to have 9 or more usual household members.
- On average 4.6 persons reported to share one sleep room. This was 4.7 and 4.6 persons per sleeping room, respectively, in phase 1 and phase 2 areas. Over three-quarter (77%) of the houses reported to have only one sleeping room.

Characteristics of women respondents:

- The mean age of survey respondents women was 29.1 and 28.7 years, respectively, in phase 1 and 2 areas. About 19% were young age 15-19 years. Older women age 45-49 years, on the other hand, comprised only 7.4% of the total. Most women (47%) fall in the age group 25-35 years.
- About 84% of the women were married or living with a man at the time of the survey. Similar proportion of women in phase 1 and phase 2 were married, 84% and 83.2%, respectively.
- The majority of the women (70.8% in phase 1 and 73.1% in phase 2) did not have any education. A little bit over a fifth (20.6%) had primary schooling while only 4.1% had secondary or higher education.

Characteristics of children under the age of 5 years:

- Sampled children included 22.3% infants age 0-11 months, 17.1% age 12-23 months old, 19.2% age 24-35 months old, 23.3% age 36-47 months and the remaining 18% were aged 48-59 months. This age distribution of children is comparable between phase 1 and 2 areas. About 52% of the sampled children were males.
- The vast majority of the children (98.5%) were living with their biological mothers - 98.6% in phase 1 and 98.5% in phase 2 areas.

Household water and sanitation:

- Nearly 39% of the households in the study area have unprotected springs as their leading source of water supply, followed by protected spring (21.4%), public tap (12.8%), river/pond/stream (9.3%), protected well (8.6%) and unprotected well (8.5%). This pattern holds both in phase 1 and 2 areas. On the whole, 43.3% of the

- households have access to improved water sources - 44.2% in phase 1 and 42.2% in phase 2 areas.
- Pit latrines without slabs or open pit were reported the predominant latrine facility in the study area - 72.4% in phase 1 and 70.2% in phase 2 areas. A tiny portion of the households (3% in phase 1 and 3.4 % in phase 2 area) reported to have improved latrines.
 - The survey asked women to report their hand washing behavior before or after certain events. On the whole, 61.2% of the women spontaneously reported that they often wash their hands before food preparation, followed by 45.1% before eating, 44% after defecation, 15.1% before feeding children and 11.4% after attending to a child who has defecated. Similar hand washing behavior pattern was noted both in phase 1 and phase 2 areas.

Bed net ownership and use:

- An Insecticide treated net (ITN), which comprises a long lasting net or a net treated in the previous 12 months, was found in 47% of the households. There were more ITNs in phase 1 areas than in phase 2 (51.2% vs. 43.4%).
- Only 15.3% of the under 5 children reported to have slept under ITN the previous night of the survey. Slightly more children in phase 2 area than in phase 1 reported to sleep under ITN the previous night (17.8% vs. 12.9%).

Child vaccination and vitamin A supplementation:

- Immunization card was seen by the interviewers for 16.7% of the children age 12-23 months. Although another 27.4% of the mothers/caretakers claimed that they had immunization card they couldn't produce it to the interviewers during the interview.
- Based on the information either recorded on the card or reported by the mother, 50.6% of the children have received BCG vaccine, 26.1% the third dose of Pentavalent and 64.1% measles vaccine. In general, children in phase 2 area are significantly more likely than those in phase 1 to receive BCG, polio, Pentavalent and measles vaccines.
- About 79% of the children age 6-59 months reported to have received at least one dose of vitamin A supplementation in the previous 6 months. Children in phase 2 area were found significantly more likely than those in phase 1 to receive vitamin A supplementation (84.5% vs. 74%). Two or more vitamin A doses were received by 48.9% of the children in phase 1 areas; this was a bit higher at 54.5% in phase 2 area.

Prevalence of childhood illnesses:

- Childhood illness reported to be common in the study areas with 33.8% of the children age 0-59 months had fever, 20.0% symptoms of ARI and 25.2% diarrhea in the two weeks preceding the survey.

Care seeking and treatment for fever:

- Among children who were sick with fever in the previous two weeks, 35.8% reported to receive any type of care. Only 23.4% reported to receive care from an appropriate service provider. The proportion of sick children with fever who received care from any or appropriate providers compare well between phase 1 and 2 areas. About 22% and 25.2% of children with fever received care from appropriate providers in phase 1 and 2 areas, respectively.
- Any antimalarial drug was received by 4.6% of children with fever - 5.1% and 4.2%, respectively, in phase 1 and 2 areas. Coartem was reported to be taken by 2.6% and 2.9% of the children with fever in phase 1 and 2 areas, respectively.

- Antibiotics were prescribed to 11.7% of the children with fever, which is comparable between phase 1 and 2 areas. Cotrimoxazole appeared the commonest antibiotic prescribed to 10.7% of the children with fever in phase 1 and 8.1% in phase 2 areas.
- Aspirin/paracetamol reported to be taken by 11.4% and 9.9% of the children with fever in phase 1 and 2 areas, respectively. Cough syrup/sedative/expectorant reported to be prescribed to 3.3% of the children with fever. About 3% of the children received an unknown medication. This was 2.6% and 3.3%, respectively, in phase 1 and 2 areas.

Care seeking and treatment for symptom of ARI:

- Among children with symptom of ARI in the previous two weeks, 39.4% were taken to any health provider for treatment. This compares between phase 1 and 2 areas at 40.9% and 37.9%, respectively. Care from appropriate health provider was received by 28.1% of the children with ARI - 27% and 29.1%, respectively, in phase 1 and 2 areas.
- Among children with symptom of ARI in the previous two weeks, 28.2% received any antibiotic. Amoxicillin and Cotrimoxazole were reported the two most commonly prescribed antibiotics, as reported by 13.8% and 13.1%, respectively.
- About a tenth of the children with symptoms of ARI received Aspirin/paracetamol and 4.6% any antimalarial drug.

Care seeking and treatment for diarrhea:

- Twenty-seven percent of sick children with diarrhea sought care in the previous two weeks. Only 16.4% were taken to an appropriate health service provider. The proportion that received care from appropriate health provider in phase 1 and 2 areas was 17.8% and 15%, respectively.
- Antibiotic was prescribed to only 5.2% of the children with diarrhea (5.2% in phase 1 and 5.1% in phase 2). Very few children (1.1%) were given injection. Home remedies or herbal medicine was given to 2.3% of the children. The provision of such medications to children with diarrhea was comparable between phase 1 and 2 areas.
- Only 11.4% of the children with diarrhea received ORS in the previous two weeks - 14.4% in phase 1 and 8.6% in phase 2 areas. About 47% (46.2% in phase 1 and 51.0% in phase 2) were given increased fluids. The proportion of children with diarrhea who received either ORS or RHF was 61.6% and 64.5%, respectively, in phase 1 and phase 2 areas.

Nutritional status of children:

- Chronic malnutrition can be considered very common in the study area with 39.8% of children age 0-59 months were stunted - 42.6% in phase 1 area and 37.0% in phase 2 areas. The proportion of children who are severely undernourished (HAZ<-2SD) is also notable – 18.4% in the overall sample, 20.3% in phase 1 and 18.4% in phase 2 areas.
- The proportion of children wasted was markedly high in the study area (18.4% for <-2SD)- 20.3% in phase 1 area and 16.4% in phase 2 area. Severely wasted children comprised 4.3%.
- The underweight rate is comparable between phase 1 and 2 at 30.2% and 29.0%, respectively. Severely underweight children (WAZ<-3SD) comprised 9.6% of the total - 10.4% and 8.7%, respectively, in phase 1 and 2 areas.

- Few children (1.4%) age 0-59 months were suffering from severe acute malnutrition (MUAC<11cm). This was 1.8% in phase 1 and 1% in phase 2 areas. Moderate acute malnutrition (MUAC: 11-12 cm) was noted among 8.1% of the children age 0-59 months (7.2% in phase 1 and 9.1% in phase 2).

Child feeding practices and therapeutic feeding:

- Based on a 24-hour mother's recall, the proportion of children age 0-5 months (n=220) that were given only breast milk (exclusively breastfed) were 36.1% - 35.6% and 36.7%, respectively, in phase 1 and 2 areas.
- Complementary feeding refers to the proportion of children age 6-8 months (n=169) who received solid, semi-solid or soft foods in the previous 24-hour period. On the whole, 43.3% of the children age 6-8 months had received solid, semi-solid or soft foods in the previous day. This was higher in phase 1 area at 50.1% vis-à-vis 35.4% in phase 2.
- The proportion of children age 0-23 months who ever received therapeutic food was 4.5% - 4.3% and 4.8%, respectively, in phase 1 and 2 areas. Only 1.5% were still receiving therapeutic food at the time of the survey.

Implications for the ICCM program

The survey provided baseline level of coverage indicators of childhood intervention and also highlighted several implications for the ICCM program. The most critical of these stem from the low levels of care-seeking for common childhood illnesses and treatment of these illnesses with the appropriate drugs. Although prevalence of fever, ARI and diarrhea among children under-five was high in this rural population, less than a third of ill children were taken to an appropriate health provider. There is need for the program to identify and tackle barriers to appropriate care-seeking to the Health Posts or nearest health centers. Targeted operations research studies would be necessary to identify actual and potential barriers. The survey also underscored the low level treatment with appropriate drugs in case of illness. To be effective, the program needs to ensure that every sick child that arrives at the health post received quality care and appropriate treatment. This can only be achieved through continued and sustained availability of appropriate drugs and supportive supervision for quality care in the health facilities.

Focus on ICCM should not overlook other child health intervention components such as immunization and micronutrient supplementation, utilization of ITNs for children under-five, water and sanitation for which the survey showed relatively lower coverage levels. Finally a focus on nutrition must be paramount because malnutrition is a major risk factor for the high morbidity and mortality among children under 5 years of age. Level of wasting and stunting were found to be particularly high in the study population.

Achieving rapid reduction in mortality among child under-five thus will require a sustained and continuous implementation ensuring that all components are delivered with high level quality. Increased attention must be given to strategies and actions to increase utilization of child health services at health posts and primary health facilities.

I. BACKGROUND AND OBJECTIVE

Ethiopia has made a commitment to achieve the MDG 4 target reduction in child mortality by 2015 demonstrated through the launching of the national Health Extension Program (HEP) in 2004. The key components of the program are approximately 30,000 Health Extension Workers (HEWs); community-based health workers that provide promotive, preventive, and selected curative health care services.

Previously, the HEWs provided ORS to children with diarrhea and diagnosed malaria with rapid diagnostic kits and treated with **artemisinin-based combination therapies (ACT)s**. Children with pneumonia were referred to health centers. Ethiopia has recently enabled a policy to expand management of pneumonia among children under-five with antibiotics to communities through the health extension workers. This provides a unique opportunity to accelerate increases in coverage of treatment of pneumonia, which is among the greatest killer of children under five in Ethiopia.. This expansion combines with the existing community management of malaria, diarrhea and severe acute malnutrition into an integrated community case management (HEP+ICCM).

The effectiveness of the ICCM depends on the strength of implementation. It is therefore essential to evaluate the effectiveness of the scale-up strategy to provide a basis for improvement in the future and global evidence on effective strategies for accelerating reduction in under-five mortality. The external support provided by CIDA and UNICEF for the evaluation of HEP+ICCM in Ethiopia is based on the aim of demonstrating that acceleration of ICCM can result in rapid decrease in childhood mortality. This evidence of effectiveness is needed urgently to justify and expand investments in ICCM in Ethiopia and other low income countries. Both donors have included support for an independent, external evaluation of HEP+ICCM to ensure that the evidence generated by the evaluation is widely accepted and disseminated. The lessons learnt during the evaluation process will allow continuous improvement of implementation in Ethiopia as well as in other countries in the region and around the world.

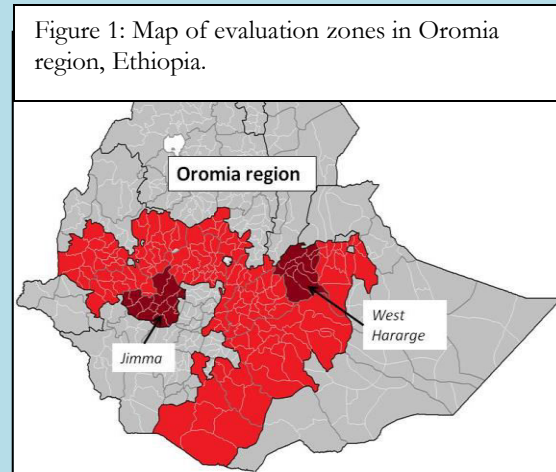
The overall aim of this baseline survey is to provide baseline data that will be used as a basis for an evaluation of the HEP+ICCM program in Ethiopia. The survey in particular assesses coverage of child health interventions, nutritional status of under-five children, and socio-economic status inequalities in coverage of child health interventions in Jimma and West Hararghe zones of the Oromia region. An end-line survey is planned approximately 24 months after the baseline. This baseline study was fielded during December 2010-February 2011.

II. SURVEY DESIGN AND IMPLEMENTATION

2.1. Study area

In agreement with the Ethiopia Federal Ministry of Health and the Oromia Regional Health Bureau, two zones in the Oromia region are selected for the ICCM evaluation (fig. 1). In these two zones, the evaluation will focus on rural areas where the ICCM will be implemented through rural HEWs.

These zones were chosen because of their relatively large size, relatively low levels of disease outbreak and food insecurity, strong implementation partners, and possibility for phase-in of the ICCM implementation.



The Oromia Regional Health Bureau (ORHB) has committed to at least an 18-month phase-in between the identified intervention and comparison areas in these two zones. Intervention *Woredas* will implement HEP+ICCM while the comparison *Woredas* will continue to offer services included in the routine HEP. For the purpose of this survey and report, the intervention areas are called "Phase 1 area" while the comparison, "Phase 2 area". Implementation of the program in the two evaluation zones has already started, following completion of the baseline coverage survey. The intervention and comparison *Woredas* have been randomly selected through an adapted, restricted randomization process, balanced by the presence of malaria, food security and geographic location (See Annex 6 for the list of survey *Woredas*). Urban areas were excluded since the urban HEP is a recent addition and implemented differently.

2.2. Study participants/respondents

Participants in this survey included heads of households, all women 15-49 years of age and mothers/caretakers of children under the age of five years residing in the sampled households.

The heads of households in the randomly selected households were interviewed and asked for a listing of all household residents including the age, gender and relationship to the head, among others. Additional questions on household assets and access to water and sanitation and malaria prevention were asked. Women of childbearing age (15-49 years) residing in the selected households were also asked to report the number of live births they have experienced in their lifetime and how many of those children are still alive. The interviews also determine socio-economic status, including education, literacy, religion and ethnicity of the women. Mothers or caregivers of children under the age of five were interviewed on child feeding practices, nutritional supplementation and vaccination status and recent illnesses, treatment practices, etc. Weight, height and middle upper arm circumference

(MUAC) were measured from all children under-five years of age residing in the sampled households.

2.3. Sample design and sample size:

The baseline survey employed a two-stage cluster sample design stratified by woreda. The clusters were represented by census enumeration areas (EAs) based on the 2007 Population census.

Since 2007 there were changes of Woredas and Kebeles such as merging and split of Kebeles and Woredas and creation of new ones in some localities of both zones. We updated the woreda names and Kebeles in close consultation with the zonal health offices and the implementing partners. The current list of Kebeles in each Woreda was then updated by the CSA for selection.

At the first sampling stage, a predetermined number of clusters were randomly drawn using systematic random sampling with probability proportionate to size (PPS) within each woreda. This was done by the CSA and neither Mela nor IIP-JHU had access to the sampling frame.

Maps were obtained for each of the selected EA from the CSA and a complete household listing was carried out in these EAs.

At the second stage, a predetermined number of households (between 25 and 27) were selected through systematic random sampling within each selected EA. The sample size was equally distributed in each of the evaluation woreda.

As part of the impact evaluation, IIP-JHU is also planning to test approaches for monitoring mortality. One such approach relies on summary birth history information from women age 15-49. Thus a sample size of 11,000 households was estimate for collection of information on summary birth history data. Of this sample a random sub-sample of 3,200 served for the coverage survey. The first stage sampling conducted by CSA involved selection of 14-15 EAs per Woreda. Of these selected EAs, a sub-sample of 4 EAs was selected by MELA with systematic random sampling with equal probability. The second stage involved the selection of 15-27 households from each selected EAs to reach a sample size of 3,200 households for the coverage sample.

2.4. Survey instruments:

Questionnaire: A structured and pre-coded questionnaire was used. The questionnaire covers a range of topics including household and respondents characteristics, household assets, materials used for the construction of households, water and sanitation, bed net ownership and use, women's characteristics, children ever born and surviving, childhood characteristics, child feeding practices, immunization, vitamin A supplementation, childhood illnesses and treatment practice, therapeutic feeding, Edema diagnosis, among others. Language experts translated the questionnaires into *Oromifa*, the local language spoken in the

evaluation zones. There was validation of the translation by a panel of 2-3 language experts. In order to maintain comparability of the Oromifa questionnaire with other surveys including the DHS, the response categories of the Oromifa questionnaire were translated to Amharic (official language of Ethiopia), as implemented in the Ethiopia DHS. The questionnaire was pre-tested and administered in *Oromifa*. The English survey questionnaire is annexed (Annex 9).

Anthropometric measurements: Weight and height of children age 0-59 months were measured. Weight of the children was measured with minimum clothing and without any ornaments on a digital scale (salter hanging scales) to the nearest 0.1 kg; following the standard procedures recommended by WHO. Laying length of under two children was measured on a wooden board to the nearest 0.1 cm. Standing height of children older than two years was measured without shoes or anything on the head on a wooden board or Leicester stadiometer (Child Growth Foundation, UK) to the nearest 0.1 cm, following the standard procedures recommended by WHO. Mid-upper Arm Circumference (MUAC) of children under 5 was also taken.

2.5. Questionnaire pre-testing

The Oromifa questionnaire was pre-tested in Jimma and West Hararghe zones in a sample of rural households and respondents. Survey supervisors and trainers including JHU experts participated in the pre-testing. In general, the questionnaire was found applicable and easy to administer although few issues were identified and revised accordingly.

2.6. Training of survey teams

A 13-day training was conducted for the survey teams in Addis Ababa. Fifty-three interviewers, nine supervisors and two zonal coordinators participated in the training. At the end of the training, 45 best performing interviewers were retained who together with nine supervisors and two zonal coordinators were deployed. The training encompassed key topics including background of the ICCM program in Ethiopia, objectives of the ICCM evaluation, basic data collection and interviewing techniques, delineation of EAs and household listing, systematic sampling of households for interview, identification of respondents, child anthropometric measurement, MUAC, Edema diagnosis and basic tips on survey organization and supervision. It was a highly participatory training that was supplemented by mock interview, role play, and field practice by the interviewers and supervisors. The training was facilitated by Mela and IIP-JHU investigators. Field staff (interviewers and supervisors) were trained in both Amharic and Oromifa.

Field practice was the major part of the training. Three field practices were conducted in an Oromia rural district near Addis Ababa. The first one, at the middle of the training, focused on practicing the questionnaire and developing interviewing skills. Two other field practices were conducted at the end of the classroom training that created an opportunity for interviewers, supervisors and the whole field team to practice EA delineation, household listing, systematic selection of households, interviewing respondents, and weighing and measuring of children under five years of age.

The field staff was also trained to observe ethical rules during data collection. The JHSPH human subject research ethics field training guide (www.jhsph.edu/irb) was used for the training. This training emphasized the importance of obtaining informed consent and the voluntariness of participation in the survey; address the need to conduct the interview in a private setting and to ensure the confidentiality of responses; discuss potentially sensitive issues such as reporting of the death of a child and how to handle them; and emphasize the importance of transparency and honesty with study subjects.

2.7. Fieldwork and Data collection

Nine data collection teams were formed. Each team composed of five interviewers (four interviewers and one measurer) and one supervisor. Five teams were deployed in Jimma; four in West Hararghe. Each team has given a four-wheel vehicle and assignment Woredas. All teams were deployed to the field immediately after the training was completed. Fieldwork started on December 25, 2010 and continued until February 24, 2011. Close supervision and follow up were made by the survey supervisors and coordinators. Mela and JHU-IIP staff members have also made occasional field visits and supervision. Supervision mainly encompassed spot checking, field questionnaire editing and frequent meeting with the survey teams and supervisors.

Although all the data collection teams were provided with vehicles in the field to visit the selected EAs, in most instances interviewers had to travel on foot for two or more hours to get to the selected EAs since most EAs are not easily accessible by car. Teams in certain EAs, especially in West Hararghe, experienced difficulty in reaching EAs located in mountainous areas due to absence of proper approachable roads. Despite these challenges, however, the survey can be considered a success

2.8. Data processing and cleaning

Data was entered into a computer using EPI-INFO by six experienced data encoders who were assisted by 3 other data clerks dedicated to coding and hard-soft copy verification. We employed double data entry and developed a simultaneous data cleaning procedure of inconsistencies and data entry errors. Ranges and skip rules as well as internal consistency checks of variables were inbuilt into the EPI-INFO to ensure data quality. STAT 10 was used for quality assurance and consistency checks of the double data entry. Reconciliation of the double entry data was done in about 70% of the variables included in the survey. All the indicators included in this report have been 100% reconciled via double data entry. When there was discordant records in the two entries, corrections were made by checking the questionnaire hard copies.

2.9. Data analysis and presentation of survey results

The analysis was guided by the survey objectives and the indicators collected. Dummy tables were created to guide data analysis. Data analysis mainly focused on descriptive statistics and in few instances Univariate analysis. STATA 10 was used for data analysis

In this report, survey results are reported separately for Phase 1 and 2 areas and for the two areas combined (total). We also annexed zonal values for selected indicators (Annex 1). An

equal number of EAs were taken by Woreda irrespective of the population size of each sampling domain. Thus, sample weights were introduced to reflect the total population in each domain. All tables and figures in the report were weighted (see Annex 3 for details on sample weighting). All associations and correlations were tested for significance. Univariate analysis mostly focused on Chi-square test (for categorical variables) and T-test (for continuous variables).

2.10. Ethical Considerations:

The study obtained ethical clearance from the Ethiopia Public Health Association (EPHA) and JHU. Participants of the study were given complete information as to the objective of the study and their benefits/risks and only following their consent were they participated in the interview. Data collectors and other survey teams were trained on how to maintain the ethical aspect of the study.

All the information and data collected was compiled, organized, stored, analyzed, and retrieved guaranteeing confidentiality. Information was analyzed as group data and not on individuals. No one outside of the study team has access to any of the questionnaires or personal identifier information collected.

III. HOUSEHOLD POPULATION AND CHARACTERISTICS

3.1. Results of household and women interviews

Table 3.1. presents information on the target and achieved sample size as well as the response rates. The survey visited 3202 households but interviews were successfully completed in 3150 households, a response rate of 98.4%. The response rate compares well between phase 1 and 2 areas, 98.4% and 98.3%, respectively.

In the surveyed households 3132 eligible women age 15-49 years were identified. Of these women, 3105 were interviewed yielding a response rate of 99.1%- 99.9% in phase 1 and 98.3% in phase 2 areas. By design, the survey also targeted children under the age of five years. In total, 2853 children under the age of five years were identified as eligible in the sampled households. The mothers/caretakers of these children were the primary respondents to the various questions concerning these children. The survey achieved a response rate of 99.1% by interviewing mothers/caretakers of 2846 children under the age of five years. Anthropometric measurements including MUAC were taken from 2678 children, resulting a 94.4% response rate.

Table 3.1. Results of household, women interviews and anthropometric measurements by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

Result of Interview	Evaluation phase		Total
	Phase I Area	Phase II Area	
Sampled households (n)	1598	1604	3202
Interviewed households (n)	1573	1577	3150
Household response rate (%)	98.4	98.3	98.4
Eligible women (n)	1565	1567	3132
Interviewed women (n)	1564	1541	3105
Women's response rate (%)	99.9	98.3	99.1
Eligible children under-five (n)	1477	1376	2853
Mother/caretaker interviewed (n)	1477	1369	2846
Mother/caretaker response rate (%)	100.0	99.5	99.8
Children height & weight measured (n)	1414	1273	2687
Children height & weight - response rate (%)	95.7	92.5	94.4

3.2. Age-sex distribution of household population

In the 3150 households interviews completed there were 16,668 household members, 8165 in phase 1 area and 8503 in phase 2 area. The mean age of the household members was 20.2 years, indicative of a young population. About 17% of the population were under five years of age and women age 15-49 years comprised 39% of the population. There is no

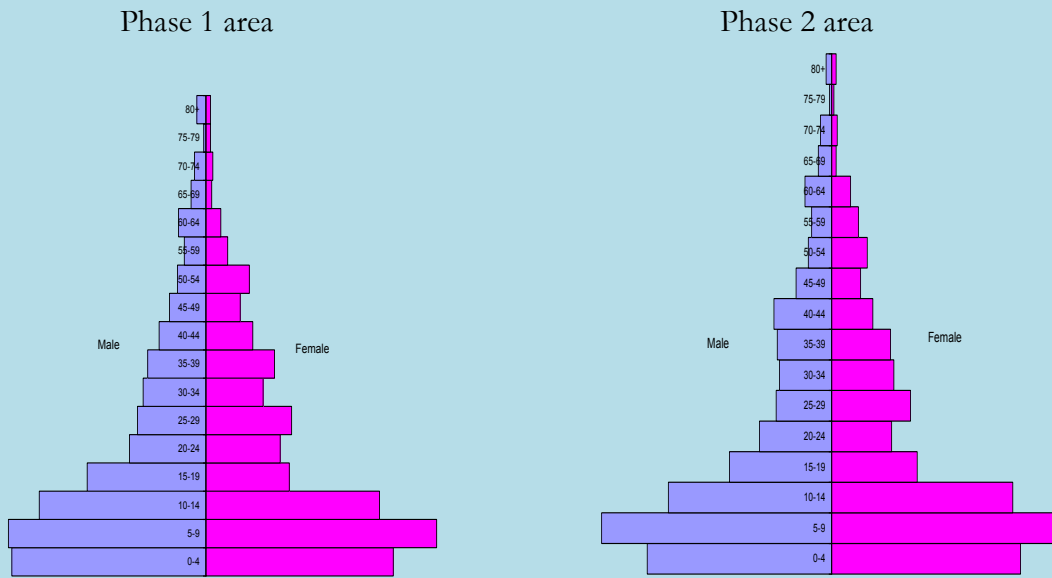
significant difference in the age distribution of household population between the phase 1 and phase 2 areas (Table 3.2 and figure 2.).

Table 3.2. Percent distribution of de-jure household population age group, sex and evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Age	Evaluation phase						Total		
	Phase I			Phase II			Male	Female	Total
	Male	Female	Total	Male	Female	Total			
0-4	17.0	16.4	16.7	16.6	17.0	16.8	16.8	16.7	16.7
5-9	17.3	20.2	18.7	20.7	20.5	20.6	18.9	20.3	19.6
10-14	14.6	15.2	14.9	14.7	16.3	15.5	14.7	15.7	15.2
15-19	10.4	7.3	8.9	9.2	7.7	8.5	9.8	7.5	8.7
20-24	6.7	6.5	6.6	6.5	5.4	5.9	6.6	6.0	6.3
25-29	6.0	7.5	6.7	5.0	7.1	6.0	5.5	7.3	6.4
30-34	5.5	5.0	5.3	4.7	5.6	5.1	5.2	5.2	5.2
35-39	5.1	6.0	5.5	4.9	5.3	5.1	5.0	5.6	5.3
40-44	4.1	4.1	4.1	5.2	3.7	4.5	4.6	3.9	4.3
45-49	3.2	3.0	3.1	3.2	2.6	2.9	3.2	2.8	3.0
50-54	2.5	3.8	3.1	2.1	3.2	2.7	2.3	3.5	2.9
55-59	1.9	1.9	1.9	1.8	2.4	2.1	1.9	2.1	2.0
60-64	2.4	1.3	1.9	2.4	1.7	2.1	2.4	1.5	2.0
65-69	1.3	0.5	0.9	1.2	0.4	0.8	1.3	0.5	0.9
70-74	1.0	0.6	0.8	1.0	0.5	0.7	1.0	0.5	0.8
75-79	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.2
80+	0.8	0.4	0.6	0.5	0.4	0.5	0.7	0.4	0.5
Missing	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean age	20.8	20.1	20.5	20.2	19.6	20.0	20.5	19.6	20.2
Number	4216	3949	8165	4294	4209	8503	8510	8158	16668

No statistically significant differences were found between phase 1 and 2.

Figure 2: Percent distribution of the household population by age group and study arm, Jimma and West Hararge zones, Oromia, December 2010-February 2011.



3.3. Household demographic composition

Table 3.3. details household headship pattern and household family size. As expected, the vast majority of households (82.3%) were headed by males - 82.3% in phase 1 area and 82.2% in phase 2 areas. On the other hand, 14.2% of the households were reported to be female-headed. In 3.5% of the sampled households the information on who heads the household was missing. The average household size in the total sample was 5.4 with 5.3 in phase 1 and 5.5 in phase 2 areas. About a tenth of the households in both areas reported to have nine or more usual household members.

Table 3.3. Percent distribution of households by household headship and number of usual members by evaluation arms, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Characteristics	Evaluation phase		
	Phase I area	Phase II area	Total
Household headship			
Male	82.3	82.2	82.3
Female	13.1	15.5	14.2
Missing	4.6	2.3	3.5
Total	100.0	100.0	100.0
Number of usual members			
1	2.0	2.2	2.1
2	8.5	7.4	8.0
3	13.8	14.1	13.9
4	16.4	14.1	15.3
5	15.9	15.3	15.7
6	13.9	13.9	13.9
7	12.2	13.0	12.6
8	7.7	9.2	8.4
9+	9.6	10.8	10.2
Mean household size	5.3	5.5	5.4
Total	100.0	100.0	100.0
Number of households	1577	1573	3150

No statistically significant differences were found between phase 1 and 2.

3.4. Household energy source

The vast majority of the households (95.7%) in the study area did not have electric power supply - 94.5% in phase 1 and 97% in phase 2 areas. Wood is reported as the single most cooking material for these households - 95.2% in phase 1 and 94.4% in phase 2 areas. Few households (3.5%) reported straw/shrub/grass among the main cooking fuel. Other cooking fuel options are rarely reported in both areas.

Source of energy for lighting mainly include Kerosene (44.9%), Gas (35.8%) and Oil lamp (12.2%). These were the main energy sources both in phase 1 and phase 2 areas (Table 3.4).

Table 3.4. Percent distribution of households according to selected household characteristics by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Household characteristics	Evaluation phase		Total
	Phase I area	Phase II area	
Electricity			
Yes	5.0	2.6	3.9
No	94.5	97.0	95.7
Missing	0.5	0.4	0.5
Main cooking fuel			
Electricity	0.1	0.1	0.1
Kerosene	1.2	0.2	0.7
Charcoal	0.5	0.1	0.3
Wood	95.2	93.4	94.4
Straw/shrubs/grass	0.6	0.4	0.5
Agricultural crop	1.8	5.5	3.5
Animal dung	0.2	0.0	0.1
No food cooked in the household	0.1	0.2	0.1
Missing	0.3	0.1	0.2
Main source of energy for lighting			
Electricity	5.0*	2.6	3.9
Solar	0.2	0.2	0.2
Gas	32.5	39.6	35.8
Generator	0.3	0.3	0.3
Kerosene	46.3*	43.3	44.9
Oil lamp	13.2	11.0	12.2
Candles	0.1	0.1	0.1
Firewood	1.9	2.3	2.1
Missing	0.9	1.1	1.0
Number of households	1577	1573	3150

*p<0.05, (compares phase 1 and 2 areas)

3.5. Household characteristics

In general, limited materials were used for the construction of floor, walls and roofs in the study area (Table 3.5). In the houses visited the main materials used for the floor were earth (52%) and dung (46%). These are comparable between phase 1 and 2 areas. Other types of floors were rarely reported.

The vast majority of the houses (97%) had their wall made of wood with mud/bamboo - 96.4% of the phase 1 and 97.6% of the phase 2.

Two materials were predominantly used for the construction of roofs - (1) thatch/leaf/grass and (2) corrugated iron. On the whole, 64.2% of the houses' roofs were made of

thatch/leaf/grass, followed by corrugated iron (33.8%). There was similar percentage of houses having roofs made of these materials in phase 1 and 2 areas.

There is in general a scarcity of sleeping rooms in the study area. On average 4.6 persons reported to share one room. This was 4.7 and 4.6 persons per sleeping room, respectively, in phase 1 and phase 2 areas. The majority (77%) of the houses reported to have only one sleeping room, 20.3% two and 2.3% three or more sleeping rooms.

Table 3.5. Percent distribution of households according to materials used for the construction of houses and number of sleeping rooms by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Household characteristics	Evaluation phase		Total
	Phase I area	Phase II area	
Main material of the floor			
Earth, sand	51.6	52.4	52.0
Dung	46.9	45.2	46.1
Wood planks	0.3	0.0	0.1
Palm/bamboo	0.0	0.1	0.0
Parquet or finished wood	0.0	0.0	0.0
Vinyl or asphalt strips	0.0	0.1	0.0
Cement	0.7	0.5	0.6
Carpet	0.3	1.5	0.9
Missing	0.2	0.3	0.3
Main material of the exterior walls			
No walls	0.2	0.1	0.2
Cane, trunks, bamboo, reed	2.1	1.4	1.8
Bamboo, wood with mud	96.4	97.6	97.0
Stone with mud	1.0	0.4	0.7
Plywood	0.0	0.0	0.0
Cement	0.0	0.1	0.0
Cement blocks	0.0	0.0	0.0
Wood planks/shingles	0.2	0.1	0.1
Missing	0.1	0.2	0.1
Main material of the roof			
No roof	0.1	0.1	0.1
Thatch, leaf, grass	64.3	64.0	64.2
Rustic materials, plastic sheet	0.0	0.0	0.0
Reed, bamboo	0.3	1.0	0.6
Wood planks	0.9	0.2	0.6
Cardboard	0.0	0.2	0.1
Corrugated iron/metal	33.7	33.9	33.8
Wood	0.1	0.1	0.1
Missing	0.6	0.5	0.6
Number of sleeping rooms			
One	78.2	75.6	77.0
Two	18.6	22.2	20.2
Three or more	2.6	2.0	2.3
Missing	0.6	0.2	0.5
Persons per sleeping room	4.6	4.7	4.6
Number of Households	1577	1573	3150

No statistically significant differences were found between phase 1 and 2.

3.6. Household assets

Table 3.6 shows possession of different household effects and agricultural lands. A little bit over a third of the households (35.2%) reported that at least one family member owned a wrist watch. This was reported at 33.8% and 36.8%, respectively, in phase 1 and phase 2 areas.

Radio was reported to present in about 38% of the households- 37.9% in phase 1 and 37.7% in phase 2. On the other hand, only very few households (0.9%) reported to own Television.

Household access to phone appeared to be limited with only 11.7% having had a non-mobile phone. Of note, households in phase 1 area appeared to have more non-mobile phone than those in phase 2 (14.1% and 9.1%, respectively). Mobile phone was very rare as reported by only 0.1% of the households interviewed

About 42% of the households had chairs; 26.2% tables. Household possession of tables and chairs was better in phase 1 area than in phase 2. The percentage that owned tables was 30% in phase 1 area, which is higher than the 22% reported in phase 2. Likewise, more households in phase 1 area than in phase 2 reported to have chair (46% and 37%, respectively).

Family ownership of bed and mattresses was also assessed. Over two-third of the households (66.8%) reported to have mattresses without bed, which compares well between phase 1 and 2 areas. Only 8.6% of the households had bed with cotton/sponge/spring mattresses - 10.6% and 6.2%, respectively, in phase 1 and 2 areas.

Ownership of livestock such as cattle, donkeys and horses were also reported. Most households (78.9%) reported to have had at least one cattle, followed by poultry (56%), sheep/goat (51.9%), donkeys (24%), horses (8.6%) and mules (3.6%). In general, possession of these livestock was comparable between phase 1 and phase 2 areas. In 15% of the households beehives were reported.

Ninety one percent of the households reported to own agricultural land - 90.1% and 92.5%, respectively, in phase 1 and phase 2 areas.

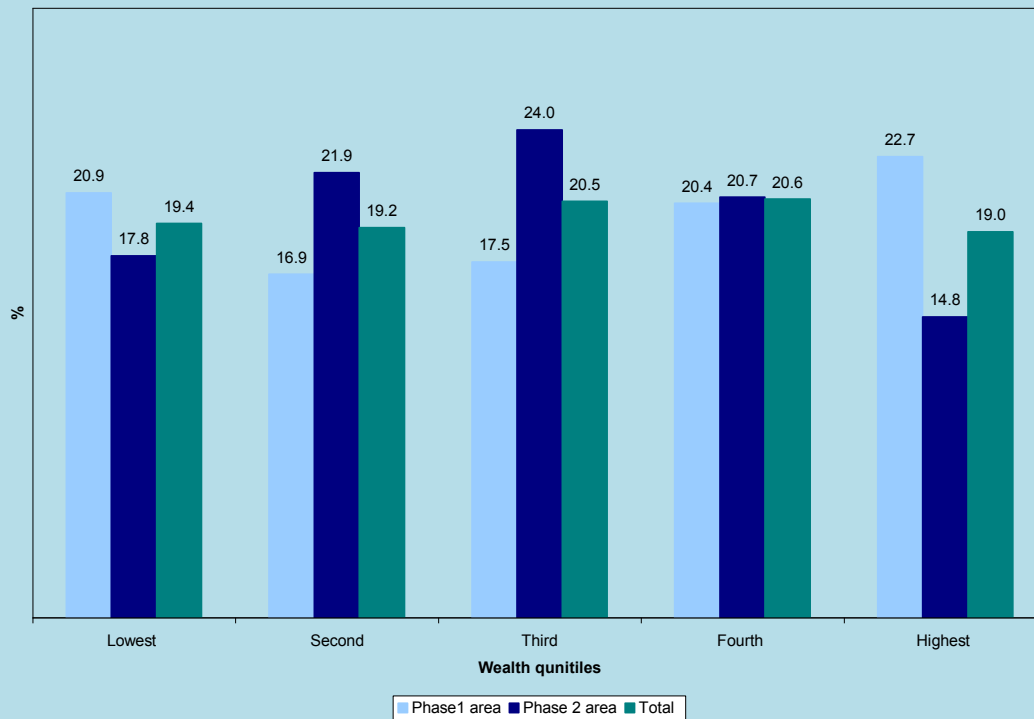
We divided households into five quintiles according to a wealth index based on household possessions and other indicators of wealth (See Annex 4 for details on the construction of the wealth quintiles). The wealth score was divided into five categories as lowest, second, third, fourth and highest (Figure 1). There appears some variation in the wealth quintiles between phase 1 and 2 areas. The proportion of households that fall in the highest wealth quintiles were 22.7% in the phase 1 area, which is higher than the 14.8% for the same in the phase 2.

Table 3.6. Percent distribution of households according to possession of various household effects by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Household characteristics	Evaluation phase		Total
	Phase I area	Phase II area	
Household effects			
Watch/clock	33.8	36.8	35.2
Radio	37.9	37.7	37.8
Television	1.4	0.5	0.9
Non-mobile phone	14.1	9.1	11.7
Mobile phone	0.01	0.2	0.1
Refrigerator	0.5	0.5	0.5
Table	30.0*	22.0	26.2
Chair	46.0*	37.0	41.8
Bed with straw, thatch mattress	19.4	17.3	18.4
Bed with cotton, sponge, spring mattress	10.6	6.2	8.6
Bed without mattress	6.6	6.0	6.3
Mattress without bed	67.0	66.6	66.8
Electric Mitad	0.7	0.8	0.7
Kerosene lamp	57.0	65.8*	61.1
Means of transport (ownership)			
Bicycle	0.6	0.2	0.4
Motorcycle	0.3	0.0	0.2
Car for private use	0.0	0.1	0.04
Car or truck for commercial use	0.0	0.1	0.03
Cart	0.6	0.6	0.6
Plow	69.0	72.7	70.7
Horses	8.7	7.9	8.3
Cattle	76.0	82.2*	78.9
Camel	1.1	1.9	1.5
Donkeys	24.1	24.4	24.3
Mules	4.1	3.0	3.6
Sheep/goats	50.0	54.1	51.9
Poultry	54.1	58.1*	56.0
Beehive (with bees)	15.5	14.5	15.0
Ownership of agricultural land	90.1	92.5	91.2
Number of Households	1577	1573	3150

*p<0.05, (compares phase 1 and 2 areas)

Figure 3. Percent households according to wealth quintiles by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.



3.7. Selected characteristics of women

Women's age distribution is depicted in Table 3.7. The mean age of the women in the reproductive age was 29.1 and 28.7 years, respectively, in phase 1 and 2 areas. Data show 18.5% of the women were between 15-19 years of age. This was comparable between the two areas although it is a bit higher in phase 2 than phase 1 (19.7% vs. 17.5%). Older women age 45-49 years, on the other hand, comprised only 7.4% of the total. Most women (47%) fall in the age group 25-35 years.

About 84% of the women were married or living with a man at the time of the survey. Similar proportion of women in phase 1 and phase 2 were married, 84% and 83.2%, respectively.

A notably high percentage of women in the study area had no schooling (70.8% in phase 1 and 73.1% in phase 2). A little bit over a fifth (20.6%) had primary schooling while only 4.1% had secondary or higher education. Likewise, there is no significant ($p > 0.05$) difference in the schooling pattern of the women interviewed between phase 1 and 2 areas.

Women respondents were predominantly Muslim at 86.2% - 84.1% in phase 1 and 88.5% in phase 2. This was followed by Orthodox Christians at 8.3% and Protestants, 2.7%. The proportion of Orthodox Christians was significantly higher in phase 1 area (10%) than in phase 2 (6.4%).

Women residing in Phase 1 areas were significantly more likely to come from the wealthiest households (24% in Phase 1; 15.5% in Phase 2). This is important to note as wealthier households may have better access to healthcare and be more food secure.

Table 3.7. Percent distribution of women according to selected background characteristics by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Background characteristics	Evaluation phase		Total
	Phase I area	Phase II area	
Age			
15-19	17.5	19.7	18.5
20-24	15.9	14.8	15.4
25-29	18.8	18.8	18.8
30-34	12.6	14.9	13.7
35-39	15.0	14.1	14.6
40-44	10.2	9.8	10.0
45-49	7.5	7.4	7.4
Missing	2.7	0.6	1.7
Mean age	29.1	28.7	28.9
Marital status			
Never married	13.0	15.8	14.3
Married or living together	84	83.2	83.6
Missing	3.0	1.1	2.1
Schooling			
No schooling	70.8	73.1	71.9
Primary	20.4	20.9	20.6
Secondary or higher	4.5	3.6	4.1
Missing	4.3	2.3	3.4
Religion			
Orthodox	10.0*	6.4	8.3
Catholic	1.1	0.2	0.7
Protestant	1.6	3.9	2.7
Muslim	84.1	88.5	86.2
Traditional, Animist	0.4	0.1	0.3
Other	2.7	0.9	1.9
Wealth quintile			
Lowest	21.2	17.8	19.6
second	16.3	22.9	19.4
Middle	17.1	23.0	19.9
Fourth	20.2	20.0	20.1
Highest	24.0*	15.5	20.0
Missing	1.2	0.8	1.0
Total	100.0	100.0	100.0
Number of women	1541	1564	3105

*p<0.05 , (compares phase 1 and 2 areas)

3.8. Characteristics of children under the age of five years

The age-sex distribution of children as well as whether the caretaker is a biological mother was assessed and presented in Table 3.8. The study included 2846 children age 5 years or younger. The age distribution of these children revealed that 22.3% were infants age 0-11 months, 17.1% were 12-23 months old, 19.2% were 24-35 months old, 23.3% were 36-47 months old and the remaining 18% were aged 48-59 months. This age distribution of children is comparable between phase 1 and 2 areas. There was a little bit higher proportion of males than females (51.5% vs. 48.5%).

The vast majority of the children (98.5%) were living with their biological mothers - 98.6% in phase 1 and 98.5% in phase 2 areas.

In terms of wealth, 23% of the children were residing in a household with the lowest wealth score while 17% in the highest. Children in phase 1 areas were statistically significantly more likely than children in phase 2 areas to reside in a household with the highest wealth score (20.9% vs. 12.8%)

Table 3.8. Percent distribution of children under the age of 5 years by age, sex and whether the caretaker is a biological mother by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Background characteristics	Evaluation phase		Total
	Phase I area	Phase II area	
Age in months			
0-11 months	22.8	21.8	22.3
12-23 months	16.2	18.1	17.1
24-35 months	19.7	18.6	19.2
36-47 months	24.0	22.7	23.3
48-59 months	17.4	18.8	18.0
Sex			
Male	53.1	49.8	51.5
Female	46.9	50.2	48.5
Caretaker is biological mother			
Yes	98.6	98.5	98.5
No	1.4	1.5	1.5
Wealth quintile			
Lowest	25.5	20.4	23.0
second	16.7	23.9	20.2
Middle	16.9	23.9	20.3
Fourth	18.4	18.1	18.3
Highest	20.9*	12.8	17.0
Missing	1.6	0.8	1.2
Total	100.0	100.0	100.0
Number of children under 5	1369	1477	2846

*p<0.05 , (compares phase 1 and 2 areas)

IV. HOUSEHOLD WATER AND SANITATION

4.1. Household water sources

Households in the study area had unprotected springs as their leading source of water supply (38.7%), followed by protected spring (21.4%), public tap (12.8%), river/pond/stream (9.3%), protected well (8.6%) and unprotected well (8.5%). This pattern is common to both phase 1 and 2 areas. On the whole, only 43.3% of the households have access to improved water source - 44.2% in phase 1 and 42.2% in phase 2 areas (Table 4.1).

Table 4.1. Percentage distribution of households according to water source by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Household water source	Evaluation phase		Total
	Phase I area	Phase II area	
Piped into dwelling	0.0	0.1	0.0
Piped into yard/plot	0.0	0.1	0.0
Public tap/standpipe	10.0	15.9	12.8
Borehole	0.2	0.6	0.4
Protected well	9.0	8.2	8.6
Unprotected well	9.2	7.7	8.5
Protected spring	24.9*	17.4	21.4
Unprotected spring	36.7	41.0*	38.7
Rainwater	0.1	0.0	0.1
River/lake/pond/stream	9.8	8.8	9.3
Missing	0.1	0.2	0.1
Total	100.0	100.0	100.0
"Improved" water source@	44.2	42.2	43.3
Number of households	1577	1573	3150

@Piped into household, public standpipes, boreholes, protected wells or springs or rainwater collection

*p<0.05 , (compares phase 1 and 2 areas)

4.2. Household latrine

Pit latrines without slabs or open pit were reported the predominant latrine facility in the study area - 72.4% in phase 1 and 70.2% in phase 2 areas (Table 4.2). A small percentage of households (2.2%) reported to have flushed pit latrines. Other types of latrines were rarely reported. A tiny portion of the households (3% in phase 1 and 3.4 % in phase 2 area) had improved latrines.

Table 4.2. Percent distribution of household by type of latrine according to evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Household latrine	Evaluation phase		Total
	Phase I area	Phase II area	
Flush to pit latrine	2.3	2.2	2.2
Ventilated improved pit latrine (VIP)	0.2	0.0	0.1
Pit latrine with slab	0.6	1.2	0.8
Pit latrine without slab/open pit	72.4	70.2	71.4
No facilities or bush or field	24.4	26.2	25.2
Missing	0.1	0.2	0.2
Total	100.0	100.0	100.0
"Improved" latrine*	3.0	3.4	3.2
Number of households	1577	1573	3150

No statistically significant differences were found between phase 1 and 2.

* *connection to sewer or septic system, pour-flush latrine, pit latrine and VIP*

4.3. Hand washing behavior of women

The survey asked women to report their hand washing behavior before or after certain events (Table 4.3). It was a spontaneous response by the women and recorded by the interviewers as responded. On the whole, 61.2% of the women spontaneously reported that they often wash their hands before food preparation, followed by 45.1% before eating, 44% after defecation, 15.1% before feeding children and 11.4% after attending to a child who has defecated. Similar hand washing behavior pattern holds both in phase 1 and phase 2 areas. Of note, the noted low hand washing habits of the mothers before feeding their children is of particular concern because it was at this time that the child was particularly vulnerable to the transmission of pathogens.

Interviewers attempted to observe availability of water and soap/detergent in the surveyed households. Only in 15.5% of the households was water available at the hand washing location. Soap/detergent was reported to be available in 78.2% of the households. This was found to be significantly higher in phase 2 areas (75.4% in Phase 1; 81.3% in phase 2).

Table 4.3. Percent distribution of women according to hand washing behavior and availability of water, soap or detergent by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

	Evaluation phase		Total
	Phase I area	Phase II area	
Hand washing behavior			
Before food preparation	59.7	62.9	61.2
Before eating	43.8	46.6	45.1
Before feeding children	16.0	14.0	15.1
After defecation	44.4	43.4	44.0
After attending to a child who has defecated	11.5	11.2	11.4
Missing	3.1	1.4	2.3
Hand washing location			
Water available	15.5	15.4	15.5
Soap or detergent available	75.4	81.3*	78.2
Hand washing location not seen	5.9	2.1	4.1
Missing	3.2	1.2	2.3
Total	100.0	100.0	100.0
Number of women	1541	1564	3105

*p<0.05, (compares phase 1 and 2 areas)

V. MOSQUITO NETS

5.1. Bed net ownership

Bed net ownership of households was assessed as shown in Table 5.1. Overall, 48.1% of the surveyed households reported to have at least one bed net - 44.5% in phase 1 area and 52.1% in phase 2 areas. The proportion of households that owned two or more bed nets were 23.8% and 31.3%, respectively, in phase 1 and 2 areas.

An Insecticide treated net (ITN) consisting of a long lasting net, was found in 47% of the households. There were more ITNs in phase 2 areas than in phase 1 (51.2% vs. 43.4%). In phase 1 area 23.4% of the households owned two or more ITNs; this was 30.6% in phase 2. In general, households in phase 2 were significantly more likely to own bed nets (ITN or otherwise).

Table 5.1. Percent distribution of households according to bed net ownership by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Household ownership of bed net	Evaluation phase		Total
	Phase I area	Phase II area	
Any type of mosquito net			
At least one	44.5	52.1**	48.1
More than one	23.8	31.3*	27.3
Average per HH	0.7	0.9	0.8
Insecticide treated net@			
At least one	43.4	51.2**	47.0
More than one	23.4	30.6*	26.8
Average per HH	0.7	0.9	0.8
Total	1577	1573	3150

@Long lasting ITN

*p<0.05, **p<0.001 , (compares phase 1 and 2 areas)

5.2. In-door residual spraying (IRS)

The majority of the households (82.6%) did not receive any IRS in the past 12 months. Only 7% reported to have had IRS in the previous three months and 6.5% in the previous 4-6 months. Only 3% of the households had such spray in the previous 7-12 months. On the whole, there was no significant difference in the proportion of households having had IRS between phase 1 and 2 areas (Table 5.2).

Table 5.2. Percent distribution of households according to insecticide residual spraying (past 12 months) by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Insecticide residual spraying:	Evaluation phase		Total
	Phase I area	Phase II area	
Not sprayed	83.7	81.4	82.6
Sprayed 0-3 months ago	7.3	6.6	7.0
Sprayed 4-6 months ago	4.9	8.4	6.5
Sprayed 7-12 months ago	3.3	2.6	3.0
Do not know	0.8	1.0	0.9
Total	1577	1573	3150

5.3. ITN use by children under 5 years of age

Most children under the age of 5 did not sleep under ITN the previous night. Only 15.3% of the under 5 children reported to have slept under ITN the previous night of the survey. More children in phase 2 than in phase 1 area reported to sleep under ITN the previous night (17.8% vs. 12.9%).

There is no significant trend in the proportion of children that slept under ITN the previous night by sex or age of the child. Nevertheless, children from relatively wealthiest family were significantly more likely than those from the poor to sleep under ITN. The proportion that slept under ITN the previous night ranged from a low of 8% among families with the lowest wealth quintiles to 22.2% among those with the highest. Similar trend by wealth quintiles can be noted both in phase 1 and 2 areas. It should be noted that the survey data collection took place outside the malaria season. Families may be more likely to not sleep under a bed net if it is not malaria season.

Table 5.3. Percent children under the age of 5 years according to insecticide treated net (ITN) use by sex, age wealth quintiles and evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Child characteristics	Under-five children who slept under a ITN last night				Total	
	Phase I		Phase II		%	No. of under-five children
	%	No. of under-five children	%	No. of under-five children		
Sex						
Male	13.8	724	19.6	748	16.5	1472
Female	12.0	677	16.1	749	14.0	1426
Age						
0-11 months	15.3	299	20.4	297	17.7	596
12-23 months	10.0	189	16.9	244	13.7	433
24-35 months	12.7	206	21.1	215	16.5	421
36-47 months	12.5	228	16.9	256	14.7	484
48-59 months	12.8	479	15.9	485	15.3	964
Wealth quintiles						
Lowest	6.2	368	10.5	314	8.0	682
Second	7.7	255	12.2	345	10.2	345
Middle	12.1	222	20.6	342	16.9	342
Fourth	20.6	244	24.9	269	22.6	269
Highest	20.4**	291	25.4 ^a **	212	22.2 ^a **	212
Total	12.9	1401	17.8*	1497	15.3	2898

*p<0.05 (compares phase 1 and 2 areas),

^a**p<0.001 (chi-square for trend comparing ITN use by wealth quintiles)

VI. CHILD IMMUNIZATION AND VITAMIN A SUPPLEMENTATION

6.1. Child vaccination

In this survey, women who have a child age 12-35 months were asked whether they had a vaccination card for the child. If card was available, the interviewer was required to copy carefully the dates on which the child received vaccinations against each disease. Interviewers asked to review both the **yellow campaign cards and the white routine vaccination cards**. When the mother could not produce the card, she was asked whether the child had received a vaccination against tuberculosis (BCG), Pentavalent, poliomyelitis (Polio) and measles. For Pentavalent and Polio, information was also obtained on the number of injections or oral doses given. Although card data is the most valid, history data have been confirmed to be reliable worldwide for monitoring vaccination performance.

Immunization card was seen by the interviewers for 16.7% (n=77) of the children age 12-23 months. Although 27.4% of the mothers/caretakers claimed that they had immunization card many couldn't produce it to the interviewers during the interview. The remaining (55.9%) reported that they did not have immunization cards for their children.

Table 6.1 shows the percentage of children age 12-23 months who have received the various vaccinations based on information obtained from card or mother's report. Based on the information either recorded on the card or reported by the mother, 50.6% of the children have received BCG vaccine, 26.1% the third dose of Pentavalent and 64.1% measles vaccine. The first dose of polio vaccine was received by 71% of the children, the third dose by 34.3%. In general, children in phase 2 area are significantly more likely than those in phase 1 to receive polio and Pentavalent vaccines ($p < 0.05$).

6.2. Vitamin A supplementation

Survey respondents were shown a picture of vitamin A capsule and asked if their child received a supplement during the last twelve months. For those who have received a supplement, the number of months since they receive the supplement was collected. In the entire sample, 78.6% of the children age 6-59 months reported to have received at least one dose of vitamin A supplementation in the previous six months of the survey. Children in phase 2 area were found significantly more likely than those in phase 1 to receive vitamin A supplementation (84.5% vs. 74%). Two or more vitamin A doses were received by 48.9% of the children in phase 1 areas; this was a higher at 60.6% in phase 2 area.

There is no difference in the receipt of vitamin A supplementation by sex. Younger children age 6-11 months in particular have the lowest coverage. The proportion of children age 6-11 months who had any vitamin A supplementation in the past 6 months was 51.2%. The corresponding coverage for the other age brackets ranged from 77.8% to 87.5%. There was no clear trend between the receipt of vitamin A supplementation and wealth quintile.

Table 6.1. Percent distribution of children 12-23 months according to vaccination status by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Source of information	BCG	Polio				Pentavalent			Measles@	Number of children aged 12-23 months
		0	1	2	3	1	2	3		
Vaccination card										
Total	100.0	100.0	100.0	100.0	59.8	100.0	100.0	100.0	100.0	77
Evaluation phase										
Phase I area	100.0	100.0	100.0	100.0	46.0	100.0	100.0	100.0	100.0	30
Phase II area	100.0	100.0	100.0	100.0	70.6	100.0	100.0	100.0	100.0	47
Mother's report										
Total	40.6	8.5	65.2	55.8	29.2	42.7	24.1	11.3	55.5	411
Evaluation phase										
Phase I area	36.2	5.3	57.8	50.1	25.5	38.2	19.4	11.2	49.8	185
Phase II area	44.5	11.3	71.8	60.9	32.6	46.8	28.2	11.3	60.7	226
Vaccination card or mother's report										
Total	50.5	23.8	71.0	63.2	34.3	52.3	36.7	26.1	64.1	488
Evaluation phase										
Phase I area	46.3	20.2	64.4	57.9	28.7	47.9	32.0	25.2	59.1	215
Phase II area	54.2	26.9	76.7*	67.8	39.3	56.1*	40.8	26.9	68.5	273

*p<0.05 (compares phase 1 and 2 areas)

@ Measles coverage included mother's report of participation in national immunization campaign that included measles vaccination.

Table 6.2. Percent distribution of children 6-59 months according to Vitamin A supplementation by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Background characteristics	Evaluation phase								Total			
	Phase I				Phase II				Any dose	2+ doses	Missing/unknown	Number of children 6-59m
	Any dose	2+ doses	Missing/unknown	Number of children 6-59m	Any dose	2+ doses	Missing/unknown	Number of children 6-59m				
Sex												
Male	72.6	47.0	0.8	651	80.9	58.8	0.6	647	76.4	52.4	0.7	1298
Female	75.8	51.2	1.0	566	86.0	62.5	0.9	656	81.0	56.9	0.9	1222
Age												
6-11 months	46.7	17.1	1.6	150	57.4	18.5	0.0	128	51.2	17.7	0.9	278
12-23 months	72.2	45.4	1.7	215	82.8	57.5	0.0	273	77.8	51.8	0.8	488
24-35 months	82.3	56.4	0.5	266	93.8	69.3	0.0	266	87.5	62.2	0.3	532
36-47 months	79.9	57.0	0.7	305	86.2	69.1	1.4	348	83.1	63.1	1.1	653
48-59 months	76.7	53.6	0.6	281	84.0	65.7	1.8	288	80.0	59.1	1.1	569
Wealth quintiles												
Lowest	73.6	46.3	1.3	318	89.8	66.3	0.5	263	80.4	54.7	1.0	581
Second	78.4	55.9	1.2	216	84.1	60.1	1.5	297	81.6	58.3	1.4	513
Middle	69.4	45.6	1.1	196	82.1	56.2	0.3	307	76.6	51.6	0.7	503
Fourth	71.9	46.3	1.0	208	76.2	58.9	0.9	235	74.0	52.2	1.0	443
Highest	77.1	51.8	0.0	260	85.8	65.1	0.0	188	80.3	56.6	2.5	448
Total	74.0	48.9	0.9	1217	84.5*	60.6**	0.8	1303	78.6	54.5	0.8	2520

*p<0.05, **p<0.001 (compares phase 1 and 2 areas)

VII. CHILDHOOD ILLNESS AND TREATMENT PRACTICE

7.1. Prevalence of childhood illnesses

In this survey the mothers or caretakers of children age 0-59 months were asked a series of questions on the prevalence of fever, cough, difficulty in breathing and diarrhea during the two weeks preceding the survey. For those children with cough, their mothers or caretakers were asked if the child had rapid breathing or difficulty breathing and, if so, whether this was due to a problem in the chest. A symptom of acute respiratory infection (ARI) is defined by the presence of cough and rapid breathing that is chest related.

Table 7.1. shows the percent distribution of children age 0-59 months who had different symptoms of illnesses in the two weeks preceding the survey. Childhood illness is common in the study areas with 33.8% of the children had fever, 20.0% symptoms of ARI and 25.2% diarrhea in the two weeks preceding the survey. Children in Phase 2 reported significantly higher rates of diarrhea (26.5%) than children in phase 1 (24%). The same trend holds true for ARI illness (18.4% phase 1; 27.1% phase 2).

The survey found a relatively higher rate of childhood illness compared to previous studies including the 2005 DHS. Most of the childhood illnesses including ARI are known to vary substantially through the year, reflecting the impact of seasonal changes on children living in subsistence economies. The time of year that a survey was conducted affects the reported prevalence of the various childhood illnesses. Thus comparison of child morbidity status between the different surveys should be made with caution. During a data review meeting (NFR available upon request), zonal health officials reported an increased rate of facility ARI during the period of survey data collection.

There wasn't significant difference between males and females in the prevalence of these illnesses. The age distribution of childhood morbidity shows some interesting pattern in that children age 6-23 months seem to be more prone to these illnesses than those under the age of 6 months and the older children. In particular, the observed high prevalence of diarrhea (40.2%) in the 6-11 months is of particular interest since this period coincides with introduction of complimentary feeding, when children have lost the immunological protection of breast milk but have not yet built their own immunity against diseases. On the other hand children under six months reported to have the lowest incidence of illnesses in the previous 2 weeks. The noted difference in the prevalence of diarrhea by age is statistically significant at $p < 0.001$. There is no clear trend on relationship between household wealth and the prevalence of childhood illnesses.

Table 7.1. Prevalence of childhood illnesses in the past two weeks by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011.

Background characteristics	Evaluation phase								Total			
	Phase I				Phase II				Fever	symptom of ARI	Diarrhea	Number of under-five children
	Fever	symptom of ARI@	Diarrhea	Number of under-five children	Fever	Symptom of ARI	Diarrhea	Number of under-five children				
Sex												
Male	36.1	19.9	25.7	712	34.0	21.3	28.1	739	35.1	20.6	26.9	1451
Female	31.7	16.6	22.0	657	33.0	22.1	24.9	738	32.3	19.3	23.4	1395
Age (in months)												
0-5 months	28.2	14.8	13.8	151	20.3	16.8	24.3	181	24.2	15.9	19.1	332
6-11 months	34.1	18.3	40.8	144	40.2	20.0	39.4	122	36.7	19.0	40.2	266
12-23 months	33.1	20.3	33.2	225	44.0	21.8	40.6	268	38.7	21.1	37.0	493
24-35 months	35.4	18.2	19.7	269	33.3	22.9	24.9	283	34.4	20.4	22.1	552
36-47 months	35.7	18.1	22.1	328	33.8	23.1	18.9	334	34.8	20.4	20.6	662
48-59 months	34.4	18.8	18.3	239	28.4	22.3	17.7	277	31.4	20.6	18.0	516
Wealth quintiles												
Lowest	28.1	12.6	19.7	358	25.7	19.6	23.8	308	27.1	15.6	21.4	666
Second	33.9	16.3	25.3	249	31.4	22.3	28.0	340	32.5	19.7	26.9	589
Middle	38.4	24.4	22.6	214	42.9	23.6	33.2	336	41.0	23.9	28.6	550
Fourth	37.5	26.0	31.4	240	32.0	18.6	21.9	268	34.9	22.4	26.9	508
Highest	34.6	16.0	23.2	287	33.7	24.9	22.1	210	34.2	19.3	22.8	497
Total	34.0	18.4	24.0	1369	33.5	21.7*	26.5*	1477	33.8	20.0	25.2	2846

*p<0.05, (compares phase 1 and 2 areas)

@ ARI = Acute Respiratory Infection

7.2. Care seeking for fever

Mothers/caretakers were asked: “Did you seek advice or treatment for the illness (of their children) from any source?”. If they answered yes, then they were asked: “Where did you seek advice or treatment?”. Respondents were asked to mention all the places of care-seeking.

Table 7.2 shows the percentage of children under five by source of treatment for fever. Among children who were sick with fever in the previous two weeks, 35.8% reported to receive any type of care. Only 23.4% reported to receive care from an appropriate service provider. We define appropriate providers to include providers in hospitals, health centers, health post, private and NGO health facilities. It excludes pharmacy, shop/vendor and traditional healers. The proportion of sick children with fever who received care from any or appropriate providers is similar between phase 1 and 2 areas. About 22% and 25.2% of such children received care from appropriate providers in phase 1 and 2 areas, respectively.

Figure 4 depicts care seeking of children with fever by sex and age. While there is no significant difference in care seeking practices by sex, age difference is apparent. It appears that children age 6-11 months with fever were the group most likely to be taken to appropriate health provider than children of any other age bracket. Younger children age 0-5 months appeared the least likely to be taken for treatment. This pattern hold in both phase 1 and 2 areas.

The percentage of children taken to a provider for treatment of fever varies positively and significantly ($p < 0.001$) with the family's wealth status (Figure 4a). The proportion of children with fever who received care from appropriate health service provider was 15.5% among families who scored the lowest in wealth quintiles and this was increased to 17.8%, 21.5%, 29.9% and 34.5%, respectively, among those families with the second, third, fourth and highest wealth quintile scores. This trend persists in both phase 1 and 2 areas.

Mother's or caretaker's education is also associated positively and significantly ($p < 0.05$) with seeking care for children with fever. Among women with no schooling the proportion that sought care from appropriate provider for their children with fever was 21.5%. This was significantly increased to 32% and 43.8%, respectively, among those children whose mother had primary and secondary education.

Table 7.2. Percent distribution of children who had fever in the past two weeks according to treatment seeking practices and places treatment sought by children under the age of 5 years by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation phase		Total
	Phase I area	Phase II area	
Any care seeking	35.1	36.5	35.8
Care seeking from appropriate provider*	21.8	25.2	23.4
Care seeking provider			
Govt hospital	0.8	0.2	0.5
Govt health center	8.6	7.6	8.1
Govt health station/ clinic	1.8	4.4	3.0
Govt health post/HEW	4.6	2.6	3.7
Other public facility	0.1	0.0	0.0
Private hospital	0.8	0.0	0.4
Private clinic	7.7	11.3	9.4
Pharmacy	3.7	2.9	3.3
Other private facility	0.1	0.0	0.1
NGO/Faith based health facility	0.7	0.5	0.6
Drug vendors/store	0.9	0.1	0.5
Shop	8.1	6.1	7.2
Traditional Healer	2.1	0.8	1.5
Volunteer community health worker	0.1	0.0	0.1
Other sources	1.2	1.3	1.2
Missing	0.8	0.8	0.8
Number of under 5 children with fever	463	519	982

No statistically significant differences were found between phase 1 and 2.

**includes hospitals, health centers, health post, private and NGO health providers but excluded pharmacy, shop/vendor and traditional healer*

Figure 3. Among sick children with fever (previous 2 weeks), the proportion who sought care from appropriate care provider by child's sex (A) and age (B) according to evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

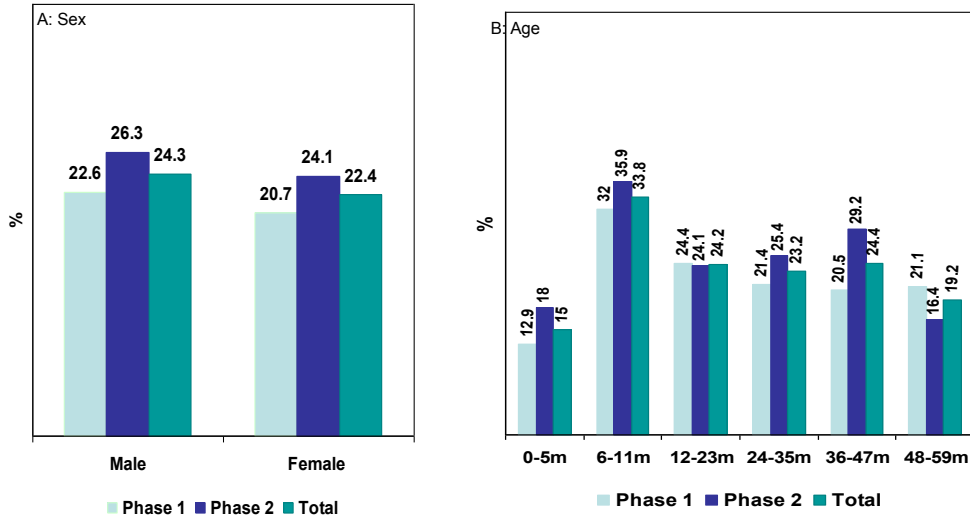
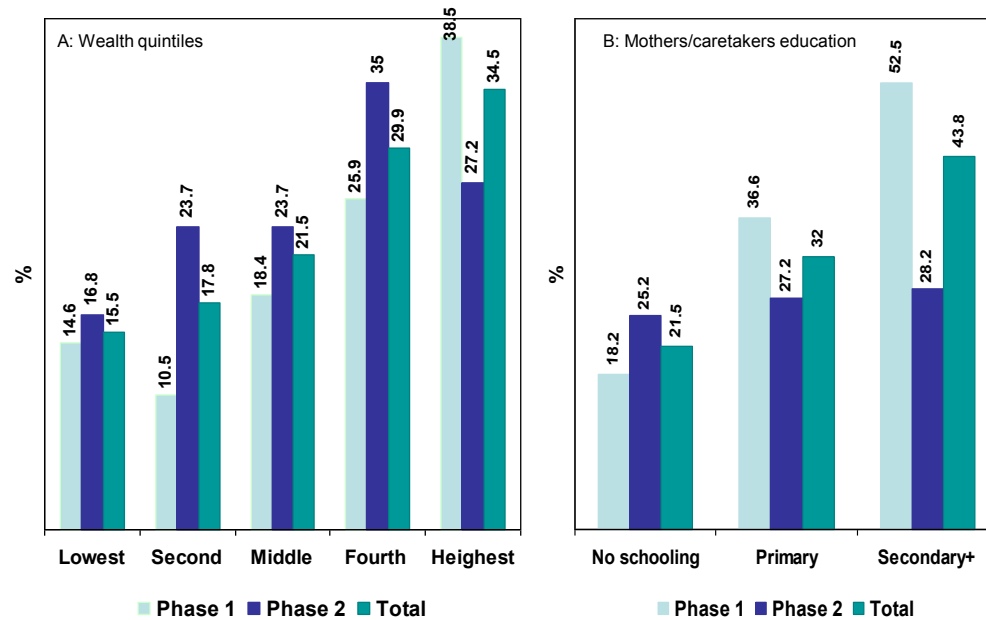


Figure 4. Among sick children with fever (previous 2 weeks), the proportion who sought care from appropriate care provider by wealth (A) and caretakers education (B) according to evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011



7.3. Type of treatment for fever

Mothers or caretakers of children with fever were asked what medications the child received for their illness, if any. They were asked to show the medication if available with them. If the mother or caretaker was unable to show the medication, interviewers displayed a pill card and asked the mother to identify the medication the child has taken. Interviewers then recorded the type of drug onto the questionnaire. Then the mother was asked where she obtained the medication. This question was asked regardless of whether the child went to a provider or not. Table 7.3 shows the type of treatment for fever.

As shown in Table 7.3, any antimalarial drug was received by 4.6% of children with fever - 5.1% and 4.2%, respectively, in phase 1 and 2 areas. Coartem was reported to be taken by 2.6% and 2.9% of the children with fever in phase 1 and 2 areas, respectively.

Antibiotic drugs and pain killers were relatively more commonly prescribed to children with fever in the study area. Antibiotics were prescribed to 11.7% of the children with fever, which is comparable between phase 1 and 2 areas. Cotrimoxazole appeared the commonest antibiotic prescribed to 10.7% of the children with fever in phase 1 and 8.1% in phase 2 areas. Likewise, Aspirin/paracetamol reported to be taken by 11.4% and 9.9% of the children with fever in phase 1 and 2 areas. Cough syrup/sedative/expectorant reported to be prescribed to 3.3% of the children with fever. About 3% of the children received an unknown medication; this was 2.6% and 3.3%, respectively, in phase 1 and 2 areas.

Table 7.3. Percent distribution of children with fever in the previous two weeks according to type of treatment for fever in the by children under the age of 5 years by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation phase		Total
	Phase I area	Phase II area	
Antimalarial			
Any antimalarial	5.1	4.2	4.6
Chloroquine	2.1	1.2	1.7
Coartem	2.6	2.9	2.7
Quinine	0.4	0.0	0.2
Other anti-malarial	0.0	0.1	0.0
Antibiotic			
Any antibiotic	11.6	11.7	11.7
Cotrimoxazole	10.7	8.1	9.4
Amoxicillin	0.6	0.2	0.4
Other antibiotic	0.3	3.4	1.9
Others			
Aspirin/ paracetamol	11.4	9.9	10.7
Ibuprofen	0.8	0.3	0.6
Cough syrup/ sedative/ expectorant	4.1	2.3	3.3
Unknown pill or syrup	0.9	1.6	1.2
Homemade remedy/ Traditional medicine	1.6	1.9	1.7
Other	2.6	3.3	2.9
Unknown/missing	1.4	0.5	1
Number of under 5 children with fever	463	519	982

No statistically significant differences were found between phase 1 and 2.

7.4. Care seeking for symptom of ARI

Based on the mothers/caretakers report, 39.4% of the children with symptom of ARI in the previous two weeks were taken to any health provider for treatment (Table 7.4). This compares between phase 1 and 2 areas at 40.9% and 37.9%, respectively. Care from appropriate health provider was received by 28.1% of the children with ARI - 27% and 29.1%, respectively, in phase 1 and 2 areas.

Of all children with symptom of ARI, 12.3% were taken to private health facilities for treatment and this was followed by government health center at 8.2%, health post at 4.5% and government health station/clinic at 3.6%. Pharmacy and shops were also reported among the places visited by children with symptom of ARI in the previous 2 weeks. In the whole, the pattern of treatment seeking and the places where treatment was sought were similar between phase 1 and 2 areas.

Care seeking behavior of mothers/caretakers for children with symptom of ARI does not vary by sex (Figure 5A). On the other hand, variation in care seeking for children's symptom of ARI can be noted by age. Figure 4B shows that children age 6-11 months with symptom of ARI are more likely than others to receive care from appropriate health providers. Care was less likely to be sought for children age 0-5 months compared to older children.

The proportion of children taken to a provider for treatment of symptom of ARI varies positively and significantly ($p < 0.001$) with the wealth of the family, ranging from 22.3% to 37.8% between the lowest and highest wealth quintile for appropriate provider (Figure 6). Mother's education is also associated positively and significantly ($p < 0.05$) with seeking care for children with symptom of ARI, ranging from 26.5% among women with no schooling to 51.8% among those with secondary education.

Table 7.4. Percent distribution of under 5 children with symptom of Acute Respiratory Infection (ARI) in the past two weeks by treatment seeking practice and places treatment sought by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation phase		Total
	Phase I area	Phase II area	
Any care seeking	40.9	37.9	39.4
Care seeking from appropriate provider*	27.0	29.1	28.1
Care seeking provider			
Govt hospital	0.8	0.0	0.4
Govt health center	9.8	6.7	8.2
Govt health station/ clinic	2.9	4.3	3.6
Govt health post/HEW	4.2	4.7	4.5
Other public facility	0.1	0.0	0.0
Private hospital	1.3	0.0	0.6
Private clinic	10.8	13.6	12.3
Pharmacy	5.1	3.2	4.1
Other private facility	0.1	0.0	0.1
NGO/Faith based health facility	1.7	1.0	1.3
Drug vendors/store	1.7	0.0	0.8
Shop	6.4	3.4	4.8
Traditional Healer	1.6	0.5	1.1
Volunteer community health worker	0.0	0.2	0.1
Other sources	0.4	2.1	1.3
Missing	0.6	0.4	0.5
Number of under 5 children with ARI	253	336	589

No statistically significant differences were found between phase 1 and 2.

Figure 5. Among sick children with symptom of ARI (previous 2 weeks), the proportion who sought care from appropriate care provider by sex (A) and age (B) according to evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

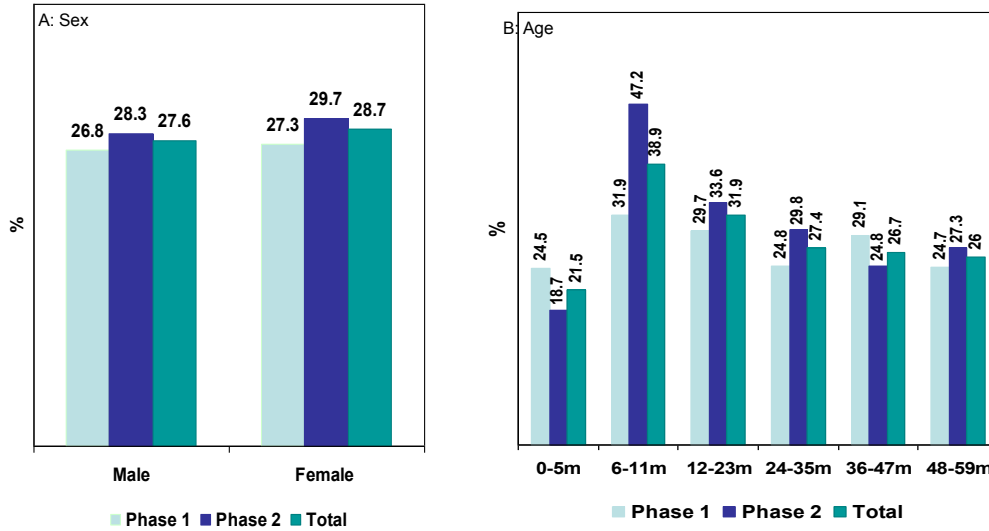
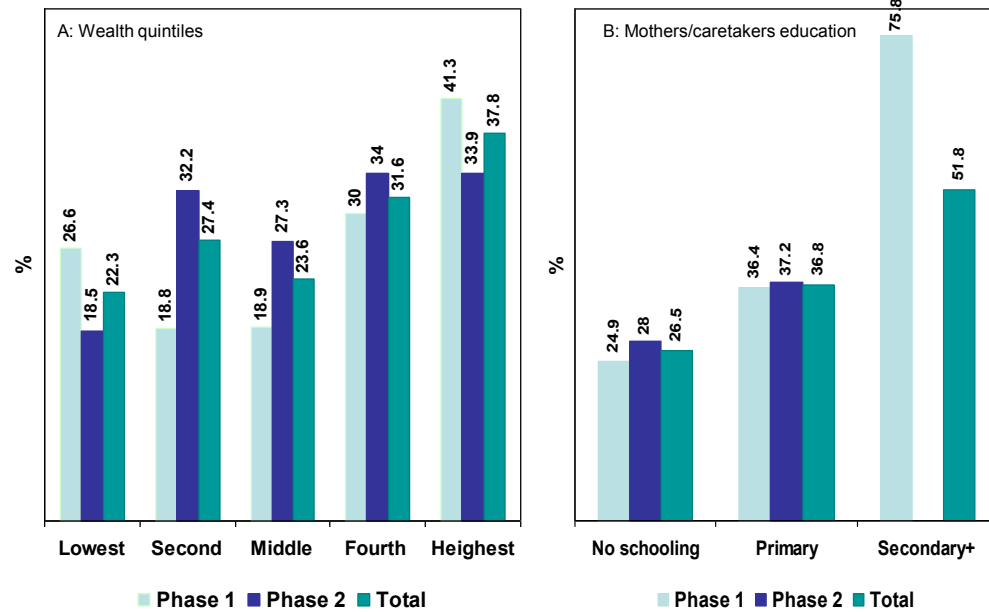


Figure 6. Among sick children with symptom of ARI (previous 2 weeks), the proportion who sought care from appropriate care provider by wealth (A) and caretakers education (B) according to evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011



7.5. Treatment for symptom of ARI

Among children with symptom of ARI in the previous two weeks, 28.2% received any antibiotic, 9.6% Aspirin/paracetamol and 4.6% any antimalarial drug. Amoxicillin and Cotrimoxazole were reported the two most commonly prescribed antibiotics, as reported by 13.8% and 13.1%, respectively (Table 7.5). In the whole, there was no significant difference between phase 1 and 2 areas in terms of the proportion of children with ARI who received antibiotic or any other treatments.

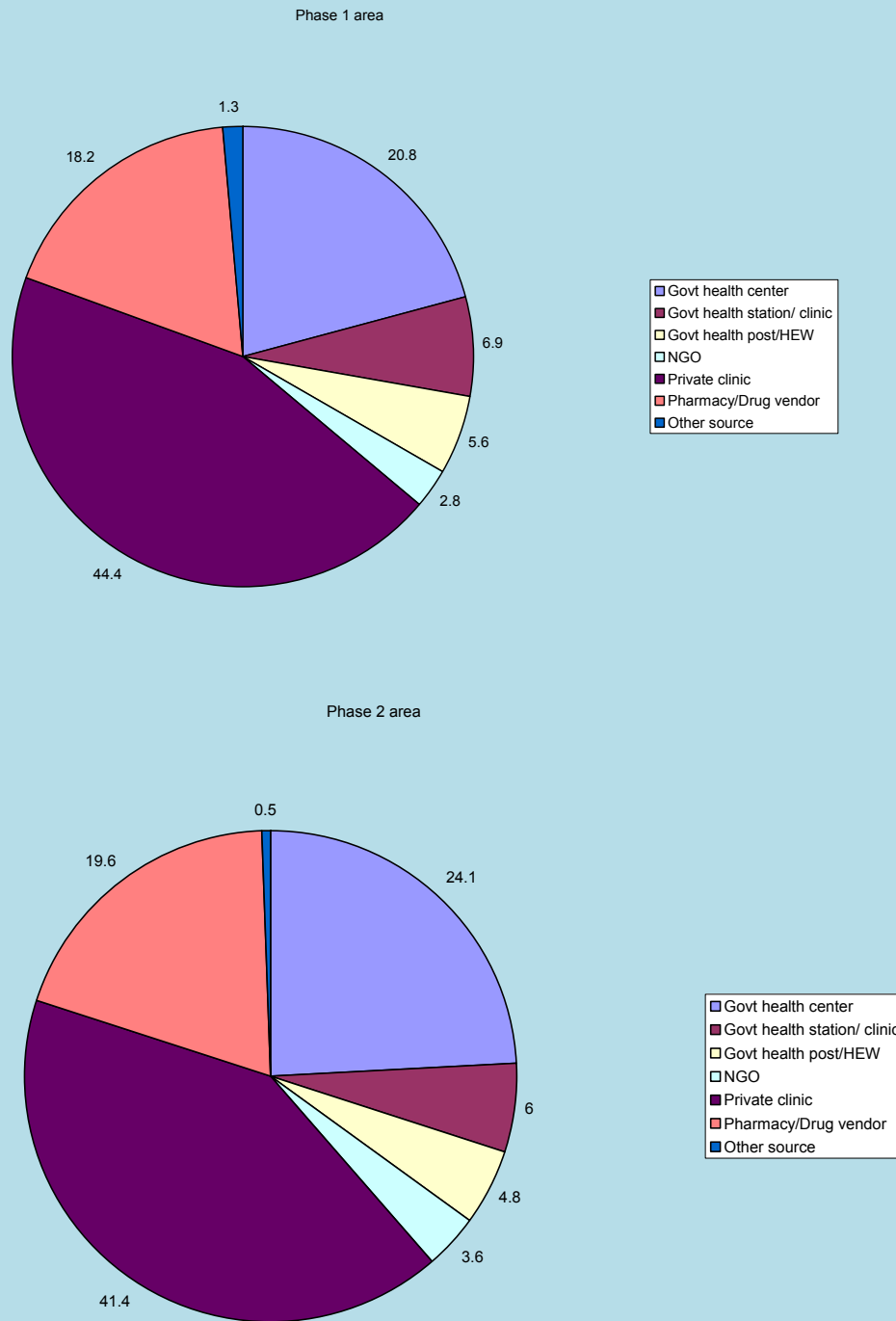
Figure 7 shows the source of the antibiotic given to treat ARI. Most mothers in both study areas obtained the treatment at a private clinic (over 40%), followed by government health centers (over 20%). It should be noted that 5-6% of the mothers reported receiving the antibiotic from a HEW at a health post although the HEWs have not yet been trained to treat ARI with antibiotics.

Table 7.5. Percent distribution of children under 5 years of age with symptom of Acute Respiratory Infection (ARI) according to type of treatment by evaluation arm, ICCM baseline coverage survey, Jimma and West Haraghe zones, Oromia, December 2010-February 2011

	Evaluation phase		Total
	Phase I area	Phase II area	
Antimalarial			
Any antimalarial	5.4	3.8	4.6
Chloroquine	2.8	1.0	1.9
Coartem	1.9	2.8	2.4
Quinine	0.7	0.0	0.3
Other anti-malarial	0.0	0.4	0.2
Antibiotic			
Any antibiotic	29.4	27.1	28.2
Cotrimoxazole	15.9	10.5	13.1
Amoxicillin	12.9	14.6	13.8
Other antibiotic	0.8	3.2	2.1
Others			
Aspirin/ paracetamol	11	8.3	9.6
Ibuprofen	1.7	0.2	0.9
Cough syrup/ sedative/ expectorant	7.3	2.3	4.7
Unknown pill or syrup	1.6	1.8	1.7
Homemade remedy/ Traditional medicine	1.4	2.1	1.8
Other	2.0	3.7	2.9
Unknown/missing	1.5	0.3	0.9
Number of under 5 children with ARI	253	336	589

No statistically significant differences were found between phase 1 and 2.

Figure 7. The percent distribution of children with symptom of ARI who received antibiotic drugs (n=167) by source of antibiotic treatment by study arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011



7.5. Care seeking for diarrhea

Mothers/caretakers of children who were reported to have had diarrhea in the two weeks prior to the survey were asked whether they sought care for the illness and where care was sought. While 27% of the mothers/caretakers reported seeking any type of care, 16.4% took the child to an appropriate health service provider (Table 7.6). The proportion that received care from appropriate health provider in phase 1 and 2 areas was 17.8% and 15%, respectively. Private clinics, government health centers and health posts are the three main health facilities mothers or caretakers sought treatment for children with diarrhea both in phase 1 and 2 areas. Some facilities without appropriate health providers including shops and pharmacies were also reported among the source of treatment.

As noted for fever and symptom of ARI, children age 6-11 months seemed more likely than others to have been taken for treatment to appropriate health providers though not statistically significant. On the other hand, the under six months appeared the least likely to be taken for treatment (Figure 8B). While 24.2% of the children age 6-11 months with diarrhea were taken to an appropriate health provider, the corresponding figure for children 0-5 months was 9.8%. Between 10.2% and 17.9% of the children age 12-59 months with diarrhea were taken to appropriate provider. Of note, there was a slight variation in treatment seeking for diarrhea by sex (17.2% for males and 15.4% for females).

The proportion of children with diarrhea that were taken to a provider for treatment also varies positively and significantly ($p < 0.05$) with the wealth of the family, ranging from 11.3% to 28.5% between the lowest and highest wealth quintile (Figure 9). The association between mother's education and seeking care for diarrhea is not clear for phase 1 area. On the whole sample, there was an increasing trend in care seeking practice with increasing education - from 15.3% among those with no schooling to 24.1% among those with secondary or higher education.

Table 7.6. Percent distribution of children with diarrhea in the past two weeks according to treatment practices by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation phase		Total
	Phase I area	Phase II area	
Any care seeking	30.1*	24.6	27.3
Care seeking from appropriate provider*	17.8*	15.0	16.4
Care seeking provider			
Govt hospital	0.0	0.0	0.0
Govt health center	5.0	4.8	4.9
Govt health station/ clinic	1.7	2.2	1.9
Govt health post/HEW	5.6	3.1	4.3
Other public facility	0.4	0.2	0.3
Private hospital	0.4	0.0	0.2
Private clinic	5.8	5.5	5.7
Pharmacy	2.5	2.3	2.4
Other private facility	0.0	0.2	0.1
NGO/Faith based health facility	0.0	0.0	0.0
Drug vendors/store	0.2	0.0	0.1
Shop	6.1	6.3	6.2
Traditional Healer	2.9	0.3	1.6
Volunteer community health worker	0.5	0.2	0.3
Other sources	1.5	1.1	1.3
Number of under 5 children with diarrhea	312	391	703

*p<0.05, (compares phase 1 and 2 areas)

Figure 8. Among sick children with diarrhea (previous 2 weeks), the proportion who sought care from appropriate care provider by sex (A) and age (B) according to evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

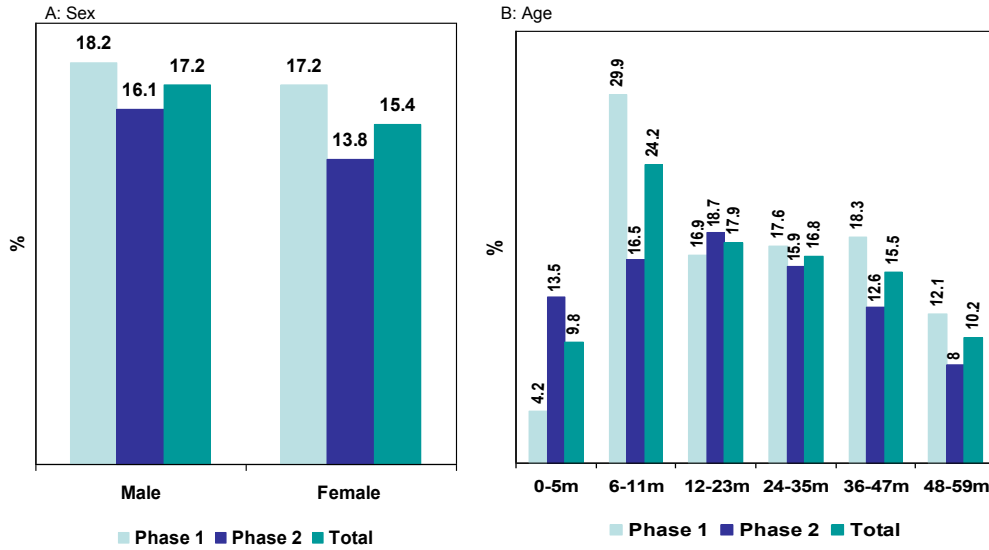
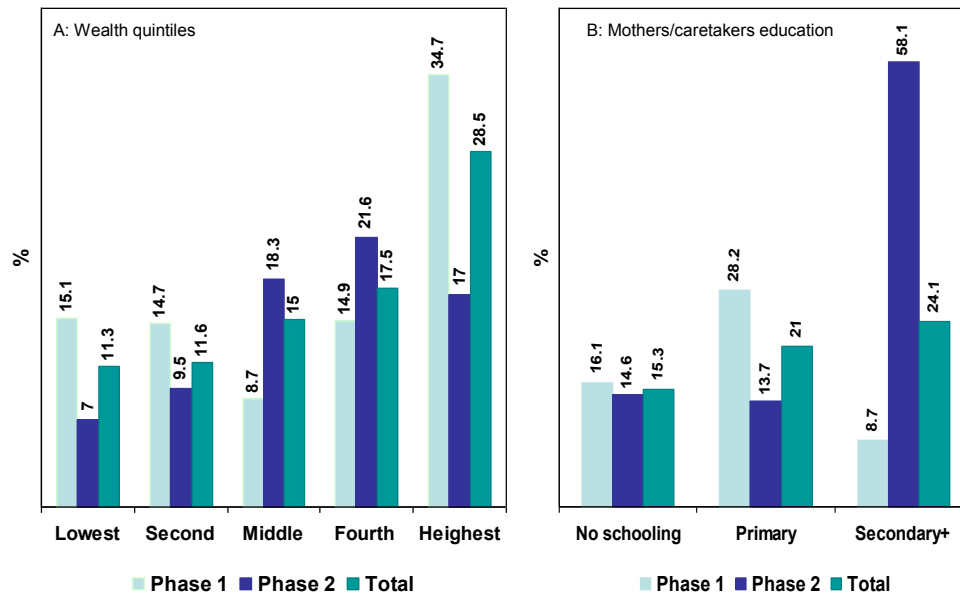


Figure 9. Among sick children with diarrhea (previous 2 weeks), the proportion who sought care from appropriate care provider by wealth (A) and caretakers education (B) according to evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011



7.6. Treatment for children with diarrhea

Oral Rehydration Therapy (ORT):

Deaths from acute diarrhea are most often due to the dehydration that results from the loss of water and electrolytes. In order to reduce dehydration due to diarrhea, administration of Oral Rehydration Salt (ORS) is highly recommended. The use of a home made solution prepared from sugar, salt and water, which is referred to here as Recommended Home Fluid (RHF) and the continuous supply of fluids for children with diarrhea is crucial. Oral Rehydration Therapy (ORT) encompasses all increases in fluid, RHF and ORS. Thus, a child with diarrhea is defined as receiving ORT if he/she received either ORS, or RHF or increased fluids.

In order to gauge the extent of use of oral rehydration, the survey asked mothers regarding the use of ORS and RHF for children sick with diarrhea in the two weeks prior to the survey. As shown in Table 7.7, only 11.4% of the children with diarrhea received ORS in the previous two weeks - 14.4% in phase 1 and 8.6% in phase 2 areas ($p < 0.05$). About 47% (46.2% in phase 1 and 51.0% in phase 2) were given increased fluids. The proportion of children with diarrhea who received either ORS or RHF was 61.6% and 64.5%, respectively, in phase 1 and phase 2 areas.

It is recommended to continue feeding and increase the amount of fluid to children during illness with diarrhea. Mothers/caretakers were asked about changes in feeding practices for those children ill during the two-week prior to the interview. The great majority of the mothers/caretakers (88.2% in phase 1 and 91.8% in phase 2) reported that they continued feeding a child with diarrhea as usual or even more than usual in the previous two weeks. A significantly larger proportion of mothers provided the correct diarrhea treatment (ORT and continued feeding) in phase 2 (61.3%) compared to phase 1 (56.6%).

Source of ORS:

Among those children with diarrhea in the previous two week who received ORS ($n=73$), the source of ORS was assessed (Figure 9). The main sources of ORS included government health posts (24.3%), health centers (19%), private clinic (15.9%), government health station/clinic (12.6%), pharmacy (6.8%), among few others. ORS sources vary by evaluation phase. In phase 1 area the leading sources for ORS was health post, as reported by 33.4% of the mothers/caretakers. There were two major sources in phase 2 areas; government health center (28.7%) and government health station/clinic (24.3%).

Other treatments for diarrhea:

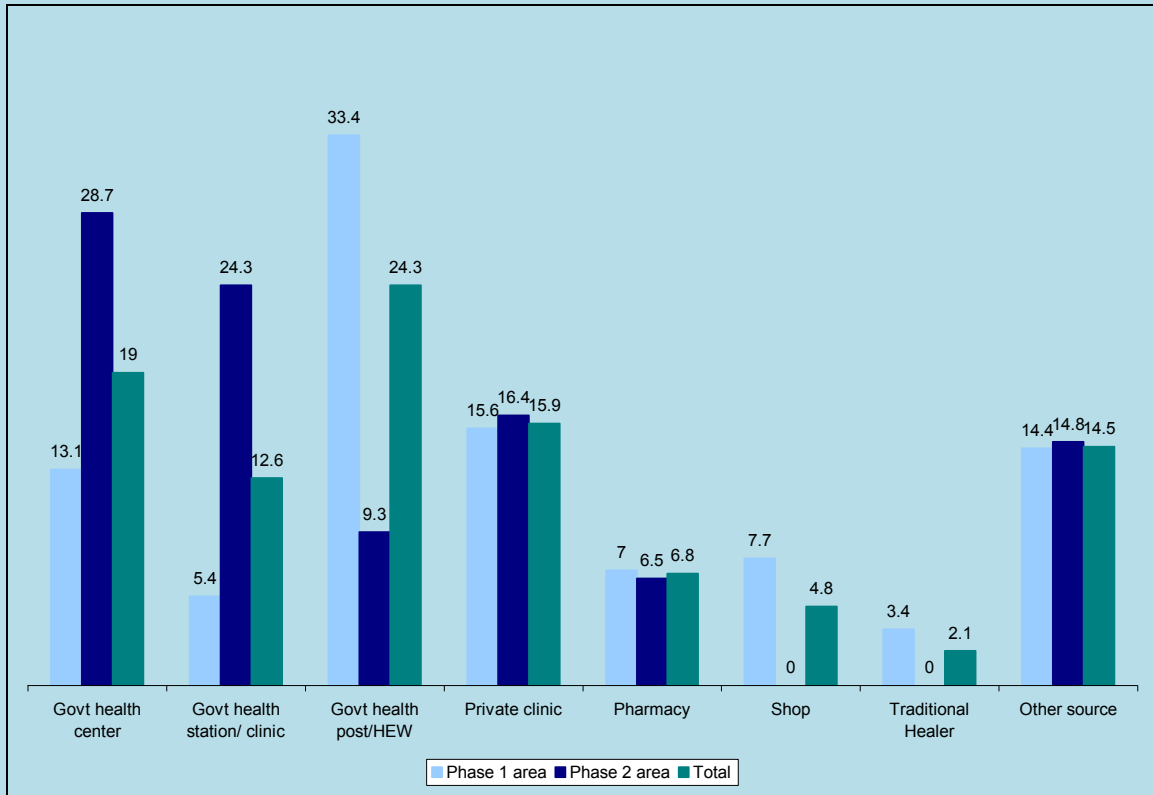
On the whole, children with diarrhea in the study area were rarely given other medications. As shown in Table 7.7, antibiotic was prescribed to only 5.2% of the children with diarrhea (5.2% in phase 1 and 5.1% in phase 2). Very few children (1.1%) were given injection. Home remedies or herbal medicine was given to 2.3% of the children. The provision of such medications to children with diarrhea was comparable between phase 1 and 2 areas.

Table 7.7 Percent distribution of children with diarrhea according to treatment for diarrhea by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation phase		Total
	Phase I area	Phase II area	
Oral rehydration therapy (ORT)			
ORS	14.4*	8.6	11.4
Recommended home fluids (RHF)	46.2	51.0	48.6
Increased fluids	19.5	18.6	19.1
Either ORS, RHF or increased fluids (ORT)	61.6	64.5	63.0
Continued feeding	88.2	91.8	90.0
ORT and continued feeding	56.6	61.3**	59.0
Pill or Syrup			
Antibiotic	5.2	5.1	5.2
Antimotility	0.4	0.4	0.4
Zinc	1.2	0.3	0.7
Other	1.9	2.7	2.3
Unknown pill or syrup	1.9	3.3	2.6
Injection			
Antibiotic	1.2	0.9	1.1
Non-antibiotic	0.0	0.0	0.0
Unknown injection	2.0	0.5	1.2
(IV)Intravenous	0.0	0.3	0.1
Others			
Home remedy/ herbal medicine	2.4	2.2	2.3
Other	2.5	3.2	2.8
Number of under 5 children with diarrhea	312	391	703

*p<0.05 **p<0.001 (compares phase 1 and 2 areas)

Figure 10 Percent distribution of children with diarrhea who received ORS according to the source of ORS by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011



VIII. NUTRITIONAL STATUS OF CHILDREN

The data on weight and height of children age 0-59 months were used to calculate three summary indices of nutritional status, which affects susceptibility to disease and their chance of survival. These indices are height-for-age, weight-for-height and weight-for-age. The nutritional status of children calculated according to these measures is compared with the nutritional status of an international reference that has been recommended by WHO. The three nutritional status indices are expressed in standard deviation (SD) unit (z-score) from the median for the international population. Children, who fall more than 2 standard deviations below the reference median are considered to be malnourished, while those who fall more than 3 standard deviations units below the reference median are considered to be severely malnourished.

Each of the indices provides somewhat different information about the nutritional status of children. The height-for-age index measures linear growth retardation among children. Children who are more than 2 SD below the median of the reference population in terms of height-for-age are considered short for their age or *stunted* (chronically malnourished). The weight-for-height index measures body mass in relation to body length. Children who are more than 2 SD below the median of the reference population in terms of their weight-for-height are considered to be thin or *wasted* (acutely malnourished-wasted). Weight-for-age reflects both chronic and acute undernutrition. Children who are more than 2 SD below the reference median on this index are considered *underweight*.

8.1. Height-for-age

Table 8.1 presents results for height-for-age for children age 0-59 months. Chronic malnutrition can be considered very common in the study area with 39.8% of children being stunted - 42.6% in phase 1 area and 37.0% in phase 2 areas. The proportion of children who were severely undernourished is also notable – 18.4% in the overall sample, 20.3% in phase 1 and 16.4% in phase 2 areas. This difference is statically significant ($P < 0.001$).

There was slight but significant difference in the prevalence of stunting by sex - 44.8% in males and 40.0% in females. This disparity by sex holds both in phase 1 and 2 areas. Stunting rates are also significantly associated with children's age. The lowest rate of stunting was noted among children age 0-11 months at 17.7%. There appear a somehow linear increase in stunting by age for children age 12-59 months, from 36.1% to 50.8% between children 12-23 and 48-59 months. This is indicative of the cumulative effect of stunting by age. Of note, there is no clear trend between stunting and the wealth of family.

8.2. Weight-for-Height

The proportion of children wasted was markedly high in the study area (18.4% for $< -2SD$)- 20.3% in phase 1 area and 16.4% in phase 2 area (Table 8.2). Severely wasted children comprised 4.3%. There was slight difference in wasting by sex for the overall sample. Nevertheless, sex difference in wasting was apparent in phase 1 area at 18.9% and 13.7%, respectively, for males and females.

The peak prevalence of wasting was noted among children age 0-11 months at 23.7% followed by the age group 12-23 months at 21.9%. In the other age groups it ranged between 8.5% and 14.2%. This pattern holds both in phase 1 and 2 areas. There was an inverse relationship between the wealth quintiles and wasting, ranging between 20% among those in the lowest and 11.3% among those in the highest wealth quintile.

8.3. Weight-for-age

As shown in Table 8.3, 29.6% of the children in the study area can be categorized as underweight. The underweight rate is comparable between phase 1 and 2 areas at 30.2% and 29%, respectively. Severely underweight children (<-3SD) comprised 9.6% of the total - 10.4% and 8.7%, respectively, in phase 1 and 2 areas.

A notable difference in underweight by sex - 32.1% for males and 27.0% for females. As noted in stunting, the rate of underweight is the lowest among children age 0-11 months (21.9%) while the highest among children age 12-23 months (32.5%). As noted for stunting, there was no significant association between the wealth of a family and the documented underweight rate.

8.4. Mid upper arm circumference (MUAC)

MUAC has been endorsed by the World Health Organization (WHO) as a suitable tool to diagnose severe acute undernutrition and the most appropriate indicator for use in admission into emergency feeding programs. MUAC less than 11.0 cm indicates severe acute malnutrition (SAM). This is recommended as a criterion of admission to therapeutic feeding programs. MUAC is also used to detect moderately malnourished children and as a criterion of admission to supplementary feeding centre. MUAC of between 11-12 cm indicates moderate acute malnutrition (MAM). Such children should be immediately referred for supplementation.

In this survey, 1.4% of the children age 0-59 months were suffering from severe acute malnutrition - 1.8% in phase 1 and 1% in phase 2 areas. Moderate acute malnutrition was noted among 8.1% of the children age 0-59 months (7.2% in phase 1 and 9.1% in phase 2). Both severe and moderate acute malnutrition rates are slightly higher in females than males. Highest rates for both severe (4.2%) and moderate (21.9%) acute malnutrition were recorded among children age 0-11 months while the lowest among older children age 36-59 months (about 1.7%). This age pattern can be noted both in phase 1 and 2 areas.

Table 8.1. Percent distribution of children under the age of 5 years according to height-for-age by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation Phase						Total		
	Phase I			Phase II			Height for age		Number of Under-five children
	Height for age < - 3 SD	Height for age < - 2 SD	Number of Under-five children	Height for age < - 3 SD	Height for age < - 2 SD	Number of Under-five children	< - 3 SD	< - 2 SD	
Sex									
Male	21.9	44.8	686	18.1	40.7	617	20.1	42.9	1,303
Female	18.5	40.0	609	14.7	33.3	625	16.6	36.7	1,234
Age									
0-11 months	5.0	16.4	262	6.8	19.2	231	5.8	17.7	493
12-23 months	20.5	37.3	216	16.8	35.0	240	18.5	36.1	456
24-35 months	26.0	49.2	261	16.9	37.5	219	21.8	43.8	481
36-47 months	20.6	53.7	288	13.8	43.4	314	17.0	48.3	602
48-59 months	29.2	54.0	268	28.1	47.2	238	28.7	50.8	506
Wealth quintile									
Lowest	16.5	37.9	335	11.6	31.6	248	14.4	35.2	583
Second	16.4	38.6	225	11.4	30.8	285	13.6	34.3	509
Middle	20.7	45.3	213	22.4	44.3	309	21.7	44.7	521
Fourth	26.6	46.0	233	19.9	43.8	229	23.3	44.9	462
Highest	22.5	45.6	270	16.3	32.4	162	20.2	40.7	432
Total	20.3	42.6	1295	16.4	37.0	1242	18.4	39.8	2,537

Table 8.2. Percent distribution of children under the age of 5 years according to Weight-for-Height by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation Phase						Total		
	Phase I			Phase II					
	Weight for height		Number of Under-five children	Weight for height		Number of Under-five children	Weight for height		Number of Under-five children
< - 3 SD	< - 2 SD	< - 3 SD		< - 2 SD	< - 3 SD		< - 2 SD		
Sex									
Male	5.3	18.9	678	4.1	15.8	619	4.7	17.4	1,297
Female	3.8	13.7	608	3.9	15.2	628	3.8	14.5	1,235
Age									
0-11 months	8.3	26.3	265	7.0	20.6	235	7.7	23.7	500
12-23 months	6.8	22.7	213	6.8	21.2	243	6.8	21.9	456
24-35 months	2.1	11.8	258	3.4	17.2	217	2.7	14.2	475
36-47 months	2.0	9.0	289	0.7	8.1	314	1.4	8.5	602
48-59 months	4.1	14.1	261	3.0	12.8	238	3.6	13.5	499
Wealth quintile*									
Lowest	6.0	21.5	329	4.5	18.2	248	5.4	20.0	577
Second	6.1	19.8	223	3.4	16.3	288	4.5	17.9	511
Middle	5.5	18.3	214	4.6	14.7	308	4.9	16.2	522
Fourth	4.0	12.5	235	4.2	13.9	233	4.1	13.2	468
Highest	1.7	9.8	265	3.2	13.7	158	2.2	11.3	423
Total	4.6	16.4	1286	4.0	15.5	1246	4.3	16.0	2,532

* missing category for wealth quintiles excluded

Table 8.3. Percent distribution of children under the age of 5 years according to Weight-for-Age by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation Phase						Total		
	Phase I			Phase II					
	Weight for age		Number of Under-five children	Weight for age		Number of Under-five children	Weight for age		Number of Under-five children
< - 3 SD	< - 2 SD	< - 3 SD		< - 2 SD	< - 3 SD		< - 2 SD		
Sex									
Male	11.7	32.9	667	9.5	31.2	610	10.7	32.1	1,277
Female	9.0	27.3	601	7.9	26.8	619	8.4	27.0	1,220
Age									
0-11 months	9.4	26.0	254	7.1	17.3	227	8.3	21.9	481
12-23 months	10.2	31.2	213	11.9	33.7	238	11.1	32.5	451
24-35 months	10.6	27.5	258	10.0	29.3	216	10.3	28.3	474
36-47 months	10.7	28.1	285	6.7	27.7	312	8.6	27.9	597
48-59 months	11.1	38.7	258	8.6	36.8	236	9.9	37.8	494
Wealth quintile*									
Lowest	8.4	31.4	325	6.8	28.4	247	7.7	30.1	572
Second	10.6	27.0	223	5.6	23.7	283	7.8	25.1	506
Middle	16.6	33.8	209	12.8	31.7	306	14.3	32.5	515
Fourth	10.0	32.5	228	10.2	35.5	227	10.1	34.0	455
Highest	8.6	26.0	263	8.0	26.1	157	8.4	26.0	420
Total	10.4	30.2	1268	8.7	29.0	1229	9.6	29.6	2,497

* missing category for wealth quintiles excluded

Table 8.4. Percent distribution of children under the age of 5 years according to mid-upper arm circumference (MUAC) by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation Phase						Total		
	Phase I			Phase II					
	MUAC		Number of Under-five children	MUAC		Number of Under-five children	MUAC		Number of Under-five children
	< 11cm	11-12cm		< 11cm	11-12cm		< 11cm	11-12cm	
Sex									
Male	1.4	6.1	712	1.2	8.7	739	1.3	7.3	1451
Female	2.2	8.4	657	0.8	9.4	738	1.5	8.9	1395
Age									
0-11 months	6.1	19.7	308	2.0	24.5	315	4.2	21.9	623
12-23 months	1.4	7.3	225	1.5	12.2	268	1.4	9.8	493
24-35 months	0.8	4.9	269	0.9	3.9	283	0.8	4.4	552
36-47 months	0.2	1.1	328	0.2	2.1	334	0.2	1.6	662
48-59 months	0	1.8	239	0.4	1.7	277	0.2	1.7	516
Wealth quintile*									
Lowest	3.4	4.5	358	0.0	7.4	308	1.9	5.8	666
Second	1.0	8.4	249	0.4	7.3	340	0.7	7.8	589
Middle	2.4	7.1	214	2.3	8.6	336	2.3	8.0	550
Fourth	1.7	9.7	240	0.9	13.4	268	1.3	11.5	508
Highest	0.5	7.3	287	1.4	9.8	210	0.8	8.2	497
Total	1.8	7.2	1369	1.0	9.1	1477	1.4	8.1	2846

* missing category for wealth quintiles excluded

8.5. Child feeding practices

WHO recommends that children be exclusively breastfed—fed only breast milk with no other liquids (including water) or food—on demand for the first six months of life.

Breastfeeding status for children under six months is determined on the basis of a mother's recall of her child's intake over the previous 24-hour period (past day and night). Based on a 24-hour mother's recall, the proportion of children age 0-5 months that were given only breast milk (exclusively breastfed) was 36.1% - 35.6% and 36.7%, respectively, in phase 1 and 2 areas (Table 8.5).

Breastfeeding is universal in the study area with only 1.8% of children under six months who were not breastfeed at all - 2.4% in phase 1 area and 1.2% in phase 2 area. Plain water was given to 3.7% (3.3% in phase 1 and 4.1% in phase 2) children age 0-23 months in the previous 24-hour period. A little bit over a fifth of the children age 0-23 months (21.5%) were given non-milk liquids and juices, and this compares between phase 1 and 2 areas. Other milk was received by same proportion of children age 0-23 months.

Complementary feeding refers to the proportion of children age 6-8 months who received solid, semi-solid or soft foods in the previous 24-hour period. As shown in Table 8.5, 43.3% of the children age 6-8 months had received solid, semi-solid or soft foods in the previous day. This was higher in phase 1 area at 50.1% than in phase 2 area (35.4%).

Table 8.5. Percent distribution of children according to feeding practices by evaluation arm, by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

Feeding practices	Evaluation phase		Total
	Phase I area	Phase II area	
Not breastfeeding (among children age 0-5 months) (%), n)	2.4, n=495	1.2, n=571	1.8, n=1066
Exclusively breastfed (among children age 0-5 months) (%), n)	35.6, n=105	36.7, n=115	36.1, n=220
Plain water only (among children age 0-23 months) (%), n)	3.3, n=495	4.1, n=571	3.7, n=1066
Non-milk liquids and juice (among children age 0-23 months) (%), n)	21.8, n=495	21.2, n=571	21.5, n=1066
Other milk (among children age 0-23 months) (%), n)	21.8, n=495	21.2, n=571	21.5, n=1066
Complementary food (among children age 6 to 8 months) (%), n)	50.1, n=93	35.4, n=76	43.3, n=169

No statistically significant differences were found between phase 1 and 2.

8.6. Therapeutic feeding

The proportion of children age 0-23 months who ever received therapeutic food was 4.5% - 4.3% and 4.8%, respectively, in phase 1 and 2 areas. Only 1.5% were still receiving therapeutic food at the time of the survey (Table 8.6).

Of those children who received therapeutic food, the majority (64.5%) were age 6-11 months when they were enrolled into the feeding program. Only 15.2% were enrolled under the age of 6 months and 17.6% at the age of 12-23 months. Most (74.9%) received the food for at most three months; 17.5% for 4-6 months. The noted pattern of age at start of therapeutic food and the feeding duration were similar between phase 1 and 2 areas.

Table 8.6. Percent distribution of children age under 5 years according to the receipt of therapeutic feeding by evaluation arm, by evaluation arm, ICCM baseline coverage survey, Jimma and West Hararghe zones, Oromia, December 2010-February 2011

	Evaluation phase		Total
	Phase I area n=495	Phase II area N=571	
Ever received therapeutic food	4.3	4.8	4.5
Do not know /Missing	1.8	1.2	1.5
Age at start of receiving therapeutic food	n=16	N=27	n=43
0-5 months	17.7	12.9	15.2
6-11 months	60.2	68.4	64.5
12+ months	16.5	18.6	17.6
Do not know /Missing	5.5	0.0	2.6
Number of months therapeutic food received	n=16	N=27	n=43
0-3 months	70.6	78.8	74.9
4-6 months	25.6	10.1	17.5
7+ months	0.0	7.9	4.2
Do not know /Missing	3.8	3	3.4
Still receiving therapeutic food	n=495	N=571	N=1066
	1.0	0.5	0.7
Do not know /Missing	1.8	1.2	1.5

No statistically significant differences were found between phase 1 and 2.

IX. SUMMARY AND IMPLICATIONS OF FINDINGS

This baseline survey sets to provide benchmarks for the ICCM program evaluation. The survey in particular assesses coverage of child health interventions, nutritional status of under-five children, and socio-economic status inequalities in coverage of child health interventions. Findings reveal that children in the study areas are characterized by high morbidity and malnutrition, which in turn are key determinants of their survival and well being. This survey also provides useful evidence on lack of equity in childhood illness treatment practices, nutritional status of children as well as the receipt of some key child health care practices in accordance with family wealth and mother's/caretaker's educational status.

Implications for the ICCM program intervention

The survey provided baseline level of coverage indicators of childhood intervention and also highlighted several implications for the ICCM program. The most critical of these stem from the low levels of care-seeking for common childhood illnesses and treatment of these illnesses with the appropriate drugs. Although prevalence of fever, ARI and diarrhea among children under-five was high in this rural population, less than a third of ill children were taken to an appropriate health provider. There is need for the program to identify and tackle barriers to appropriate care-seeking to the Health Posts or nearest health centers. Targeted operations research studies would be necessary to identify actual and potential barriers. The survey also underscored the low level treatment with appropriate drugs in case of illness. To be effective, the program needs to ensure that every sick child that arrives at the health post received quality care and appropriate treatment. This can only be achieved through continued and sustained availability of appropriate drugs and supportive supervision for quality care in the health facilities.

Focus on ICCM should not overlook other child health intervention components such as immunization and micronutrient supplementation, utilization of ITNs for children under-five, water and sanitation for which the survey showed relatively lower coverage levels. Finally a focus on nutrition must be paramount because malnutrition is a major risk factor for the high morbidity and mortality among children under 5 years of age. Level of wasting and stunting were found to be particularly high in the study population.

Achieving rapid reduction in mortality among child under-five thus will require a sustained and continuous implementation ensuring that all components are delivered with high level quality. Increased attention must be given to strategies and actions to increase utilization of child health services at health posts and primary health facilities. .

Implications for the evaluation

One of the major objectives of this survey is to determine comparability of the two evaluation phases at baseline. The survey showed that the two arms of the evaluation are comparable in terms of socio-demographic attributes such as household size and composition, age structure, marital status and education of women and age distribution of children under-five. However households in phase 1 arms seem wealthier than those in phase 2.

Table 9 shows the key indicators with those in bold that are statistically significantly different by phase. In general, phase 2 households have better health indicator measurements: higher protection against malaria, higher measles immunization, higher proportion of children with diarrhea correctly managed, higher levels of vitamin A supplementation and lower stunting rates.

Although the evaluation is based on a randomized cluster design, the analytical procedures for impact assessment, either on coverage or mortality levels must take into account the baseline level of the coverage indicators. Moreover, this will also allow tracking trends in coverage.

Table 9: Selected key indicators by evaluation arm

Selected Key Indicators	Phase 1 area	Phase 2 area
Child Health		
Percentage of households using improved drinking water sources	N=1577 44.2	N=1573 42.2
Percentage of households using improved sanitation facilities	N=1577 3.0	N=1573 3.4
Percentage of women aged 15-49 who reporting hand washing before feeding children	N=1541 16.0	N=1564 14.0
Percentage of households with at least one insecticide treated net or covered by indoor residual spraying.	N=1577 43.4	N=1573 51.2**
Percentage of households a child under 5 slept under ITN the previous night	N=1401 12.9	N=1497 17.8**
Percentage of children aged 12-23 months who are immunized against measles	N=215 59.1	N=273 68.5*
Percentage of children aged 12-23 months who received 3 doses of Pentavalent vaccine	N=215 25.2	N=273 26.9
Percentage of children aged 0-59 months who had fever in the previous two weeks	N=1369 34.0	N=1477 33.5
Percentage of children aged 0-59 months who had symptom of ARI in the previous two weeks	N=1369 18.4	N=1477 21.7
Percentage of children aged 0-59 months who had diarrhea in the previous two weeks	N=1369 24.0	N=1477 26.5
Percentage of children aged 0-59 months with suspected pneumonia taken to an appropriate health provider	N=253 27.0	N=336 29.1
Percentage of children aged 0-59 months with suspected pneumonia receiving antibiotics	N=253 29.4	N=336 27.1
Percentage of children aged 0-59 months with diarrhea receiving oral rehydration and continued feeding.	N=312 56.6	N=391 61.3**
Percentage of children aged 0-59 months with fever receiving appropriate antimalarial drugs	N=463 5.1	N=519 4.2
Nutrition		
Percentage of children 6 - 59 months who received at least one dose vitamin A supplement within the last 12 months	N=1217 74.0	N=1303 84.5**
Percentage of children 0-23 months who ever received therapeutic food	N=495 4.3	N=571 4.8
Percentage of children age 0-59 months who are stunted (HAZ<-2SD)	N=1295	N=1242

	42.6*	37.0
Percentage of children age 0-59 months who are wasted (WHZ<-2SD)	N=1286 16.4	N=1246 15.5
Percentage of children age 0-59 months who are underweight (WAZ<-2SD)	N=1268 30.2	N=1229 29.6

* p<0.05, **p<0.001

Annex 1. Selected key indicators by zone

Selected Key Indicators	West Hararghe Zone	Jimma Zone
Child Health		
Percentage of households using improved drinking water sources	N=1417 23.5	N=1733 58.7
Percentage of households using improved sanitation facilities	N=1417 1.7	N=1733 4.4
Percentage of women aged 15-49 who reporting hand washing before feeding children	N=1415 18.9	N=1690 12.1
Percentage of households with at least one insecticide treated net or covered by indoor residual spraying.	N=1417 37.9	N=1733 54.2
Percentage of households a child under 5 slept under ITN the previous night	N=1470 9.3	N=1428 21.1
Percentage of children aged 12-23 months who are immunized against measles	N=257 75.8	N=231 51.8
Percentage of children aged 12-23 months who received 3 doses of Pentavalent vaccine	N=257 31.4	N=231 20.5
Percentage of children aged 0-59 months who had fever in the previous two weeks	N=1436 29.7	N=1410 37.7
Percentage of children aged 0-59 months who had symptom of ARI in the previous two weeks	N=1436 17.5	N=1410 22.3
Percentage of children aged 0-59 months who had diarrhea in the previous two weeks	N=1436 21.6	N=1410 28.7
Percentage of children aged 0-59 months with suspected pneumonia taken to an appropriate health provider	N=271 27.6	N=318 28.4
Percentage of children aged 0-59 months with suspected pneumonia receiving antibiotics	N=271 26.1	N=318 29.8
Percentage of children aged 0-59 months with diarrhea receiving oral rehydration and continued feeding.	N=307 73.9	N=396 48.2
Percentage of children aged 0-59 months with fever receiving appropriate antimalarial drugs	N=449 3.4	N=533 5.5
Nutrition		
Percentage of children 6 - 59 months who received at least one dose vitamin A supplement within the last 6 months	N=1272 85.2	N=1248 72.2
Percentage of children 0-23 months who ever received therapeutic food	N=528 8.8	N=538 0.5
Percentage of children age 0-59 months who are stunted (HAZ<-2SD)	N=1227 32.5	N=1310 46.7
Percentage of children age 0-59 months who are wasted (WHZ<-2SD)	N=1221 18.5	N=1311 13.6
Percentage of children age 0-59 months who are underweight (WAZ<-2SD)	N=1211 26.8	N=1286 32.3
Percentage of children age 0-59 months with sever acute malnutrition (MUAC<11 cm)	N=1295 0.7	N=1319 1.7

Annex 2: Notes on some analytical procedures and findings

<p>Child age imputation</p>	<p>About 24% of the children under 5 years had an unknown age of birth while the remaining 76% had complete information on the date of birth. Based on the observed month of birth distribution of children with complete information, we imputed the month of birth for the missing cases. Details on how we did this procedure in STATA is attached in Annex 5.</p> <p>An average survey date was used in the calculation of child age instead of the exact date of interview. This is because the exact date of interview was not consistently recorded by interviewers making the conversion of Ethiopian dates into western dates. There were data quality issues, as many interviewers reported dates outside of the actual survey period.</p> <p>Given that the survey data collection period was only two months and 24% of the children had unknown birth month, this approach will probably not have a noticeable effect on the indicators. The estimated child age will be, at most, +/- 1 month different from the actual age and this seems like a reasonable margin of error.</p> <p>Also some mothers reported <u>year of birth (yob)</u> that did not match with the reported <u>age of the child (in completed year)</u> . For the age imputation yob was considered as the reference and the reported age was ignored.</p> <p>It should also be noted that 99 children were found to be older than 59 months of age. Given the assumptions used in calculating the age of the child in months, these 99 children were retained in the survey and assigned the age of 59 months.</p>
<p>Reconciliation after double data entry</p>	<p>Reconciliation was completed on approximately 70% of the variables after double data entry. For the remaining 30% of variables, the datafile from the “best performing” data entry clerk. Most of the data used to construct the indicators was 100% reconciled, however some key information such as the asset data used to construct the wealth quintiles was not reconciled.</p>
<p>Nutritional indicators</p>	<p>The nutritional indicators were calculated with a user-defined STATA program (zscore06) based on current WHO standards.</p> <p>The data showed very high prevalence of wasting (16%). It was also noted that higher rates of stunting were reported in Jimma (47%) versus West Haraghie (33%). This is contrary to the expectation since anecdotal evidence suggest that West Haraghe is less food secure than Jimma.</p>
<p>Survey timing</p>	<p>It should be noted that the survey took place after the malaria season (Dec-Feb). Therefore some indicators, like the proportion of under-five</p>

	children who slept under a bed net the previous net should be interpreted with caution.
Illness prevalence	The survey reported very high prevalences of fever (34%) and ARI, defined as “cough and rapid breathing due to chest problem” (20%). However during a data review meeting (NFR available upon request) the zonal officials reported both a measles epidemic and an increased rate of ARI from facility data during the data collection period.
Illness careseeking	Careseeking from a “Private Clinic” was a relatively large proportion of the overall careseeking for all illnesses: ~10%. Participants were unsure what would constitute a private clinic in a rural setting. It was suggested that (1) mothers were confused by the difference between private and public clinic or (2) many women were traveling to the woreda town for treatment.
ARI point-of-treatment	Eight percent of mothers reported that they obtained antibiotics from Health Extension Workers (HEWs) to treat ARI. This is a baseline survey and the CCM for pneumonia has not been scaled-up. It is unknown if mothers were confused by the question or perhaps some HEWs are distributing antibiotics ahead of the program implementation.
Wealth quintiles	Despite the evidence that childhood stunting is closely related to poverty, there was no association with stunting and wealth found in the survey. Mela reported, despite several iterations, they were unable to develop a quintile that was associated with stunting. Before a more in-depth equity analysis is preformed, further work on the wealth quintiles should be done.

Annex 3. Sample weighting computation procedure:

Full sample

At the first stage of selection for each woreda 14 EAs are chosen systematically with *pps*. The probability of selection in this case is $14 m_i/M$, except for 2 woredas, where it is $15m_i/M$. The value, 14 (or 15) denotes the number of EAs selected in the woreda, m_i denotes the number of households in the i^{th} selected EA of the woreda according to the 2007 census and M is the total number of households in the woreda, that is, Σm_i .

At the second stage 25 (or 26, 27) households are selected from each sample EA after a new, updated listing is obtained. The probability of selection at this stage is $25/n_i$, where 25 denotes the number of households sampled in each sample EA and n_i denotes the actual number of households in the EA in 2010.

The overall probability, P_f , of selecting a household in a given stratum (woreda) is thus the product of probabilities at the two stages, or

$$P_f = (14 m_i/M)(25/n_i) = 350 m_i/(M n_i).^1 \quad [1]$$

Note that the above expression would reduce to $350/M$ if the number of households in 2010 was the same as in 2007.

The survey weight, W_f , for the full sample, except for the exceptions noted in the footnote, is the inverse of [1], or

$$W_f = (M n_i)/350m_i. \quad [2]$$

Subsample (coverage survey)

If the subsample of 4 EAs is selected systematically with equal probability (*epsem*) the overall probability of selection for the subsample, P_s , is easily seen to be

$$P_s = (4/14)(14 m_i/M)(25/n_i) = 100 m_i/(M n_i). \quad [3]$$

Re-arranging and reducing terms in [3] yields

$$P_s = (4m_i/M)(25/n_i) = (100 m_i)/(M n_i).$$

Note that the first term above, $(4m_i/M)$, is precisely the probability of selecting 4 EAs with *pps*, indicating that a systematic *epsem* sample of 4 of the full sample of 14 EAs provides a *pps* subsample of the former.

Selecting the systematic *epsem* sample simply entails calculating a sampling interval, I , between 1.0 and 14 (or 15) for each woreda and choosing a random start between 1.0 and I .

The survey weight is the inverse of [3].

¹ In some woredas the product is 14×26 , 14×27 , 15×26 or 15×27 .

The weight were therefore calculated as detailed in the table below:

Component Sample and its Stratum Parameters (#EAs, #HHs, #HHs/EA)	Tabulation Category			
	Zone		Evaluation Arm	
	Jimma	West Harargie	Phase 1	Phase 2
Subsample 4, 100, 25	$(M n_i)/100 m_i$	$(M n_i)/100 m_i$	$(M n_i)/100 m_i$	Not applicable
Subsample 4, 104, 26	$(M n_i)/104 m_i$	$(M n_i)/104 m_i$	Not applicable	$(M n_i)/104 m_i$
Subsample 4, 108, 27	$(M n_i)/108 m_i$	$(M n_i)/108 m_i$	Not applicable	$(M n_i)/108 m_i$
Supplemental 10, 250, 25	$(M n_i)/250 m_i$	$(M n_i)/250 m_i$	$(M n_i)/250 m_i$	$(M n_i)/250 m_i$
Supplemental 11, 275, 25	$(M n_i)/275 m_i$	$(M n_i)/275 m_i$	Not applicable	$(M n_i)/275 m_i$
Full 14, 350, 25	$(M n_i)/350 m_i$	$(M n_i)/350 m_i$	$(M n_i)/350 m_i$	Not applicable
Full 14, 358, 27	$(M n_i)/358 m_i$	$(M n_i)/358 m_i$	Not applicable	$(M n_i)/358 m_i$
Full 14, 354, 26	$(M n_i)/354 m_i$	$(M n_i)/354 m_i$	Not applicable	$(M n_i)/354 m_i$
Full 15, 383, 27	$(M n_i)/383 m_i$	Not applicable	Not applicable	$(M n_i)/383 m_i$
Full 15, 379, 26	Not applicable	$(M n_i)/379 m_i$	Not applicable	$(M n_i)/379 m_i$

- The 3 parameters for each stratum (Woreda) refer, respectively, to the number of sample EAs (clusters) in the Woreda, the total number of sample households (that is, the number of clusters multiplied by the size of the cluster) and the cluster size. “Not applicable” means there are no sample EAs in that category.
- M is the total number of households in the stratum (Woreda) from which the sample EA was selected, according to the 2007 Census.
- The value, n_i , is the number of households in the i^{th} sample EA according to the 2010 up-dated listing.
- The value, m_i , is the number of households in the i^{th} sample EA according to the 2007 Census.

Annex 4. Construction of the Wealth Index

Household economic indicator variables:

We included a wide range of household assets that reflect economic status. In addition, number of persons per sleeping rooms, size of agricultural land and whether the household has a corrugated iron roof were included.

Wealth indicators used to create the wealth quintiles

<ul style="list-style-type: none"> ▪ Household electricity ▪ A watch/clock ▪ A radio ▪ A television ▪ A mobile telephone ▪ A non-mobile telephone ▪ A refrigerator ▪ A table ▪ A chair ▪ A bed with straw/thatch mattress ▪ A bed with cotton/sponge/spring mattress ▪ A bed without mattress ▪ A mattress without a bed ▪ An electric mitad ▪ A kerosene lamp/pressure lamp 	<ul style="list-style-type: none"> ▪ A bicycle ▪ A motorcycle or motor scooter ▪ A car (for personal use) ▪ A car or truck (for commercial use) ▪ A cart ▪ A plow ▪ Horses ▪ Cattle ▪ Camels ▪ Donkeys ▪ Mules ▪ Sheep/goats ▪ Poultry ▪ Beehives (with bees) ▪ Corrugated iron roof ▪ Number of persons per sleeping room ▪ Agricultural land size
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The Principal Component analysis (PCA):

Principal components analysis (PCA) was used to assign the weights for the economic indicators. This procedure was employed in the Ethiopia Demographic and Health Survey (DHS). We used STATA Factor Analysis procedure to generate the factor loadings. This procedure first standardizes the indicator variables (calculating z-scores); then the factor coefficient scores (factor loadings) are calculated; and finally, for each household, the indicator values are multiplied by the loadings and summed to produce the household's index value. Only the first of the factors produced is used to represent the wealth index.

Construction of Quintiles:

The quintiles are based on the wealth distribution of the households. The households are then ordered by the score, and the distribution is divided at the points that form the five 20-percent sections. Then the household score is recoded into the quintile variable so that each member of a household also receives that household's quintile category. This represents as lowest, second, third, fourth and highest categories.

Annex 5. List of survey Woredas by zone and intervention arm

Phase 1 Areas (Woredas)	
Jimma Zone	West Hararghe zone
Chora Botor	Boke
Gera	Chiro
Goma	Doba
Kersa	Gemechis
Limu Kosa	Guba Koricha
Mana	Hawi Gudina
Shebe Senbo	Oda Bultum
Omo Nada	
Setema	
Phase 2 Areas (Woredas)	
Jimma Zone	West Hararghe zone
Dedo	Anchar
Gumay	Burka dimtu
Limu Seka	Daro Labu
Nono Benja	Habro
Seka Chokorsa	Mesela
Sokoru	Mieso
Tiro Afeta	Tulo
Sigamo	

Annex 6. Kebeles and Enumeration areas (EA) including sample size per EA by zone and Woreda.

Zone	Woreda	Kebele	EA code (by CSA)	#HH Sampled per EA
West Hararghe	MIESO	SIRIBA	2	27
West Hararghe	MIESO	HARO MERO DADOMA	3	27
West Hararghe	MIESO	DORE KORA	2	27
West Hararghe	MIESO	HULE ADAMI	3	27
West Hararghe	DOBA	EFADIN	4	25
West Hararghe	DOBA	BILISUMA	1	25
West Hararghe	DOBA	TOKUMA MATA LEGACHA	2	25
West Hararghe	DOBA	EFA AMAN	3	25
West Hararghe	TULO	EFA ANDODE	3	26
West Hararghe	TULO	KUFA KASA	4	26
West Hararghe	TULO	LUBO DEKEB	3	26
West Hararghe	TULO	HUNDE LAFTO	3	26
West Hararghe	MESELA	BELA BUKES	3	27
West Hararghe	MESELA	REKO BASI	4	27
West Hararghe	MESELA	ADA KAMA	2	27
West Hararghe	MESELA	KUFA KASA GEMECHESA	5	27
West Hararghe	ANCHAR	GODELALO	2	26
West Hararghe	ANCHAR	MIDAGDU	1	26
West Hararghe	ANCHAR	BIYO	4	26
West Hararghe	ANCHAR	SEKA	4	26
West Hararghe	GUBA QORICHA	BURKA BERKELE	3	25
West Hararghe	GUBA QORICHA	ODA DIMA	4	25
West Hararghe	GUBA QORICHA	HARDIM	1	25
West Hararghe	GUBA QORICHA	JERJERI	1	25
West Hararghe	HABRO	DANSE	3	27
West Hararghe	HABRO	HARO CHERCHER	3	27
West Hararghe	HABRO	MADA JALALA	10	27
West Hararghe	HABRO	FIRJIRU	4	27
West Hararghe	DARO LEBU	ODA LELEBA	3	26
West Hararghe	DARO LEBU	SAKINA	3	26
West Hararghe	DARO LEBU	SETEWA	3	26
West Hararghe	DARO LEBU	HARORESE KILE	3	26
West Hararghe	HAWI GUDINA	Kebenawa	4	25
West Hararghe	HAWI GUDINA	Bilika	7	25
West Hararghe	HAWI GUDINA	Kebenawa	1	25
West Hararghe	HAWI GUDINA	Wenchebe	3	25
West Hararghe	BOKE	KERSA	4	25
West Hararghe	BOKE	WACHU YAYA	2	25
West Hararghe	BOKE	HATURA	3	25

West Hararghe	BOKE	ARBA	1	25
West Hararghe	BURKA DIMTU	Kurfa Roka	5	27
West Hararghe	BURKA DIMTU	Anuba	5	27
West Hararghe	BURKA DIMTU	Burka Ramis	2	27
West Hararghe	BURKA DIMTU	Dimtu Bereda	3	27
West Hararghe	QUNI	OBI 17	4	26
West Hararghe	QUNI	ODAROBABA	6	26
West Hararghe	QUNI	ODA MUDA	5	26
West Hararghe	QUNI	HAROADI	1	26
West Hararghe	GEMECHIS	KUNI SEGERIYA	4	25
West Hararghe	GEMECHIS	MADERIYA	2	25
West Hararghe	GEMECHIS	SIREGUDO	9	25
West Hararghe	GEMECHIS	METEDABIR DIRESEDETA	5	25
West Hararghe	CHIRO ZURIA	BEA KUBI	1	25
West Hararghe	CHIRO ZURIA	LALO GUDO	6	25
West Hararghe	CHIRO ZURIA	ALA GORA	3	25
West Hararghe	CHIRO ZURIA	FUGNAN DIMO	8	25
Jimma	LIMU SEKA	EBICHA	2	26
Jimma	LIMU SEKA	GALE GOBETA	1	26
Jimma	LIMU SEKA	DAME GEBISA	1	26
Jimma	LIMU SEKA	SEKA	2	26
Jimma	NONO BENJA	Abu Gibe	1	25
Jimma	NONO BENJA	Cheho	4	25
Jimma	NONO BENJA	Lame Soloka	3	25
Jimma	NONO BENJA	Dokonu	2	25
Jimma	LIMU KOSA	WELEKESOMBO	4	25
Jimma	LIMU KOSA	CHANCHOGESHE	3	25
Jimma	LIMU KOSA	CHEFEALFETA	2	25
Jimma	LIMU KOSA	ACHA	5	25
Jimma	SOKORU	GURAGE BIFTA	3	27
Jimma	SOKORU	NATIRI MENCHO	3	27
Jimma	SOKORU	DAKA	4	27
Jimma	SOKORU	CHALA	8	27
Jimma	TIRO AFETA	JATO	4	27
Jimma	TIRO AFETA	LELISA	5	27
Jimma	TIRO AFETA	AOMOCHALA	2	27
Jimma	TIRO AFETA	DACHAGIBE	5	27
Jimma	KERSA	KERSA SUME "	5	25
Jimma	KERSA	BUSA BECHANE	6	25
Jimma	KERSA	BABO	5	25
Jimma	KERSA	WADIKO	4	25
Jimma	MANA	GUBEBO SOKA	4	25
Jimma	MANA	BILIDA	8	25

Jimma	MANA	KEMISE WERABO	5	25
Jimma	MANA	BUTIRE	2	25
Jimma	GOMMA	YACHIAURACHE	6	25
Jimma	GOMMA	ODA ADAMI	1	25
Jimma	GOMMA	OMOGURUDE	3	25
Jimma	GOMMA	KOTA	3	25
Jimma	GERA	GEBAKORO	3	25
Jimma	GERA	BORE GOGO	3	25
Jimma	GERA	KECHO ANDERACHA	2	25
Jimma	GERA	OBA TOLI	6	25
Jimma	SEKA CHEKORSA	GETA BEKE	1	27
Jimma	SEKA CHEKORSA	ANDODE ALAGA	2	27
Jimma	SEKA CHEKORSA	ATIRO SUFA	3	27
Jimma	SEKA CHEKORSA	NESE	6	27
Jimma	DEDO	DIMA SERITE	3	27
Jimma	DEDO	LALO	7	27
Jimma	DEDO	ASA NUPE	2	27
Jimma	DEDO	DILIBI	6	27
Jimma	OMONADA	GUDETA BULA	2	25
Jimma	OMONADA	TOLI BEYEM	9	25
Jimma	OMONADA	HUNDATOLI YEBO	11	25
Jimma	OMONADA	SORGO LASARA	4	25
Jimma	SIGMO	DIYA KURIBI	3	27
Jimma	SIGMO	KEJELO	3	27
Jimma	SIGMO	GATA	3	27
Jimma	SIGMO	NOO	4	27
Jimma	SETEMA	SIKA	4	25
Jimma	SETEMA	KIMISO	2	25
Jimma	SETEMA	GELA	9	25
Jimma	SETEMA	SETEMA KECHA	1	25
Jimma	SHEBE SENBO	MECHI	5	25
Jimma	SHEBE SENBO	MERGANO BASO	4	25
Jimma	SHEBE SENBO	ANJA GENBO	7	25
Jimma	SHEBE SENBO	HALO SEBEKA	7	25
Jimma	CHORA BOTER	BIPA BORELE	3	25
Jimma	CHORA BOTER	WAYU WEDESA	5	25
Jimma	CHORA BOTER	KOBI KEJELO	2	25
Jimma	CHORA BOTER	BOTER ADERE	1	25
Jimma	GUMA	YASERA PERA	2	27
Jimma	GUMA	GURBO DAGE	3	27
Jimma	GUMA	KUDAKUNACHO	7	27
Jimma	GUMA	BARA ENCHNI	4	27

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