

CARE SIERRA LEONE
CHILD SURVIVAL PROJECT IN KOINADUGU DISTRICT

**FINAL QUANTITATIVE AND ANTHROPOMETRIC SURVEY IN
FIVE CHIEFDOMS**

FINAL REPORT

BY

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TABLE OF CONTENTS

List of Tables -----	iv
List of Figures -----	vi
List of Abbreviations -----	vii
Executive Summary -----	viii

CHAPTER 1: INTRODUCTION

1.1 Background -----	1
1.2 Process and Partnership Building -----	2
1.3 Aim and Objectives of the Survey -----	3
1.4 Limitation -----	3

CHAPTER 2: SURVEY METHODOLOGY

2.1 Study Area -----	4
2.2 Study Population -----	4
2.3 Survey Instruments -----	4
2.4 Recruitment and Training of Field Personnel -----	4
2.5 Sample Size and Sample Selection -----	5
2.6 Data Collection -----	5
2.7 Data Processing and Analysis -----	6

CHAPTER 3: SURVEY RESULTS

3.1 Socio-Demographic Characteristics -----	9
3.2 Immunizations -----	13
3.3 Breastfeeding and Feeding Practices -----	16
3.4 Maternal and Newborn Care -----	19
3.5 Diarrhoea, Acute Respiratory Infection (ARI) and Fever/Malaria -	20
3.5.1 Diarrhoea -----	23
3.5.2 Fever/Malaria -----	25
3.5.3 Acute Respiratory Infection (ARI) -----	28
3.6 Integrated Management of Childhood Illness (IMCI) -----	29

3.7 Knowledge on HIV/AIDS -----	31
3.8 Household Water and Sanitation -----	32

CHAPTER 4: DISCUSSIONS AND RECOMMENDATIONS

4.1 Discussions -----	35
4.1.1 Breastfeeding and Feeding Practice -----	35
4.1.2 Immunizations -----	37
4.1.3 Maternal and Newborn Care -----	38
4.1.4 Diarrhoea -----	39
4.1.5 Fever/Malaria -----	40
4.1.6 Acute Respiratory Infection (ARI) Care-Seeking -----	42
4.1.7 Integrated Management of Childhood Illness (IMCI) -----	43
4.1.8 Knowledge on HIV/AIDS -----	44
4.2 Recommendations -----	44
4.2.1 Breastfeeding and Feeding Practice -----	44
4.2.2 Immunizations -----	45
4.2.3 Maternal and Newborn Care -----	46
4.2.4 Diarrhoea -----	46
4.2.5 Fever/Malaria -----	46
4.2.6 Acute Respiratory Infection (ARI) Care-Seeking -----	47
4.2.7 Integrated Management of Childhood Illness (IMCI) -----	47
4.2.8 Knowledge on HIV/AIDS -----	47

APPENDICES

APPENDIX A: Final Quantitative Survey Key indicator Results -----	49
APPENDIX B: Confidence Limits for Key Indicator Results -----	51
APPENDIX C: Final Quantitative Survey Questionnaire -----	53
APPENDIX D: Survey Personnel -----	67

LIST OF TABLES

Table 1: Age distribution of survey children in months -----	9
Table 2: Percentage distribution of children (0-23) months by sex -----	10
Table 3: Percentage distribution of live births ever had -----	10
Table 4: Percentage distribution of live births ever had by age of mothers ----	11
Table 5: Average number of live births ever had by age of mothers -----	11
Table 6: Percentage of children under five years living in households -----	12
Table 7: Number of biological children under age five living in households ---	12
Table 8: Current marital status of mothers with children (0-23) months -----	12
Table 9: Percent of households with livestock and/or backyard gardens -----	13
Table 10: Economic status of households -----	13
Table 11: Frequency of injection received for tetanus by mothers with children (0-23) months during pregnancy of youngest child -----	14
Table 12: Percentage of children (0-23) months having immunization card, card lost/misplaced or never had card -----	14
Table 13: Immunizations of children (12-23) months as verified by under-five card -----	15
Table 14: Immunizations of children (0-23) months as verified by under-five card -----	16
Table 15: Initiation of breastfeeding children (0-23) after birth -----	17
Table 16: Feeding practices of children (0-5) months during the last 24 hours -	17
Table 17: Number of times children (6-23) months received solid/semi-solid foods in the last 24 hours -----	18
Table 18: Place of birth for children (0-23) months -----	20
Table 19: First place of treatment for pregnancy related illnesses for women (15-49) years -----	21
Table 20: Instrument used to cut the navel cord after delivery -----	22
Table 21: Placement of babies immediately after birth -----	22
Table 22: Postpartum checks after delivery of children aged (0-23) months ----	23
Table 23: Treatment of diarrhoea for children (0-23) months who had diarrhoea in the past two weeks -----	24
Table 24: Feeding practice of children (0-23) months during an episode of diarrhoea -----	24

Table 25: Feeding practice of children (0-23) months during recovery period from an episode of diarrhoea -----	24
Table 26: Place of care seeking for children (0-23) months with fever -----	27
Table 27: Treatment of fever for children aged (0-23) months -----	27
Table 28: Children (0-23) months with ARI in the past two weeks -----	28
Table 29: Treatment of ARI for children aged (0-23) months -----	29
Table 30: Signs of childhood illness that would cause the mother to seek treatment -----	30
Table 31: Feeding practice of children (0-23) months during an episode of an illness in past two weeks -----	30
Table 32: Feeding practice of children (6-23) months during an episode of an illness in past two weeks -----	31
Table 33: Methods of reducing chances of getting AIDS virus as reported by mothers -----	31
Table 34: Methods of transmitting HIV/AIDS as reported by mothers -----	32
Table 35: Methods of preventing HIV/AIDS as reported by mothers -----	32
Table 36: Household main source of drinking water -----	33
Table 37: Ways of disposing stools of babies and young children -----	33
Table 38: Ways of disposing garbage as reported by mothers -----	34
Table 39: Hand washing with soap / ash -----	41

LIST OF FIGURES

Figure 1: Percentage of children aged (6-23) months who are still breastfeeding ---	18
Figure 2: Birth attendants for women (15-49) years during delivery of youngest child -----	21
Figure 3: Knowledge and preparation of ORS/SSS by mothers with children aged (0-23) months who had diarrhoea in the past two weeks -----	25
Figure 4: Fever care-seeking for children aged (0-23) months -----	26
Figure 5: Mothers' knowledge on the causes of malaria -----	27
Figure 6: ARI care-seeking for children aged (0-23) months -----	29
Figure 7: Deliveries assisted by PHU MCH Aides vs TBAs -----	39

LIST OF ABBREVIATIONS

AIDS	Acquired Immuno Deficiency Syndrome
ANC	Antenatal Care
BCC	Behaviour Change Communication
BFV	Blue Flag Volunteers
CBGP	Community Based Growth Promotion / Promoter
CHC	Community Health Club
C-IMCI	Community Integrated Management of Childhood Illnesses
CSP	Child Survival Project
DHMT	District Health Management Team
DPT	Diphtheria Pertussis Tetanus
EPI	Expanded Programme on Immunization
HIV	Human Immuno Deficiency Virus
IDD	Iodine Deficiency Disorders
IgA	Immunoglobulin ‘A’ content
KPC	Knowledge, Practices and Coverage
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MNC	Maternal & Newborn Care
MOHS	Ministry of Health and Sanitation
OPV	Oral Polio Vaccine
ORS	Oral Rehydration Solution
PDA	Personal Data Assistance device
PHUs	Peripheral Health Units
PPS	Probability Proportional to Size
SPSS	Statistical Package for Social Scientists software
SSS	Salt Sugar Solution
USAID	United States Agency for International Development
VDC	Village Development Committee
WFC	World Fit for Children
WRA	Women of Reproductive Age (i.e. women aged 15 to 49 years old)

EXECUTIVE SUMMARY

CARE Sierra Leone in collaboration with the Ministry of Health and Sanitation (MOHS) have implemented a five-year (2003-2008) USAID funded Child Survival Project (CSP) - *For De Pikin Dem Wel Bodi* (The Health of the Child) in Koinadugu District in the Northern Region of Sierra Leone. The goal of the Child Survival Project is to improve the health status of children under five and women of reproductive age (WRA) (15-49 years) in Koinadugu, the largest district and one of the most remote districts in Sierra Leone.

The Child Survival Project has operated in a total of 415 communities in five chiefdoms of the district. The project activities were executed directly in 54 out of the 415 communities through community-based structures including Community Health Clubs (CHCs), Community Based Growth Promotion (CBGP) volunteers, Village Development Committees (VDCs). The remaining communities (361) were reached indirectly through radios and ad-hoc campaigns by project staff and/or PHUs. The total beneficiary population was estimated at 47,605 (with 18,114 children under five and 29,491 WRA).

The Final Quantitative and Anthropometric Survey was conducted to measure progress that had taken place due to project activities. The main objective of the survey was to provide quantitative information on the impact of the Child Survival Project implemented by CARE Sierra Leone in the five chiefdoms in Koinadugu District. The survey was conducted using the standard 30 clusters sampling. A total sample size of 450 households was select for the survey; with 15 households per each cluster from the village-level population which form the sampling frame.

The main results of the survey are:

- 69.1% of children aged (0-23) months initiated breastfeeding within the first hour after birth (vs. baseline: 19.5%)
- 68.3% of the children aged (0-5) months were exclusively breastfed (vs. baseline: 8.3%)
- 18.8% of children aged (0-23) months were underweight (vs. baseline: 26.5%)
- 34.2% of children aged (0-23) months had their births attended by skilled health personnel (vs. baseline: 15.1%)
- 83.7% of women aged (15-49) years who had antenatal care during last pregnancy with youngest child (vs. baseline: 56.8%)
- 66.0% of children (12-23) months are fully vaccinated before their first birthday (vs. baseline: 45.7%)
- 70.4% of children aged (12-23) months who received a measles vaccine (vs. baseline: 69.5%)
- 81.2% of children aged (0-23) months that slept under an ITN the previous night (vs. baseline: 0.57%)
- 48.2% of children aged (0-23) months with a febrile episode that ended during the last two weeks who were treated with an effective anti-malarial drug within 48 hours after the fever began (vs. baseline: 27.4%)

CHAPTER 1

INTRODUCTION

1.1 Background

CARE Sierra Leone and Ministry of Health and Sanitation (MOHS) have implemented a five-year (2003-2008) USAID funded Child Survival Project (CSP) - *For De Pikin Dem Wel Bodi* (The Health of the Child) in Koinadugu District located in the Northern Region of Sierra Leone. The goal of the Child Survival Project is to improve the health status of children under five and women of reproductive age (WRA) (15-49 years) in Koinadugu, the largest district and one of the most remote districts in Sierra Leone.

The project operated in 54 out of 361 communities in five chiefdoms of the district; through community-based structures including Community Health Clubs (CHCs), Community Based Growth Promotion (CBGP) volunteers, Village Development Committees (VDCs) amongst others. The five chiefdoms of the project operation include Dembelia Sinkunia, Follosaba Dembelia, Neini, Sengbeh and Wara Wara Yagala. Project activities are accomplished in close collaboration with the District Health Management Team (DHMT) and staff from the twenty-two (22) Peripheral Health Units (PHUs) in these chiefdoms.

The primary beneficiaries of the project include are the community members of these five chiefdoms. The 2004 national population census data led to a revised estimation of the principal beneficiaries of the project. Currently these are estimated to be 19,198 children under five years and 27,101 women of reproductive age within a total population of 112,921 in the five chiefdoms. This population is served by 22 PHUs.

The secondary beneficiaries of the project include the six remaining chiefdoms in the district with a total population of 121,409 (20,640 children under five, 29,139 women WRA). This population is served by 34 PHUs. The total beneficiary population is therefore estimated at 39,838 children under five and 56,240 WRA, as compared to initial project estimates based on 1985 census data of 48,630 children under five and 51,491 WRA.

The project was implemented through innovative strategies that built partnerships between communities and the Government. The goal of the project was achieved through the attainment of four principal objectives:

1. Strengthened family and household knowledge and decision-making skills related to the health of women and children resulting in the practice of positive behaviours to prevent, recognize and manage common diseases;
2. Improved quality and accessibility of services provided by MOHS personnel and its extension services;
3. Enhanced community capacity to form groups and institutions that sustain health initiatives, demonstrate social cohesion and promote good governance mechanisms;
4. Ensured sustainability of the activities and achievements of the project.

Project implementation focused on the following four interventions through the Community Integrated Management of Childhood Illnesses (C-IMCI) approach: Expanded Programme on Immunization (EPI), Nutrition, Malaria and Maternal & Newborn Care (MNC) based on the following strategies:

1. Capacity building of institutions and partners through training, organizational diagnosis activities and subsequent action on areas of need.
2. Behaviour Change Communication (BCC) activities are being used to promote physical health, prevent disease, improve home management of disease, promote appropriate care-seeking practices among caretakers/mothers and household members; and improve practices of health care providers.
3. Quality assurance initiatives including the development of protocols and instruments that guide an innovative system of creating opportunities for peer feedback.
4. CARE in support of IMCI also addressed health systems strengthening.

Prior to the inception of project implementation, Knowledge, Practices and Coverage (KPC) Baseline Survey was conducted in April 2004 to set bench marks. The baseline survey also collected anthropometric data to measure the nutrition status of the children. As the project concludes in September 2008, a Final Quantitative and Anthropometric Survey were carried out to measure progress that has taken place due to project activities.

1.2 Process and Partnership Building

CARE Sierra Leone partnered with community-based organizations (CBOs) such as community health clubs (CHCs) and the PHUs staff of the Ministry of Health and Sanitation. Equally, CARE worked closely with the DHMT headed by the District Medical Officer (DMO), actively participated in reviewing the baseline questionnaire, training field personnel (see list of enumerators in Appendix D) on how to take anthropometric measurements as well

as the data gathering exercise itself. The District Health Management Team, including PHU staff also collaborated closely with CARE during the dissemination of the survey findings to communities.

Actively engaging DHMT at district level in the final quantitative survey has provided an opportunity for the two partners to gain a better understanding of their operating relationship, including limitations/capacities on both sides. Planning well in advance, constant communication in an effort to coordinate activities all proved to be critical aspects to the final quantitative survey process.

1.3 Aim and Objectives of the Survey

The main purpose of the Final Quantitative and Anthropometric Surveys was to provide quantitative information on the impact of the Child Survival Project implemented by CARE Sierra Leone in collaboration with Ministry of Health and Sanitation (MOHS) in the five chiefdoms in Koinadugu District.

The objectives of this survey are:

- To collect quantitative knowledge, practices and coverage of women of reproductive age (15-49 years) in the five CSP operational chiefdoms in Koinadugu District.
- To collect anthropometric data of children aged (0-23) months to measure their nutritional status.
- To deduce comparison between baseline and final survey data.
- To provide CARE and stakeholders with lessons learnt and recommendations based on data analysed.

1.4 Limitations

The Final Quantitative and Anthropometric Survey was conducted using the standard 30 clusters sampling. The same number of clusters/communities per chiefdom (that is, 6 per chiefdom yielding 30 communities in the five chiefdoms) was maintained for the survey. Also the same sampling size (with one additional household per cluster so that the size will represent 0.5% of the studied population) as baseline was used, taking into account the fact that some communities were reached directly whereas other were reached indirectly through radios and ad-hoc campaigns (by CSP or PHUs).

CHAPTER 2

SURVEY METHODOLOGY

2.1 Study Area

The study covers the five chiefdoms in Koinadugu District, where the Child Survival Project was implemented. The five chiefdoms include: Dembelia Sinkunia, Follosaba Dembelia, Sengbeh, Neini and Wara Wara Yagala. The survey was conducted in 30 selected rural communities¹ out of 415 targeted communities (including 54 direct communities and 361 indirect communities).

2.2 Study Population

The study targeted a population of about 46,299² (comprising 19,198 children under five and 27,101 WRA). Households with children under 24 months old were considered for the survey. No sooner the age of the child (between 0 and 23 months) was determined; the mother/caretaker of the survey child was interviewed. In the event that a household has two or more children less than 24 months, the youngest child was selected for the survey.

2.3 Survey Instruments

The main survey instruments used for data collection were the structured (baseline) questionnaire, which was reviewed and adapted for the purpose of the end line survey and the Personal Data Assistance (PDA) device. The questionnaire was administered to mothers/caretakers in households (with children under 24 months) to provide information on economic status, socio-demographic characteristics, child immunization, breastfeeding/feeding practices, treatment of child illness, maternal and newborn care, water and sanitation, integrated management of childhood illness (IMCI) and knowledge on HIV/AIDS. The PDA was used to input data as collected and edited in the field.

Other survey instruments were questionnaire field guide, training manual and anthropometric guide. These were developed to ensure that survey teams/personnel understand the standard procedures and acquire consistent approach for data collection.

2.4 Recruitment and Training of Field Personnel

¹ The sample includes six communities per chiefdom; two communities from directly targeted zone and four from indirect intervention zone.

²Total estimated beneficiary population in direct zone and indirect intervention zone.

The survey used a combination of CARE staff and the Ministry of Health and Sanitation personnel from the district for data collection. Twenty-five (25) field researchers (including 5 supervisors and 20 interviewers) were recruited for the survey.

A three-day training workshop was held to train the field personnel. The training included facilitation on interviewing techniques (standard procedures), the contents of the questionnaires, demonstrations and practice in asking/interpreting the questions in the local languages (Kuranko, Fullah, Mandingo and Limba) as well as completing the questionnaires. The sampling technique for selecting the households and the use of the PDA were also discussed. Moreover, one day of the training was devoted to the theory and practice of collecting anthropometric measurements. Survey team received practice with the measurement of weight and length in children less than 24 months using salter scales and length boards. The team was also familiarized with the use of growth charts. The participants were then organised into five teams; one supervisor and four interviewers per each team.

2.5 Sample Size and Sample Selection

Fifteen (15) households (mother-child pairs) were selected in each cluster/community; in which interviews were conducted. Overall, a total sample size of 450 households was selected for the survey. The sample was chosen from the village-level population in the 30 selected clusters, which formed the sampling frame.

The sample was selected at two stages. At the *first stage*, six (6) clusters/communities were randomly selected in each chiefdom with a total of 30 clusters/communities selected in the five chiefdoms. The sample included two communities from amongst the direct targeted communities and four from indirect intervention zone in each chiefdom. The *second stage* envisaged the selection of households (i.e. mother-child pairs). Prior to selecting the households, two entry points were determined in every cluster/community. Subsequently, fifteen (15) households were selected randomly starting from the entry points for interview. In a case where a community has less than the required number of households, the team continued to the nearest community to obtain the sample.

2.6 Data Collection

Data collection was accomplished according to the schedule. It commenced on Saturday 21st June 2008 and ended on Wednesday 25th June 2008. Data was collected by five (5) supervisors and twenty (20) interviewers recruited for the purpose. The field personnel were organized into five teams with each team comprised of one supervisor and four interviewers.

The supervisors served as team leaders and ensured efficient data collection. The project Monitoring and Evaluation Officer coordinated the exercise. All thirty (30) clusters were covered and a total of 450 questionnaires were completed.

The data collection exercise was quite challenging. Due to the poor road network, access to most of the communities was very difficult. Many of the communities were reached by footpath with survey teams, who walked farther distances across hilly and forest terrain.

2.7 Data Processing and Analysis

Data entry was initiated in the field. The survey design prompted data entry into personal data assistance device (PDA) during data collection exercise; with each survey team given one PDA. After interviewers filled out the questionnaires and supervisors have checked and edited them; the data was then inputted into the PDAs for storage. The essence of using the PDAs was to enhance implementation of the survey in a short possible time without undue delay. However, the process proved very challenging for the survey field staff and somehow futile right through. Some of the devices have limited power (due to low energy retention of the batteries) which retarded data inputting in the field. Also, the personnel were not efficient in using the devices since these were quite new to them and needed more time to have mastered their operation. Again, transfer of data to computer applications was inefficient. Data from some questionnaires were missing in the PDAs. As a result manual inputting of the missing data was then proceeded; for fear of further complication in using the PDAs.

Cleaning and analysis of the data were the sole responsibility of the consultant. After verification and cleaning of the database, the data was then exported to SPSS (Statistical Package for Social Scientists) software for analysis. SPSS data cleaning queries were performed during the entire data cleaning exercise to check for logical consistency. The ‘cleaned’ data was subsequently analysed using the SPSS software and Microsoft Excel spreadsheet. Outputs were presented in frequency tables and cross-tabulations based on the indicators. For the anthropometric data, analysis was conducted with the World Health Organization *Anthro* software (v.2.0.2). As the 1978 NCHS growth reference standards were used for the baseline analysis in 2004, the present results were analyzed using the NCHS standards for comparative purposes. However, data was also analyzed using the newer 2006 WHO growth reference standards, as these are more reflective of ideal growth in healthy, breastfed children, as well as for future comparison.

CHAPTER 3

SURVEY RESULTS

The survey targeted a total sample size of 450 mothers with children less than 24 months for interview. However, it was discovered during analysis of the data that three children were older than the criteria age (that is, more than 23 months). Results are therefore provided for 447 children who were within the target age (0-23) months. Information of the older children was not included. Of the survey children, the data ascertained 150 children in direct project operation zone and 297 children in indirect project operation zone. For the purpose of comparison, baseline results are presented in parenthesis along the final survey results of key indicators throughout this report. The rapid catch indicator table comparing baseline survey and final quantitative survey results is presented in the summary table below.

SUMMARY TABLE*

**Rapid Catch Indicator Table Comparing Baseline, Final Quantitative Survey Results
and Project targets**

Indicators	Final Survey 2008	Baseline Survey 2004	Project Target
Nutrition/feeding practice			
Percent of children aged 0-23 months who were breastfed within the first hour after birth.	69.1% (D78.7%, InD64.3%)	19.5%	35%
Percent of children (0-23) months who received pre-lacteal feeding.	14.6% (D8.1%, InD18%)	-	-
% of children aged (0-5) months who were exclusively breastfed during the last 24 hours.	68.3% (D82%, InD60.7%)	8.3%	15%
% of children aged (6-9) months who received breast milk and complementary foods during the last 24 hours.	74.3% (D70.6%, InD75.5%)	69.8%	80%
% of households that use iodine fortified salt for cooking (i.e. salt with iodine content \geq 15 parts per million).	61.6% (D65.6%, InD59.5%)	-	-
Percent of children aged 0-23 months who were underweight (weight less than -2 standard deviation).	18.8% (D17.4%, InD19.4%)	26.5%	-
Maternal and Newborn Care			
% of women aged (15-49) years who know at least two symptoms that indicate the need to seek referral for emergency obstetric care.	74.5% (D84.1%, InD69.6%)	37.8%	65%
% of women aged (15-49) years who had antenatal care during last pregnancy with youngest child	83.7% (D90.7%, InD80.1%)	56.8%	-
% of children aged (0-23) months whose births were attended by skilled health personnel. *(includes doctor, nurse, MCH Assistant) TBAs were not considered skilled	34.2% (D47.3%, InD27.6%)	15.1%	30%
% of mothers with (0-23) months able to report at least two known neonatal danger signs.	44.1% (D52%, InD40.1%)	7.4%	35%

Indicators	Final Survey 2008	Baseline Survey 2004	Project Target
% of mothers who received/bought ≥ 90 iron supplements while pregnant with the youngest child less than 24 months of age.	86.6% (D94.7%, InD82.5%)	60.0%	75%
% of mothers who received a Vitamin A dose during the first two months after delivery.	67.3% (D76.7%, InD62.6%)	17.8%	17.8%
% of mothers who received de-worming medication during the second or third trimester of a pregnancy within the last two years.	71.6% (D78.0%, InD68.4%)	21.7%	-
% of mothers who took anti-malarial medicine to prevent malaria during pregnancy in the last two years.	72.9% (D79.3%, InD69.7%)	31.0%	50%
EPI % of mothers with children aged 0–23 months who received at least two tetanus toxoid injections during pregnancy of youngest child	69.1% (D74.7%, InD66.3%)	47.2%	-
% of children aged 12–23 months who are fully vaccinated (against the five vaccine-preventable diseases) before first birthday.	66.0% (D70.4%, InD63.9%)	45.7%	60%
% of children aged 12–23 months who received a measles vaccine.	70.4% (D72.2%, InD69.4%)	69.5%	80%
% of children aged 6–23 months who received a Vitamin A dose in last 6 months.	73.6% (D76.5%, InD72.0%)	68.2%	-
% of children aged (6–23) months who received de-worming medication during last 6 months.	42.5% (D49.0%, InD39.4%)	15.9%	-
Fever/Malaria % of children aged (0–23) had a febrile episode in the past two weeks	50.8% (D53.3%, InD49.5%)	41.9%	-
% of children aged (0–23) months that slept under an ITN the previous night.	81.2% (D91.3%, InD76.1%)	0.57%	15%
% of children aged (0–23) months with a febrile episode that ended during the last two weeks who were treated with an effective anti-malarial drug within 48 hours after the fever began.	48.2% (D52.0%, InD39.5%)	27.4%	40%
Other childhood illnesses Percent of children (0–23) months with an episode of diarrhoea in the past two weeks.	23.3% (20.7%, InD24.6%)	28.2%	
% of children aged (0–23) months with an episode of diarrhoea that ended during the last two weeks who were effectively treated with an ORS or SSS.	38.5% (D29.0%, InD42.5%)	-	-
% of children (0–23) months with an episode of cough/fast breathing during the last two weeks	19.7% (D17.3%, InD20.9%)	41.7%	-
% of children (0–23) months with an episode of cough/fast breathing during the last two weeks who were taken to an appropriate health care.	53.4% (D61.5%, InD50%)	26%	-
Knowledge % of mothers of children aged (0–23) months who know at least two signs of childhood illness that indicate the need for treatment.	79.9% (D90%, InD74.7%)	79.0%	95%
% of children aged (0–23) months that received increased fluids and continued feeding during an episode of diarrhoea in the past two weeks.	9.6% (D16.1%, InD6.8%)	48.7%	-
% of children aged (0–23) months that received increased fluids and continued feeding during an illness in the past two weeks.	7.7% (D12.6%, InD5.1%)	-	-

Indicators	Final Survey 2008	Baseline Survey 2004	Project Target
% of mothers with children aged (0–23) months that cite at least two known ways of reducing the risk of HIV infection.	45.0% (D64.7%, InD35.0%)	3.8%	-
Other Indicators % of households that have access to safe drinking water	56.4% (D94.1%, InD37.5%)	-	-
% of mothers with children age (0-23) months who wash their hands with soap/ash before food preparation, before feeding children, after defecation and after attending to a child who has defecated.	20.4% (D25.3%, InD17.8%)	-	-
% of mothers of children (0-23) months who delivered at a health care facility	34.5% (D50.0%, InD26.6%)	-	-
% of children age 0–23 months who were born at least 24 months after the previous surviving child	82.9% (D82.4%, InD83.2%)	-	-

**Note: Parentheses present results of direct (D) and indirect (InD) zones*

3.1 Socio-Demographic Characteristics

The age distribution of the survey children outlined in Table 1 indicates that no significant difference in the age distribution was observed between baseline and endline surveys.

Table 1: Age distribution of survey children in months
(N =450)

Age (in moths)	Number of children	Percent of total
0-5	139	30.9
6-11	102	22.7
12-17	110	24.4
18-23	96	21.3
24+	3	0.7
All	450	100.0
Birth date given	345	76.7
Recall	105	23.3

The percentage distribution of children (0-23) months in Table 2 shows that the proportion of male children was generally higher than that of female children in both direct and indirect zones, except age (12-17) months which shows higher female percentages. However, both sexes recorded the same percentages for age (6-11) months in indirect communities.

Table 2: Percentage distribution of children (0-23) months by sex

Age (in months)		Sex		Total (N=447)
		Male (N=84, 164)	Female (N=66, 133)	
Direct Zone	0-5	20.7	12.7	33.3
	6-11	14.0	10.0	24.0
	12-17	10.0	13.3	23.3

	18-23	11.3	8.0	19.3
	All	56.0	44.0	100.0
Indirect Zone	0-5	16.8	13.1	30.0
	6-11	11.1	11.1	22.2
	12-17	11.4	13.8	25.3
	18-23	15.8	6.7	22.6
	All	55.2	44.8	100.0

Survey findings in Table 3 shows that the number of live births mothers have ever had ranges from 1 to 7. At the time of survey, 42.7% of women have had between 1 and 2 live births; while 46.4% have had 3 to 6 live births. About one-tenth (10.9%) have had 7 live births. The age of two mothers (out of 450 mothers interviewed) was missing from the data and thus their live births were not included.

Table 3: Percentage distribution of live births ever had
(N=150, 297)

No. of live births	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
1 - 2	41.7	43.1	42.7
3 - 4	24.5	30.4	28.4
5 - 6	21.2	16.4	18.0
7	12.6	10.0	10.9
All	100.0	100.0	100.0

The age of mothers in Table 4 shows that women start giving birth in their teens and majority (87.1%) of teenage mothers aged (15-19) years have had only one child. However, 9.7% have had two children and 3.2% have had three children. Certainly, the number of live births mothers have ever had depends on their age as shown in ages (25-34) and (35 and above) years.

Table 4: Percentage distribution of live births ever had by age of mothers

No. of live births	Age of mothers (in years)				Total (N =448)
	15-19 (N =62)	20-24 (N =137)	25-34 (N =177)	35+ (N =72)	
1	87.1	31.4	6.2	1.4	24.3
2	9.7	40.9	8.5	8.3	18.5
3	3.2	19.0	27.7	8.3	18.5
4	0.0	4.4	18.1	8.3	9.8
5	0.0	3.6	16.4	11.1	9.4
6	0.0	0.0	15.8	15.3	8.7

7	0.0	0.7	7.3	47.2	10.7
Total	100.0	100.0	100.0	100.0	100.0

Table 5 gives the average number of live births ever had by age of mothers. Survey results revealed that teenage mothers (15-19 years) had about one child on average and older mothers (35 years and above) had an average of 5.5 live births.

Table 5: Average number of live births ever had by age of mothers
(N = 448)

Age of mothers (in years)	Total number of live births	Number of mothers	Average number of live births
15-19	72	62	1.2
20-24	289	137	2.1
25-34	720	177	4.1
35+	399	72	5.5

About two-fifths (38.9%) of mothers with live births later experienced at least one child death. Of the mothers who have had death of a child, 65.0% have had one child die, 15.0% have had two children die and almost 20.0% have had at least three children die. The maximum number of deaths recorded to any mother is six.

The percentage of children under five years living in households is shown in Table 6. The number of children under five years living in households ranges from 1 to 6 children in direct zone and 1 to 12 children in indirect zone. Survey results revealed that (45.1%) have two children under age five; with higher percentage (47.8%) recorded in indirect zone. Just about one-fifth (20.2%) of households accounted for only one child whilst slightly over 20% have three children and up to 12.5% have more than three children.

Table 6: Percentage of children under five years living in households
(N = 151, 299, 450)

Number of children	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
One	23.8	18.4	20.2
Two	39.7	47.8	45.1
Three	23.2	21.7	22.2
More than three	13.2	12.1	12.5
Total	100.0	100.0	100.0

The highest number of children under five years born to any mother and living in households is 7. Survey results in Table 7 show that slightly over half of mothers have one biological child under five living in households. Over two-fifths have 2 children and about 6.4% have 3 or more children less than five years living in households.

Table 7: Number of biological children under age five living in households
(N = 151, 299, 450)

No. of children	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
1	50.3	51.5	51.1
2	40.4	43.5	42.4
3 or more	9.3	5.0	6.4
Total	100.0	100.0	100.0

Of the mother with two or more biological children, 82.9% of the children aged (0-23) months were born at least 24 months after the previous surviving child (with 33.9% in direct zone and indirect zone 64.1%) whilst 41.5% of children aged (0-23) months were born at least 36 months after the previous surviving child.

Current marital status of mothers with children (0-23) months outlined in Table 8 below shows that almost 96% of mothers are married/in union/living with partners; with no substantial difference on the age of the respondents.

Table 8: Current marital status of mothers with children (0-23) months
(N = 150, 297, 447)

Marital status	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Married	94.0	96.3	95.6
Divorced	2.0	1.0	1.3
Widow	1.3	1.7	1.6
Single	2.6	1.0	1.6
Total	100.0	100.0	100.0

Majority of households (77.6%) have backyard gardens for their livelihood. The predominant livestock owned by households is poultry; which recorded 72.4% of households owned it. Although Koinadugu district is known to be the centre of cattle production, only one-fifth of households reported they owned cattle as shown in Table 9.

Table 9: Percent of households with livestock and/or backyard gardens
(N = 150, 297, 447)

Livestock/backyard garden	CSP Operational Zone		Total
	Direct Zone	Indirect Zone	
Own poultry	75.5	70.9	72.4
Own sheep/goats	49.0	39.1	42.4

Have backyard garden	84.1	74.2	77.6
Own cattle	23.8	18.4	20.2

Ownership of assets was sought as proxy to indicate the economic status of households. Few households actually owned any of these items. Radio and large pot were the dominant items observed; which were reported for about 47% of households owning each. Following was tape recorder with 42.9% of households possessing it. Stove and sewing machine were hardly found. Table 10 outlines the various items indicating the economic status of households.

Table 10: Economic status of households
(N = 150, 297, 447)

Assets	CSP Operational Zone		Total
	Direct Zone	Indirect Zone	
Radio	53.0	43.5	46.7
Tape recorder	53.6	37.5	42.9
Charcoal pot	13.2	8.0	9.8
Stove (single burner)	3.3	0.0	1.1
Stove (multiple burner)	1.3	0.0	0.4
Bicycle	25.2	15.1	18.4
Motor cycle	18.5	8.4	11.8
Sewing machine	7.3	3.0	4.4
Large cooking pot	47.0	46.8	46.9

The survey results revealed that the main material used for housing among survey households is mud with wattle or mud brick. However, the end line survey indicated an increase (52.7%) of households that have iron sheets for their roofing as compared to the base line (25%). 47.3% had grass roofs. This increase suggests that communities are engaged in more economic activities to improve on their livelihood security.

3.2 Immunizations

- Percent of mothers with children aged (0–23) months who received at least two tetanus toxoid injections during pregnancy of youngest child; **69.1%** (**47.2%**)
- Percent of children aged (12–23) months who are fully vaccinated (against the five vaccine-preventable diseases) before first birthday; **66.0%** (**45.7%**)
- Percent of children aged (12–23) months who received a measles vaccine; **70.4%** (**69.5%**)
- Percent of children aged (6–23) months who received a Vitamin A dose in last 12 months; **73.6%** (**68.2%**)
- Percent of children aged (6–23) months who received de-worming medicine in last 6 months; **42.5%** (**15.9%**)

88.2% of mothers reported to have had at least one tetanus toxoid injection before giving birth to the youngest child. Of these mothers, almost 20.0% had the injection once and 77.8% received two or more injections. The frequency of injection received for tetanus toxoid by mothers with children less than 24 months is given in Table 11.

Table 11: Frequency of injection received for tetanus by mothers with children (0-23) months during pregnancy of youngest child
(N = 150, 297, 447)

No. of injection	CSP Operational Zone		Total
	Direct Zone	Indirect Zone	
Once	19.9	19.9	19.9
Twice	53.9	50.8	51.9
More than twice	25.5	26.2	25.9
Don't remember	0.7	3.1	2.3
Total	100.0	100.0	100.0

Obviously, not all children (0-23) months have under-five/immunization card. Only 76.5% of children had card (and verified). About 12.5% reported their cards have lost/misplaced at time of survey and 11.0% never had cards as given in Table 12.

Table 12: Percentage of children (0-23) months having immunization card, card lost/misplaced or never had card
(N = 150, 297, 447)

Status of card	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Have card (Verified)	81.3	74.1	76.5
Card lost/misplaced	8.7	14.5	12.5
Never had card	10.0	11.4	11.0
Total	100.0	100.0	100.0

Apparently, mothers were taking their children for the first round of vaccinations at health care facility. Based on information on the under-fives/immunization cards, the proportion of children (12-23) who received BCG is comparable to DPT1 (Pentavelent1); with BCG recorded at 98.8% and DPT1/Pentavelent1 96.3%. Almost 66.0% (107 out of 162) of children aged (12–23) months were fully vaccinated (against the five vaccine-preventable diseases) before their first birthday. Whilst the percentage of the same children who received DPT3 (Pentavelent3) vaccine was recorded as 80.9% and measles vaccine was 70.4%. However, the drop-out rate between DPT1 and DPT3 stands at 16%. Although a supplementary vaccine to measles, the coverage of yellow fever was slightly lower (67.9% compared to 70.4%). Table 13 shows immunizations of children (12-23) months as verified by under-five card.

**Table 13: Immunizations of children (12-23) months as verified by under-five card
(N = 54,108, 162)**

Immunizations	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
EPI Access: BCG	100.0% (54/54)	98.2% (106/108)	98.8% (160/162)
Pentavelent 1/DPT1	96.3% (52/54)	96.3% (104/108)	96.3% (156/162)
Measles	72.2% (39/54)	69.4% (75/108)	70.4% (114/162)
Yellow fever	72.2% (39/54)	65.7% (71/108)	67.9% (110/162)
EPI Coverage I: (BCG, DPT3, OPV3, Measles)	70.4%	63.9%	66.0%
EPI Coverage II: DPT3	85.2% (46/54)	78.7% (85/108)	80.9% (131/162)
Drop-Out Rate (% of drop-outs between DPT1 & DPT3)	11.5% (6/52)	18.3% (19/104)	16.0% (25/156)

The various immunizations received by survey children less than 24 months, as verified by under-five/immunization card, are presented in Table 14. Survey results revealed that over 80% of all children (0-23) months received BCG, Polio 0, Polio 1 and DPT1 at their ages; each. Whereas about 70% of the children were given Polio 2 vaccine or DPT2 and just over half obtained Polio3/DPT3 with measles vaccine least recorded at 40.4% because of age. A significant difference was observed between the rates of BCG and OPV0 although these vaccines are given together immediately after birth of children (96.8% as compared to 89.5%).

**Table 14: Immunizations of children (0-23) months as verified by under-five Card
(N = 122, 220, 342)**

Immunizations	CSP Operation Zone		Total	Total
	Direct Zone	Indirect Zone	Endline	Baseline
BCG	97.5	96.4	96.8	95.2
DPT1/Pentavelent 1	87.7	84.1	85.4	87.3
DPT2/Pentavelent 2	77.0	67.7	71.1	63.2
DPT3/Pentavelent 3	63.9	53.6	57.3	38.6
OPV0	91.0	88.6	89.5	64.0
OPV1	88.5	84.5	86.0	86.8

OPV2	76.2	67.3	70.5	62.7
OPV3	64.8	55.0	58.5	37.7
Measles	42.6	39.1	40.4	42.5

Vitamin A supplementation coverage among children aged (6-23) months in the last 6 months preceding the survey (either confirmed by under-five card or from mothers' recall) was 73.6% (direct project communities 76.5%; indirect project communities 72.0%) while baseline result was 68.2%. The percentage of children aged (6-23) months who acquired de-worming medicine in last 6 months before the survey was found to be 42.5%.

3.3 Breastfeeding and Feeding Practices

- Percent of children aged (0-23) months who were breastfed within the first hour after birth; **69.1%** (19.5%)
- Percentage of children (0-23) months who received pre-lacteal feeding; **14.6%**
- Percent of children aged (0-5) months who were exclusively breastfed during the last 24 hours; **68.3%** (8.3%)
- Percent of children aged (6-9) months who received breast milk and complementary foods during the last 24 hours; **74.3%** (69.8%)

Nearly all surveyed children aged (0-23) months had ever been breastfed (98.0%); with only 9 out of 447 (2.0%) were reported had never been breastfed. As Table 16 indicates, more than two-thirds (69.1%) of children started breastfeeding immediately (within the first hour) after birth and almost one-quarter (24.6%) commenced breastfeeding after one hour or more. However, 64 out of 438 (14.6%) of children (0-23) months who had ever been breastfed received pre-lacteal feeding; that is children were given other liquids other than breast milk in the first 72 hours after birth. Pre-lacteal feeding in direct project operation communities is twice less than that in indirect communities (8.1% against 18%).

Table 15: Initiation of breastfeeding to children (0-23) after birth
(N = 150, 297, 447)

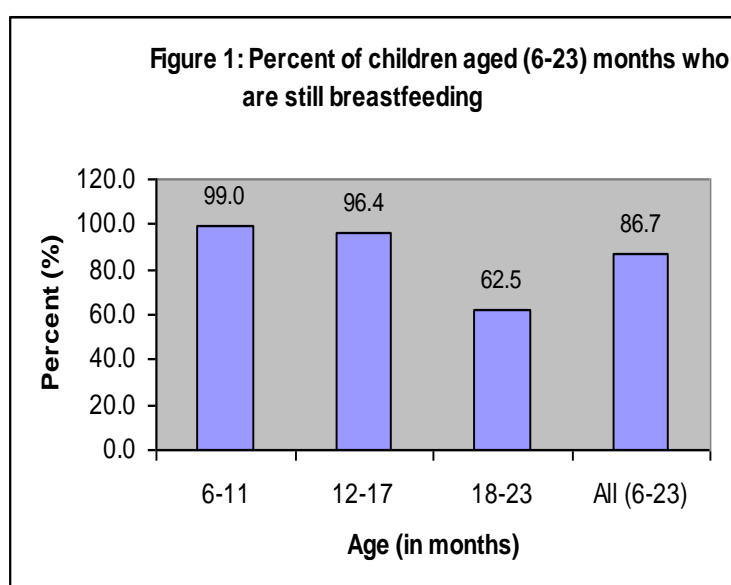
Breastfeeding initiation	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Within the first hour	78.7	64.3	69.1
After the first hour	16.7	28.6	24.6
Don't remember	4.0	4.4	4.3
All	99.3	97.3	98.0

68.3% of children less than 6 months were exclusively breastfed (that is, given breast milk only) in the last 24 hours prior to survey. In communities of direct project operation, exclusive breastfeeding accounted for 82.0% of the children but lower in indirect zone with 60.7%. According to the feeding practices of these children presented in Table 16, 96.4% had breast milk in the last 24 hours before the survey. It was observed that, the children were also given other liquids in addition to breast milk including plain water (20.1%) and (3.6%) infant formula/fortified infant food.

Table 16: Feeding practices of children (0-5) months during the last 24 hours
(N = 149, 289, 438)

Food/Liquid	CSP Operational Zone		Total
	Direct Zone	Indirect Zone	
Breast milk	96.0	96.6	96.4
Plain water	12.0	24.7	20.1
Infant formula	0.0	1.1	0.7
Fortified infant food	2.0	3.4	2.9
Porridge/gruel	0.0	0.0	0.0

Continued breastfeeding of children (6-23) months stands at 86.7% (267 out of 308) as shown in Figure 1. It was observed that continued breastfeeding start declining at age 18 months. Almost all children between 6 and 11 months are continuously breastfed and slightly less (96.4%) for those between 12 and 17 months.



Survey results in Table 17 revealed that many children (6-23) months were given foods (solid, semi-solid and/or soft) other than liquids below the minimum required feeding frequency during the last 24 hours preceding the survey. About one-third (30.4%) of children aged (6-8) months and up to 14.1% of children aged (9-23) months were found to have had no

food at all. Only 45.6% of breastfed children aged (6-8) months were given food at the minimum required frequency (twice) or more. For children (9-23) months who were breastfed, 42.8% received food at least three times (minimum required frequency).

Table 17: Number of times children (6-23) months received solid/semi-solid foods in the last 24 hours

Number of times	Age of children (in months)			
	(6-8) months (N = 46)		(9-23) months (N = 262)	
	Breastfed	Non-breastfed	Breastfed	Non-breastfed
0	30.4	0.0	12.6	1.5
1	21.7	0.0	10.7	1.1
2	10.9	0.0	18.7	1.5
3	21.7	2.2	29.4	4.6
4 or more	13.0	0.0	13.4	6.5

The proportion of children aged (6–9) months who received breast milk and complementary foods during the last 24 hours was reported at 74.3% overall; with 70.6% in direct communities and 75.5% in indirect communities

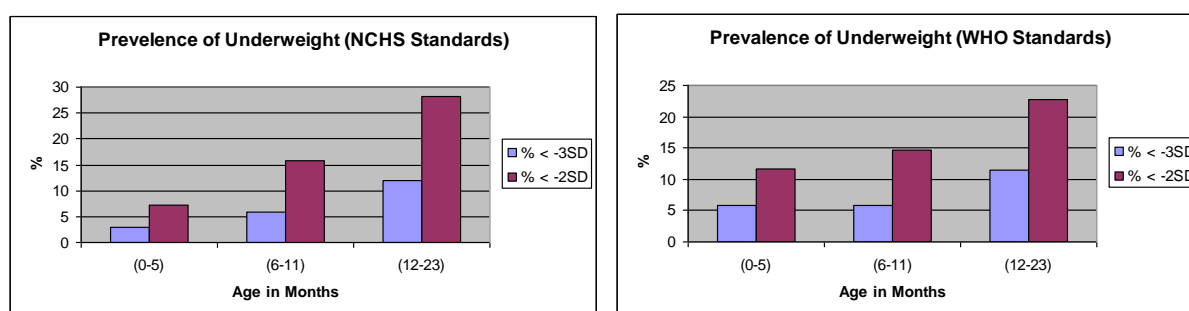
Salt used for cooking was observed for iodine content by health personnel of survey team who were experienced in using the salt test kits. It was found out that, about two-thirds (61.6%) of households use iodine fortified salt for cooking. Households' consumption of iodized salt seems to be higher in direct project communities (65.6%) and lower in indirect communities (59.5%).

3.4 Anthropometric Data

- Percent of children aged (0-23) months who were underweight; **18.8%** (26.5%)
- Percent of children aged (0-5) months who were underweight; **11.6%** vs. **15.7%**
(national nutritional assessment, MOHS, 2007)
- Percent of children aged (6-11) months who were underweight; **14.7%** vs. **20.9%**
(national nutritional assessment, MOHS, 2007)
- Percent of children aged (12-23) months who were underweight; **22.8%** vs. **23.0%**
(national nutritional assessment, MOHS, 2007)

Of the 443 children weighed, 17 (3.8%) were assessed to have oedema, or fluid retention in the tissues, which is a sign of severe malnutrition. Because this condition can lead to an inflated weight, the weights of these children were disregarded on an individual level and were considered to be <-3 SD below normal for calculations involving weight at the

population level. The KPC 2008 survey results indicate that 18.8% [95% CI (15%, 22.5%)] of children are underweight, or < -2 SD below normal weight-for-age, based on the NCHS (National Centre for Health Statistics) standards. According to the WHO standards, 17.4% [95% CI (13.8%, 21.1%)] of these children are considered underweight. This indicates a 7.7% decrease from the 2004 baseline survey, where 26.5% of children were underweight. The prevalence of underweight was higher in children aged (12-23) months with 22.8%, moderate in children aged (6-11) months at 14.7% and lower (11.6%) in (0-5) month olds. Further analysis by mothers' age groups indicates that teenage mothers (15-19 years old) have significantly higher underweight prevalence (29.5%) while most other groups are closer to the mean as a whole (approximately 18%).



3.5 Maternal and Newborn Care

- Percent of women (15-49) years who had antenatal care during last pregnancy with youngest child; **83.7% (56.8%)**
- Percent of children aged (0-23) months whose births were attended by skilled health personnel; **34.2% (15.1%)**
- Percent of women aged (15-49) years who know at least two symptoms that indicate the need to seek referral for emergency obstetric care; **74.5% (37.8%)**
- Percent of mothers with (0-23) months able to report at least two known neonatal danger signs; **44.1% (7.4%)**

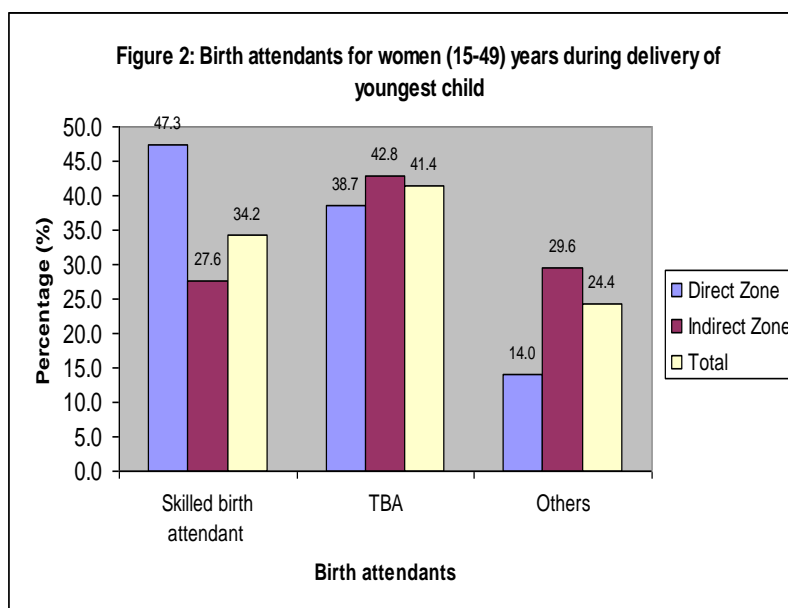
89.8% of mothers indicated that they saw 'someone' for antenatal care (ANC) while they were pregnant with the youngest child. However, only 64.4% produced a maternal health card, with an additional 19.2% stating they had a card, but were not able to locate it at the time of the survey (83.7% in total). Almost one-third (34.5%) of children aged (0-23) months have their births at a health care facility (clinic/hospital). This result in direct project operation zone (50.0%) nearly double that in indirect zone (26.6%). Sadly, more than three-fifths

(64.9%) of births took place at home; more so in indirect zone. Table 18 indicates where the births of children aged (0–23) months occurred.

Table 18: Place of birth for children (0-23) months
(*N* = 150, 297, 447)

Place of birth	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Home	39.3	68.0	58.4
Other home	9.3	5.1	6.5
Clinic	48.0	22.9	31.3
Hospital	2.0	3.7	3.1
Other	1.3	0.3	0.7
Total	100.0	100.0	100.0

Overall, 34.2% of births were delivered by a skilled health personnel/birth attendant (including a doctor, nurse or MCH Aide); which was considerably higher in direct zone (47.3%). Traditional birth attendant (TBA) accounted for 41.4% of deliveries. Also, it was observed that significant proportion of deliveries (24.4%) was performed by other unskilled attendants such as family members or relatives according to Figure 2.



About three-quarters (74.5%) of women aged (15-49) years were able to state at least two symptoms that would indicate the need to seek referral for emergency obstetric care. Of these, 88% preferred to have such care at a health care facility. However, nearly one-tenth (8.7%) were not able to identify any place to seek the care; as shown in Table 19.

Table 19: First place of treatment for pregnancy related illnesses for women (15-49) years

(*N* = 150, 297, 447)

First place	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
District hospital	4.0	3.3	3.6
Clinic	88.7	82.3	84.4
TBA	0.7	1.7	1.3
Traditional healer	2.6	1.7	2.0
None	4.0	11.0	8.7
Total	100.0	100.0	100.0

On decision to go to health facility during pregnancy, nearly two-thirds (58.6%) of mothers reported that men (husbands/male partners) made decisions for clinic attendance. Only 34.0% stated that they (mothers) themselves made the decision whilst 7.4% said decision are made by family members, relatives, friends or health workers.

Just over two-fifth (44.1%) of mothers with children aged (0-23) months were able to report at least two known neonatal danger signs. The knowledge of mothers on neonatal danger signs in direct zone is 12% more than that in indirect zone (52% compared to 40.1%). Other vital maternal indicators are given as follows.

	End line 2008	Base line 2004
% of mothers who received/bought ≥ 90 iron supplements while pregnant with the youngest child less than 24 months of age.	86.6%	60.0%
% of mothers who received a Vitamin A dose during the first two months after delivery.	67.3%	17.8%
% of mothers who received de-worming medication during the second or third trimester of a pregnancy within the last two years.	71.6%	21.6%
% of mothers who took anti-malarial medicine to prevent malaria during pregnancy of youngest child.	72.9%	31.0%

With regards instrument used to cut the navel cord after delivery, majority of mothers (60.9%) with children aged (0-23) months indicated that a new razor blade was used whilst 28.2% used scissors. However, 8.5% of mothers did not know the instrument that was used. Old razor blade or knife is rarely used. Table 20 outlines the instruments used to cut the navel cord after delivery.

Table 20: Instrument used to cut the navel cord after delivery
(N = 150, 297, 447)

Instrument used	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
New razor blade	48.0	67.3	60.9
Old razor blade	2.0	2.4	2.2

Knife	0.0	0.3	0.2
Scissors	42.0	21.2	28.2
Don't know	8.0	8.8	8.5
Total	100.0	100.0	100.0

For placement of babies immediately after birth (as shown in Table 21), an increased percentage of mothers (30.4% vs. baseline level of 6.0%) stated that they stayed with their babies; possibly lying with them side by side. On the other hand, less mothers (25.5% vs. baseline level of 58.3%) said their babies were put on the floor; the same proportion indicated that the newborns were put in cot.

Table 21: Placement of babies immediately after birth
(N = 150, 297, 447)

	Direct Zone	Indirect Zone	Total	Base line
Stay with mother	37.3	26.9	30.4	6.0%
Put in cot	28.0	24.2	25.5	21.4%
Put on floor	20.7	27.9	25.5	58.3%
Bath	10.0	11.1	10.7	8.7%
Taken away	2.0	5.4	4.3	2.7%
Don't know	2.0	4.4	3.6	2.9%
Total	100.0	100.0	100.0	100.0

Mothers were asked whether anyone check on their health after survey child was born. Of the 447 mothers with children (0-23) months, 65.7% indicated seeing someone for postpartum checks after delivery as shown in Table 22.

Table 22: Postpartum checks after delivery of children aged (0-23) months
(N = 150, 297, 447)

Status	CSP Operational Zone		Total
	Direct Zone	Indirect Zone	
Check done	77.1	59.8	65.7
No check	22.2	39.5	33.6
Don't remember	0.7	0.7	0.7
Total	100	100	100.0

Survey findings revealed that 62.0% of mothers received information on child spacing during postpartum checks. Further analysis showed that those who went for post partum checks are more likely to delay the birth of their next child for more than two years (52.4%) as earlier indicated.

3.6 Diarrhoea, Acute Respiratory Infection (ARI) and Fever/Malaria

3.6.1 Diarrhoea

- Percent of children (0-23) months with an episode of diarrhoea in the past two weeks; **23.3%** (28.2%)
- Percent of children aged 0-23 months with an episode of diarrhoea that ended during the last two weeks who were effectively treated with an ORS or SSS; **38.5%**
- % of children aged 0–23 months that received increased fluids and continued feeding during an episode of diarrhoea in the past two weeks; **9.6%** (48.7%)

About 23.3% of children aged (0-23) months had diarrhoea in the past two weeks prior to the survey. For the children who had diarrhoea, above half (56.7%) of mothers sought treatment from someone outside the home. Of these, 46.2% had sought treatment from a health care facility (mostly clinic) and 10.5% from other providers such as traditional healer, blue flag volunteers or drug peddlers. Regarding decision to seek treatment of child's diarrhoea, more than half (55.9%) of mothers stated that their husbands/partners usually decided they should seek treatment whilst 35.6% decided on their own. And up to 8.5% of the decision is often made by a friend/relative or a health worker.

Table 23 shows treatment of diarrhoea for children aged (0-23) months that had diarrhoea in the past two weeks. 38.5% of the children were given effective treatment with oral rehydration solution (ORS) and the recommended salt sugar solution (SSS), combined. Nearly 20% of the children were given pills or syrup whilst about 16.3% received plain (hot) water for treatment.

Table 23: Treatment of diarrhoea for children (0-23) months who had diarrhoea in the past two weeks

(N = 31, 73, 104)

Treatment	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Plain water	12.9	17.8	16.3
ORS	29.0	38.4	35.6
Water meresin (SSS)	0.0	4.1	2.9
Pills	12.9	21.9	19.2
Syrup	22.6	17.8	19.2
Jelly water	0.0	2.7	1.9
Others	6.5	2.7	3.8

As shown in Table 24, fewer (10 out of 104 or 9.6%) children aged (0-23) months were given increased fluids and continued feeding during an episode of diarrhoea. Less than half (43.3%) had breastfeeding as usual or more than usual, three-tenths (30.8%) had more liquids and 15.4% had usual food or more.

Table 24: Feeding practice of children (0-23) months during an episode of diarrhoea

(N = 31, 73, 104)

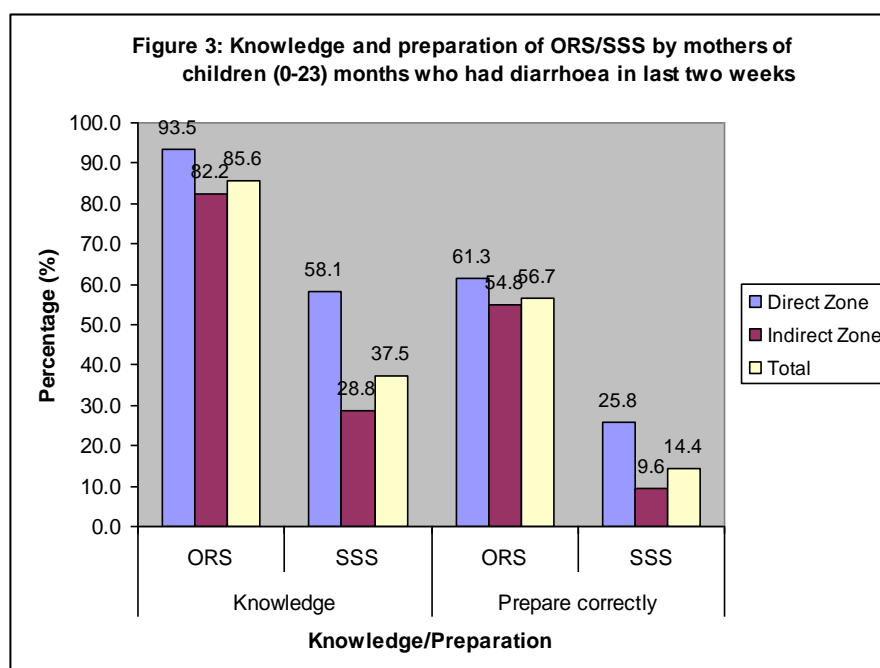
Feeding practice	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Breastfeeding as usual and more than usual	71.0	31.5	43.3
Give food as usual and more than usual	22.6	12.3	15.4
Give liquids more than usual	38.7	27.4	30.8
Increased fluids & continued feeding	16.1	6.8	9.6

Up to 92.3% of children (0-23) months who had diarrhoea in the past two weeks were reported to have recovered from the episode at the time of the survey. Of these, just 49.0% received continued feeding during the recovery period (that is, usual and more than usual). About 13.5% were reported had no food at all as Table 25 indicates.

Table 25: Feeding practice of children (0-23) months during recovery period from an episode of diarrhoea
(*N* = 31, 73, 104)

Feeding practice	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Not fed	19.4	11.0	13.5
Less than usual	25.8	31.5	29.8
As usual	32.3	27.4	28.8
More than usual	16.1	21.9	20.2
Total	93.5	91.8	92.3

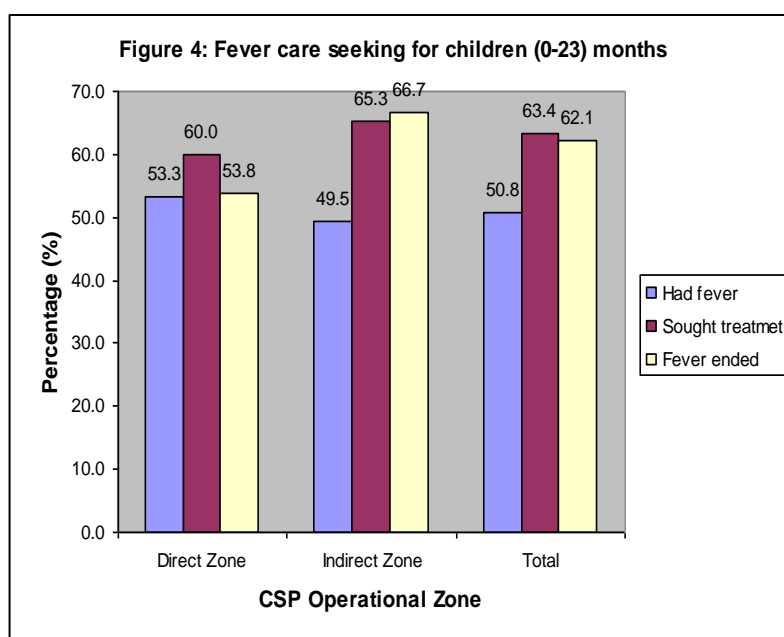
Mothers of children aged (0-23) months who had an episode of diarrhoea were asked about their knowledge and preparation of both oral rehydration solution (ORS) and salt sugar solution (SSS). On the whole, 85.6% of mothers stated that they had heard of ORS. Of these, only 61.3% were able to correctly describe the preparation of the solution. On the contrary, far less proportion of mothers (37.5%) revealed that they had heard of SSS. And just over one-tenth (14.4%) were able to describe the correct preparation of the home solution. The proportion of mothers' knowledge and preparation of ORS and SSS were found to be advanced in direct project operation communities than in indirect communities as indicated in Figure 3.



3.6.2 Fever/Malaria

- Percent of children aged (0–23) months with a febrile episode in the past two weeks; **50.8% (41.9%)**
- Percent of children aged (0–23) months that slept under an ITN the previous night; **81.2% (0.57%)**
- **Treatment for fever** - Percent of children aged 0-23 months with a febrile episode that ended during the last two weeks who were treated with an effective anti-malarial drug (ACT) within 48 hours after the fever began; **48.2% (27.4%)**
- Percent of mothers who took effective anti-malarial medicine to prevent malaria during pregnancy with youngest child; **72.9% (31.0%)**
- **Care seeking for fever** - Percent of children aged 0-23 months with a febrile episode during the last two weeks who were taken to an appropriate health care; **48.9%**

The percentage of children aged (0–23) with a febrile episode in the past two weeks before the survey was 50.8% (227 out of 447). Mothers sought treatment for 63.4% (144 out of 227) of the children who had a febrile episode and about 62% (141 out of 227) of them reported to have had their fever ended at the time of the survey.



On decision to seek treatment of child's fever, about two-thirds (61.0%) of mothers indicated that their husbands/partners generally decided they should seek treatment; with just 36.0% made decisions themselves. And up-to 3.0% of the decision was made by a friend/relative or a health worker.

Of the children aged (0–23) with a febrile episode in the past two weeks, 46.7% of them sought treatment at a health facility (as their first place); with no significant difference observed between direct and indirect communities. Over one-tenth (13.7%) of the children had treatment from drug peddlers and less than 1% were taken to traditional healer as shown in Table 26.

Table 26: Place of care seeking for children (0-23) months with fever

Place of care seeking	CSP Operation Zone		Total (N=227)
	Direct Zone (N=80)	Indirect Zone (N=147)	
District hospital	3.8	1.4	2.2
Clinic	45.0	47.6	46.7
Traditional healer	1.3	0.7	0.9
Drug peddlers	10.0	15.6	13.7
All	60.0	65.3	63.4

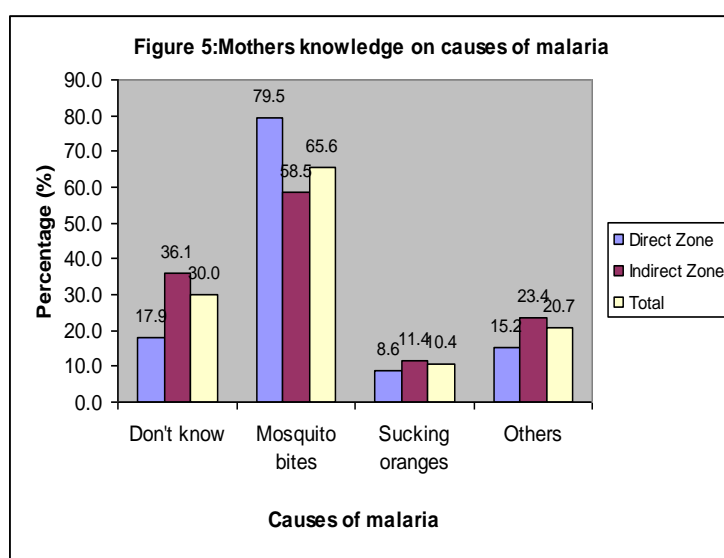
About 48.2% of children who had a febrile episode that ended during the last two weeks were treated with an effective anti-malarial drug (ACT) within 48 hours after the fever began.

Table 27: Treatment of fever for children aged (0-23) months
(N=227)

Time of treatment after fever started	ACT given
Same day	26.4
Within 24 hours	18.1
Within 48 hours	11.0
More than 48 hours	6.6
All	62.1

Above three-quarters (76.7%) of mothers took any drug to prevent them from getting malaria during pregnancy with their youngest child. Of these, 72.9% of mothers took the recommended anti-malaria drug (fansidar) during pregnancy although about 1.3% had chloroquine, less than 1% had herbs and 3.6% did not recall the drug.

Mothers' knowledge on the causes of malaria was found to be high as shown in Figure 5. At least two causes were observed by any mother. Overall, more than two-thirds (65.6%) of mothers mentioned mosquito bites as the main cause of malaria; which was recorded relatively higher in direct communities.



Of children aged (0-23) months who had a febrile episode in the preceding two weeks of the survey, 86.3% (85.5%) were reported slept under bed nets (insecticide treated nets (ITNs)). Of all surveyed children, 81.2% of all survey children slept under insecticides treated nets (ITNs) the previous night before the survey.

3.6.3 Acute Respiratory Infection (ARI)

- Percent of children (0-23) months with an episode of cough/fast breathing during the last two weeks; **19.7% (41.7%)**

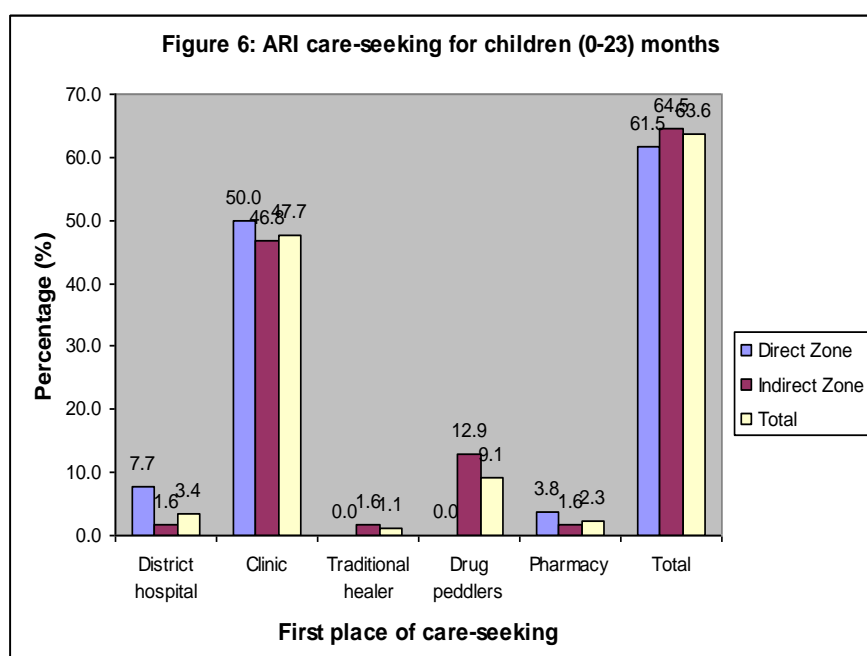
- Percent of children (0-23) months with an episode of cough/fast breathing during the last two weeks who were taken to an appropriate health care facility; **53.4% (26.0%)**

About 31.1% of children (139) aged (0-23) months had a cough during the two weeks previous to the survey. Of these, acute respiratory infection (cough with fast breathing) was reported for 19.7% of the children (See Table 28).

Table 28: Children (0-23) months with ARI in the past two weeks
(N = 150, 297, 447)

Acute Respiratory Infection	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Cough	30.7	31.3	31.1
Cough with trouble breathing	17.3	20.9	19.7

Health care was sought for 63.5% of the children aged (0-23) months that had an acute respiratory infection in the past two weeks. Majority (53.4%) of the children were given care from a health facility/provider including hospital, clinic and pharmacy. Significant percentage of the children (12.6%) sought treatment from drug peddlers especially for indirect communities. Figure 6 indicates the first place of ARI care seeking for children aged (0-23) months who had the illness in the past two weeks. Less proportion (10.2%) of the children received some sort of treatment from unskilled health provider (traditional healer or drug peddler) within the first two days after the illness started.



Treatment of ARI for children aged (0-23) months who had an acute respiratory infection in the past two weeks is outlined in Table 29. Survey findings revealed that combination of at least two medicines is often given for treatment of ARI. Amongst the medicines, septrin

seems to be the most common medicine given. Following are panadol, aspirin and then amoxicillin. Apparently, most treatment of ARI was sought within the first 24 hours after it had started.

Table 29: Treatment of ARI for children aged (0-23) months
(N = 88)

Medicine given	Time of ARI treatment after started			
	Same day	Within 24 hours	Within 48 hours	More than 48 hours
Aspirin	10.2	19.3	3.4	0.0
Panadol	17.0	29.5	5.7	3.4
Septin	20.5	30.7	6.8	1.1
Pen VK	0.0	1.1	1.1	0.0
Herbs	3.4	3.4	0.0	0.0
Amoxicillin	5.7	14.8	1.1	0.0
Total	56.8	98.9	18.2	4.5

3.7 Integrated Management of Childhood Illness (IMCI)

- Percent of mothers of children aged (0–23) months who know at least two signs of childhood illness that indicate the need for treatment; **79.9% (79.0%)**
- Percent of sick children age (0-23) months who received increased fluids and continued feeding during an illness in the past two weeks; **7.7%**

Mothers of children aged (0–23) months were asked about the signs of illness with their children that would indicate the need to seek treatment. About four-fifths (79.9%) of mothers were able to identify at least two signs of childhood illness that indicate the need for treatment. Mothers in direct communities seem to have more knowledge of signs of childhood illness than those in indirect communities (90.0% as against 74.7%). Table 31 shows the various signs of illness that were mentioned. High fever was the most common sign with 77.6% of mothers stating it. Following are “not eating/drinking” (53.0%), “not playing normally” (38.8%) and “vomits everything” (37.8%). Only 2.0% of mothers stated others signs including persistent crying, paleness and constipation.

Table 30: Signs of childhood illness that would cause the mother to seek treatment
(N = 150, 297, 447)

Sign of illness	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Not playing normally	42.7	37.0	38.9
Not eating or drinking	56.0	51.5	53.0
Lethargic or difficult to wake	24.0	16.2	18.8
High fever	87.3	72.7	77.6
Fast or difficult breathing	24.7	17.2	19.7
Vomits everything	39.3	37.0	37.8
Convulsions	12.7	12.1	12.3

Others	2.0	2.0	2.0
Don't know	2.7	8.8	6.7

Merely 7.7% of the children aged (0–23) months that experienced any illness in the past two weeks before the survey received increased fluids and continued feeding. Whereas, 19.7% of the children were given food as usual or more than usual and 18.3% had more liquids than usual as shown in Table 31.

Table 31: Feeding practice of children (0-23) months during an episode of an illness in the past two weeks

Feeding practice	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Give food as usual or more than usual	21.6% (22/102)	18.7% (37/198)	19.7% (59/300)
Give liquids more than usual	19.6% (20/102)	17.7% (35/198)	18.3% (55/300)
Increased fluids & continued feeding	12.6% (13/103)	5.1% (10/197)	7.7% (23/300)

The proportion of children aged (6–23) months who experienced any illness in the past two weeks previous to the survey that received increased fluids and continued feeding was found to be 7.3%. As survey results indicate in Table 32, no significant difference was observed between the amounts of food and fluids given to children during an illness.

Table 32: Feeding practice of children (6-23) months during an episode of an illness in the past two weeks

Feeding practice	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Give food as usual or more than usual	22.4% (19/85)	19.2% (30/156)	20.3% (49/241)
Give liquids more than usual	22.4% (19/85)	18.6% (29/156)	19.9% (48/241)
Increased fluids & continued feeding	11.5% (9/78)	5.2% (8/154)	7.3% (17/232)

3.8 Knowledge on HIV/AIDS

- Percent of mothers with children aged (0–23) months that cited at least two known ways of reducing the risk of HIV infection: **45.0% (3.8%)**
- Percent of mothers with children aged (0–23) months that listed at least two known ways of preventing HIV transmission; **41.4%**

59.3% of mothers with children aged (0-23) months indicated they have heard of HIV/AIDS. Mothers' knowledge on HIV/AIDS in direct project zone is nearly twice that in indirect zone

(85.3% compared to 46.1%). Approximately 45.0% of all mothers cited two or more known ways of reducing the risk of HIV infection. Also awareness of reducing the risk of HIV infection among mothers in direct zone almost doubles that in indirect zone. Table 33 gives the known methods of reducing the risk of virus.

Table 33: Methods of reducing chances of getting HIV as reported by mothers
(N = 150, 297, 447)

AIDS reducing methods	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Faithfulness to partner	68.0	36.4	47.0
Frequent Condom use	62.7	34.3	43.8
Abstinence from sex	60.7	33.7	42.7

Amongst the methods of transmitting HIV, about half of mothers with children aged (0-23) months indicated unprotected sex as the most popular (50.6%). Transmission of HIV by communal use of sharp instrument and blood transfusion accounted for 36.9% and 17.0% of mothers stating them; respectively. Knowledge of mother to child's transmission was somehow low; with slightly over one-tenth (11.4%) of mothers mentioned. About 6.0% of mothers were not able to report any method of transmitting HIV. Like ways of reducing the risk of HIV infection, mothers' knowledge on methods of transmitting HIV is advanced in direct project zone. The various methods of transmitting HIV as reported by mothers of children (0-23) months are presented in Table 34.

Table 34: Methods of transmitting HIV as reported by mothers
(N = 150, 297, 447)

Transmission methods	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Unprotected sex	76.7	37.4	50.6
Blood transfusion	26.7	12.1	17.0
Mother to child	16.7	8.8	11.4
Communal use of sharp instruments	56.0	27.3	36.9
Don't know	4.7	6.7	6.0

Again, mothers of children aged (0-23) months were asked about their knowledge on preventing HIV/AIDS. The top method stated was condom use (40.9%); next is abstinence from sex (39.4%) and then faithfulness (27.3%). About 41.4% of mothers were able to list at least two known ways of preventing HIV transmission. Table 35 outlines the various methods of preventing HIV/AIDS as reported by the mothers.

Table 35: Methods of preventing HIV/AIDS as reported by mothers

(N = 150, 297, 447)

Prevention methods	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Abstain from sex	56.7	30.6	39.4
Condom use	58.0	32.3	40.9
Faithfulness	42.0	19.9	27.3
Limiting sexual partners	15.3	10.1	11.9
Avoid sex with prostitutes	15.3	9.4	11.4
Avoid sex with IV drug users	9.3	8.8	8.9
Avoid blood transfusion	16.0	10.4	12.3
Avoid sharing injectible instruments	9.3	5.1	6.5

3.9 Household Water and Sanitation

- Percent of households that have access to safe drinking water; **56.4%**
- Percent of mothers with children aged (0-23) months who report that they wash their hands with soap/ash before food preparation, before feeding children, after defecation and after attending to a child who has defecated; **20.4%**

Household main source of drinking water in Table 36 shows that over half of households (56.4%) source safe drinking water, mainly from protected wells. Water is considered safe for drinking when it comes from protected sources such as tap, hand pump well and tube well/borehole. The percentage of households accessing drinking water from this source in direct communities more than doubles that in indirect communities (94.1% compared to 37.4%). However, still significant percentage of households (32.4%) gets drinking water from an unprotected source (spring/river/stream) which is most prominent in indirect communities (47.5%).

Table 36: Households' main source of drinking water

(N = 150, 297, 447)

Main source	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Open well in yard/plot	0.7	3.3	2.4
Open public well	2.0	10.7	7.8
Protected well in yard/plot	2.0	2.3	2.2
Protected public well	92.1	35.1	54.2
Spring/river/stream	2.6	47.5	32.4
Rain water	0.0	0.3	0.2
Other	0.7	0.7	0.7
All	100.0	100.0	100.0

Of the protected sources of drinking water, households in direct zone have reliable access than those in indirect zone throughout the year (95.4% against 34.3%).

Table 37 presents various ways of disposing babies and young children stools as described by mothers. Interestingly, more than 80% of mothers stated they practice safe disposal of babies/children stools (thrown into toilet/latrine).

Table 37: Ways of disposing stools of babies and young children

Ways of disposing	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Thrown into toilet/latrine	92.7	78.9	83.6
Buried in yard	6.0	12.4	10.2
Left on the ground	0.0	3.0	2.0
Others	1.3	5.7	4.2
Total	100.0	100.0	100.0

Table 38 shows that more than 80.0% of mothers have no improved way of disposing waste/garbage as they mainly dispose their garbage in open pit or anywhere. However, a significant percentage of mothers (17.6%) mentioned closed pit for disposing garbage and fewer (0.2%) use garbage collectors.

Table 38: Ways of disposing garbage as reported by mothers

Garbage disposal	CSP Operational Zone		Total
	Direct Zone	Indirect Zone	
Open pit	68.2	52.2	57.6
Closed pit	19.2	16.7	17.6
Burning	2.6	2.0	2.2
Garbage collector	0.7	0.0	0.2
Anywhere/Others	9.3	29.1	22.4
Total	100.0	100.0	100.0

CHAPTER 4

DISCUSSIONS AND RECOMMENDATIONS

The basis of comparison of the final quantitative survey results is the baseline survey conducted in 2004. Somehow the results are also compared with the 2005 Sierra Leone Multiple Indicator Cluster Survey (MICS-3) data as proxy. MICS-3 is a nationwide representative survey of households, women and children. It provides up-to-date information for assessing the situation of children and women in Sierra Leone during the first decade (2001 –2010) and supply statistics on which MOHS activities are prioritized.

4.1 DISCUSSIONS

4.1.1 Breastfeeding and Feeding Practice

Patterns of infant feeding are significant in determining a child's nutritional status as well as its vulnerability to infections. Children's nutritional status is a reflection of their overall health. When children have access to adequate food supply, are not exposed to repeated illness and are well taken care of; they would reach their growth potential. Breastfeeding enhances young children's nutritional status as it contains all the essential nutrients and is readily available to the children. The nutritional value of breast milk is further enhanced by its ability to protect children against infections/diseases such as diarrhoea, acute respiratory infections, sepsis, measles and meningitis amongst others. Breast milk has anti-allergic properties through its high immunoglobulin A (IgA) content, especially in colostrums (the first milk).

Breastfeeding in itself has colossal benefits for the mother as it: (i) enhances early postpartum involution of the uterus back to its pre-pregnancy state; (ii) promotes better lactation and adequate milk flow, and; (iii) provides important psychological bonding between mother and child. Continued breastfeeding of children, in addition to appropriate complementary feeding until 24 months of age, is important to prevent nutritional deficiencies given that, breast milk accounts for a substantial proportion of fat, vitamin A, calcium and high-quality protein.

Iodine deficiency disorders (IDD) are the world's leading cause of preventable mental retardation and impaired psychomotor development in young children. In its most extreme form, iodine deficiency causes cretinism. Its absence also increases the risks of stillbirth and miscarriage among pregnant women. Iodine deficiency is most commonly and visibly associated with goitre. IDD takes its greatest toll in impaired and mental growth/development.

Later, it contributes to children's poor performance in school, reduced intellectual ability as well as impaired work performance. It is a policy that all salts (imported or home produced) should therefore be adequately iodized (with content equal/grater than 15 parts per million).

According to the survey, breastfeeding was found to be a common practice in the five project operational chiefdoms in Koinadugu District; with almost all mothers had ever breastfed and currently breastfeeding their children. About 98.0% of children less than age 24 months had ever breastfed and 86.7% (although slightly below 94.3% baseline figure) are currently breastfeeding. Likewise, continuation of breastfeeding throughout the second year of life is about 80.6% (also lower than 95.0% baseline figure).

Apparently, timely initiation of breastfeeding practice was prevalent. 69.1% of the children initiated breastfeeding immediately (within the first hour) after delivery which was lower (19.5%) during the base line; although about 24.6% were delayed (after the first hour). Timely breastfeeding was reported higher in direct project zone (78.7%) than in indirect zone (64.3%). The delay in initiation of breastfeeding seems to be compensated by the provision of pre-lacteal feeds such as "hot water" to newborns which was recorded at 14.6%; with direct zone recording less (8.1%). Consequently, exclusive breastfeeding of children aged (0–5) months has advanced from 8.3% (baseline) to at 68.3% (end line).

About 74.3% of the infants aged (6-9) months received supplementary foods in addition to breast-milk during the last 24 hours. Not too much progress was made by the project since the base line figure stood at 69.8%. This may partly be due to the lack of access to food especially in hungry season. Secondly, for those who are given complementary feeding, the feeding frequency is often less than optimal.

Survey results revealed that children aged (6-23) months are often given foods and other liquids below the minimum required feeding frequency. Only 45.6% of breastfed children aged (6-8) months were given foods at the minimum two required frequency or more during the last 24 hours preceding the survey. For children aged (9-23) months who were breastfed, 42.8% received foods at least three times (minimum required frequency) within 24 hours. 30.4% of children (6-8) months and up to 14.1% of children aged (9-23) months were found to have had no food at all. This finding was possibly due to the fact that the survey respondents misunderstood the question as 'rice' is synonym to 'food' in Sierra Leone context; that is, it was likely that those children had not eaten rice but eaten other food during

the 24 hours prior to the survey since the survey was conducted during hungry season when the availability of rice was limited.

61.6% of households with children (0-23) months use iodine fortified salt for cooking. The percentage of households consuming adequately iodized salt is above the national value of 45% (MICS3). Households' consumption of iodized salt seems to be higher in direct project communities (65.6%) and lower in indirect communities (59.5%). Most of the home produced salt (popularly consumed) is inadequately/not iodized.

4.1.2 Anthropometric data

Overall, significant reduction in underweight children aged 0-23 months (<-2 standard deviation) was observed from the baseline level of 26.5% to 18.8% (statistically significant). Further analysis of anthropometric data revealed that the proportion of underweight children is lower in project operational areas compared to the rest of the country, especially among those children aged 0-11 months: Percent of underweight children aged 0-5 months according to CSP KPC 2008 was 11.6% compared to 15.7% (MOHS 2007); among aged 6-11 months, CSP KPC 2008 indicated the percent of underweight was 14.7% vs. 20.9% (MOHS 2007). This implies the project implementation which resulted in positive infant young child feeding practices, exclusive breastfeeding and early initiation of breastfeeding, in particular, had greater impact on the nutritional status among younger children.

Another interesting finding was the correlation between the children feeding practice score and the children's age. A significant difference in children feeding practice score was observed between ages (6-8) months and (9-23) months; with the younger age group having lower scores are not being fed as well as they should be. The big difference was the numbers of food groups the children were getting (4 for the older children and 2 for the younger children; out of 8 groups). The younger children also had slightly less appropriate feeding frequency scores. However, the children feeding practice score and the presence of underweight were not significantly associated. The lack of correlation with underweight may have to do with the drop in weight following the poor feeding practices instead of being present simultaneously (i.e. not rapid but progressive weight loss due to poor feeding). Thus, there may be more underweight in the (9-23) age group even though feeding practices are improving.

It was also revealed that maternal age seems to be associated with the prevalence of underweight. Interestingly, mothers in the teenage age group (15-19) have significantly higher underweight prevalence (29.5%) while most other groups are closer to the mean as a whole (approximately 18%). Teenage mothers are more likely to have a child that is underweight which may be a result of low birth weight due to the mother's age; and the focus group also revealed a high level of uncertainty in child care practices in young mothers. Even in direct communities, a focus group made up of mostly young mothers said they all discarded the colostrums, while older mothers in indirect communities all had the correct information. This was also found in the UNICEF report (2007) where women's youth groups often had poor knowledge about child feeding.

4.1.3 Immunizations

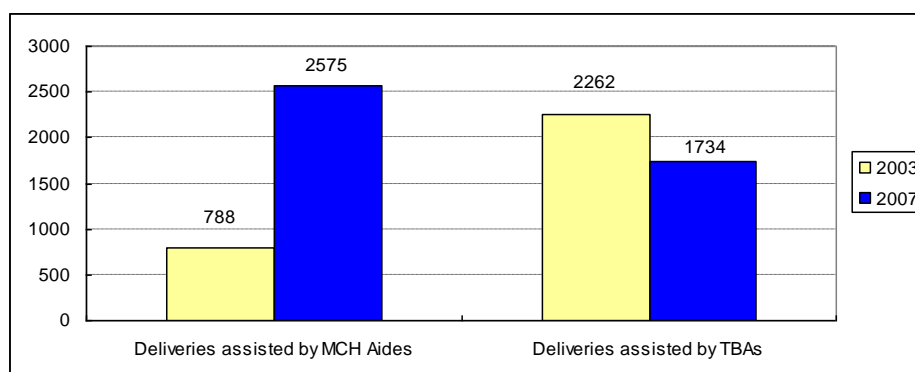
Immunization is well known to protect children against wide variety of dangerous diseases. It is essential to improve the health of young children, especially those under age five years; this would help to reduce child mortality. A child who is not fully immunized is more likely to become malnourished, disabled or to die. Immunization should be completed in the first year of life so as to be more effective in protecting children. The goal of World Fit for Children (WFC) with regards expanded programme on immunization (EPI) is to achieve full vaccination for 90% of children at national level and corresponding coverage of at least 80% in every district or equivalent administrative unit.

The survey findings indicated that more children had immunisation cards (as verified) when compared to the baseline (54.7% to 76.5%). A significant increase was observed among children 12-23 months who were fully immunised before their first birthday 46.7% (baseline) to 66.0% (end line). The increase could be attributed to the increase community sensitisation through Community Health Clubs and Community Based Growth Promoters. However, much progress was not made in measles vaccine received by children aged 12-23 months. The base line figure was reported at 69.5% whilst the end line survey report stood at 70.4%.

Based on information verified on immunization card, 96.3% of children (12-23) months received DPT1 vaccine whereas 80.9% received DPT3. A significant difference was observed between the rates of BCG and OPV0 although these vaccines are given together immediately after birth of children (96.8% as compared to 89.5%). This might be attributed to increased institutional deliveries in the Koinadugu district (1,743 to 2,575 – MOHS data, 2007) as a

result of maternal and newborn care interventions supported by the project, distribution of community based Vitamin A for post-partum women by Traditional Birth Attendants (TBAs). The increase in institutional deliveries could be as a result of free ITN distribution to women who delivered at health facilities, pregnant women support group sessions and bye laws banning home deliveries instituted by Village Development Committees amongst others. According to the end line survey report, 34.5 % births of children aged 0-23 months were attended by skilled health personnel whilst 15.1% was recorded during the base line.

Figure 7. Deliveries assisted by PHU vs. TBAs



The dropout rate between DPT1 and DPT3 reduced by more than half (from 39.4% to 16.0%) indicating an increase in EPI coverage as well as increase access to the EPI services. The increase could be partly attributed to free distribution of ITNs to children receiving DPT 3.

Vitamin A supplementation coverage for children aged (6-23) months during the last six months (verified on immunization card) has not improved significantly (68.2%-baseline vs. 73.6%-endline) while de-worming services more than doubled (42.5% compared to 15.9%) the children having received de-worming medicine in the previous 6 months. Likewise, vitamin A supplementation among postpartum women has significantly improved during the five-year period (from 17.8% to 67.3%). Also, de-worming during the second and third trimester of pregnancy within the last two years notably increased from 21.7% to 71.6%.

4.1.4 Maternal and Newborn Care

Maternal care components such as antenatal care (ANC), tetanus toxoid immunization, and skilled birth attendance at delivery help to prevent morbidity and mortality. Absence of these services could be dangerous due to pregnancy and child bearing complications. Maternal mortality in Sierra Leone is one of the highest in the world (about 495 deaths per 100,000 live

births – MICS3). One of the MDGs is to reduce maternal mortality by three-quarters between 1990 and 2015.

Tetanus Toxoid vaccination coverage considerably increased by 20% (i.e. from 47.2% to 69.1%). This signifies an improvement in access to tetanus toxoid services for women of reproductive age (15-49) years.

Of the 447 mothers with children (0-23) months, 65.7% indicated seeing someone for postpartum checks after delivery. Survey findings revealed that 62.0% of mothers received information on child spacing during postpartum checks. Further analysis showed that those who went for postpartum checks are more likely to delay the birth of their next child for more than two years (52.4%).

Women's knowledge on seeking referral for emergency obstetric care has advanced; with as much as 74.5% of them stated at least two symptoms that indicated the need. Of these, 88% preferred to have such care at a health care facility as the first place. Likewise, awareness of neonatal danger signs was significantly notable; with 44.1% of mothers able to report at least two known signs.

The significant improvement in some other maternal and newborn care indicators (e.g., increased deliveries by skilled assistant) and potential factors affecting the improvement have already been discussed earlier under immunization.

4.1.5 Diarrhoea

Infants and children need specific nutritional care when sick to build up strength and prevent increased risk of mortality. Continued feeding and increased intake of fluids during an episode of diarrhoea is essential to prevent weight loss. Feeding after the illness with more frequent and larger amounts of nutrient-dense foods over a sustained period of time is also required to regain lost nutrients and energy.

A number of studies suggest that diarrhea illness in childhood contributes to secondary malnutrition and that this effect is more severe in malnourished children. Both continued feeding during the illness and increased feeding during the recovery phase are important in reducing this negative outcome.

Continued breastfeeding during diarrhea curtails duration and reduces the risk of dehydration and growth faltering. Non-breastfed children are about three times more likely to develop moderate or severe dehydration during a diarrhea episode than children who are breastfed. Also, frequent breastfeeding reduces the need for oral dehydration salts (ORS) during an episode of diarrhoea, provides a clean fluid with low solute load, and is more acceptable to sick infants.

The prevalence of diarrhoea was reported low at 23.3%. The practice of appropriate nutritional care for children with diarrhoea (i.e., continued breastfeeding during diarrhoea, giving more fluids in addition to breast milk, and giving more food) was not prevalent at 9.6%. This might be partly because much emphasis is given to exclusive breastfeeding and now it is difficult to find children 0-5 months receiving food other than breast milk even during sickness. It was also found that this indicator was not calculated properly during the baseline, thus the comparison between baseline and endline values is not possible.

Majority (56.7%) of the caretakers of children with diarrhoea episode sought for treatment (46.2% from health facilities and 10.5% from other providers such as traditional healers, blue flag volunteers or drug peddlers). Just 38.5% of the children were effectively treated with oral rehydration solution (ORS) or the recommended salt sugar solution (SSS). The proportion of mothers' knowledge and preparation of ORS and SSS were found to be higher in direct project operation communities than in indirect communities, while overall it was relatively low. Availability and cost of the ORS might be a major problem.

As seen in the below table, majority of the caretakers practiced hand washing with soap or ash before food preparation and feeding children; however, hand washing practice was less common after defecation or after cleaning / disposing children's stools. Only 20.4% of mothers stated that they wash their hands with soap/ash consistently before food preparation and feeding children and after defecation and cleaning /disposing children's stools.

Table 39: Hand washing with soap / ash
(N=297, 150, 447)

Hand washing with soap/ash	CSP Operation Zone		Total
	Direct Zone	Indirect Zone	
Before food preparation	47.8	57.3	51.0
Before feeding children	43.4	54.0	47.0
After defecation	65.3	78.7	69.8
After cleaning / disposing children's stools	61.6	71.3	64.9
Total	17.3	25.3	20.4

4.1.6 Fever/Malaria

Fever, a widespread malaria symptom, requires urgent care-seeking especially with young children. International recommendation suggests any treatment of fever in children in areas where malaria is common subsides immediately giving a full dose of recommended anti-malaria tablets. Preventive measures such as use of ITNs can enhance reduction of malaria transmission among children.

Survey results indicated that fever and thus malaria episodes were treated within the formal health sector in most cases. Of the 227 children who had a fever in the two weeks preceding the survey, treatment was sought for 144 (63.4%). (48.9% of the children were taken to a health care facility (mainly PHU) while 13.7% had treatment from drug peddlers and less than 1% were taken to traditional healer.)

48.2% of the children with fever that ended were treated with an effective anti-malarial drug (ACT) within 48 hours after the fever began. It was observed from the base line survey that only 27.4% of the children surveyed were treated with effective anti- malaria drug (Chloroquine). This result therefore indicates significant improvement. It is worth noting that, treatment of fever for children was usually sought the same day or within 24 hours after the fever started. Also, an increased proportion (72.9% as against 31.0%) of mothers took the recommended anti-malaria drug (Fansidar) to prevent malaria during pregnancy in the last two years.

Mothers' knowledge on the causes of malaria improved significantly; with over two-thirds (65.5%) of mothers stated mosquito bites as the main cause of malaria whilst, in baseline, only 4% (7 respondents) attributed the bite of mosquito to malaria as indicated in the base line report. Moreover, children with a febrile episode in the preceding two weeks who slept under insecticides treated nets (ITNs) was recorded as 81.2% during the end line survey vs. the baseline value of 0.57%, which indicates a marked achievement by the project. These achievements could be attributed to intensive sensitisation and greater access to ITNs through routine distribution and campaigns in 2006.

4.1.7 Acute Respiratory Infection (ARI) Care-Seeking

Acute Respiratory Infections (ARI) is one of the most common reasons for paediatric consultations at health care facilities the world over. ARI includes common colds, ear infections, sore throats, bronchitis and cough with trouble/fast breathing. The latter is an apparent symptom of pneumonia and most of ARI-associated deaths in children under five years of age are due to pneumonia.

Apparently, majority of acute respiratory infections are viral, mild and self-limiting; for which in most cases children with ARI need antibiotics. Early detection and proper case management is the principal strategy for control of ARI. By and large, mothers' knowledge in ARI symptoms and their care-seeking behaviour is crucial to reduce further morbidity and prevent mortality.

Respiratory infection symptom, specifically cough, was reported for 31.0% of children (139 out of 447) during the two weeks preceding the survey; of which 19.7% (88) had acute respiratory infection (cough with trouble/fast breathing). This is an indication of a reduction of ARI prevalence during the project period. Of the children who had ARI, health care was sought for 63.5% and 53.4% were taken to an appropriate health care facility including hospital, clinic and pharmacy. Only 10.2% were taken to a traditional healer and/or drug peddlers. Antibiotics (with some analgesic drugs) were the popular drugs used for treatment of ARI and treatment was mostly sought within the first 24 hours after the illness had started.

4.1.8 Integrated Management of Childhood Illness (IMCI)

Two focuses of community IMCI strategy are: (i) timely caregiver recognition of signs in children that indicate the need for treatment; and (ii) effective home management of child illness.

According to the end line survey findings, 79.9% of mothers were able to identify at least two signs of childhood illness that indicate the need for treatment (baseline: 79.0%). This indicates that not much improvement was made with regards this indicator. However, mothers in direct communities are likely to have more knowledge of signs of childhood illness than those in indirect communities (90.0% as against 74.7%). Most common danger signs recognized were *high fever, child not eating/drinking, child not playing normally and vomiting everything* amongst others.

7.7% of the children that experienced any illness in the past two weeks prior to the survey received increased fluids and continued feeding. 19.7% of the children were given food as usual or more than usual and 18.3% had more liquids than usual. Low intake of the food and liquids might be partly attributable to the project's strong emphasis of exclusive breastfeeding for children 0-5 months, as noted earlier (under diarrhoea section).

4.1.9 Knowledge on HIV/AIDS

One of the most important prerequisites for reducing the rate of HIV infection is for the general population to have accurate knowledge of preventing transmission of the virus. It is important to target women of reproductive age (15-49 years) who are often vulnerable. Knowledge of mother-to-child transmission (MTCT) of HIV virus is also an important prerequisite for the women if they are to seek HIV testing during pregnancy in order to avoid potential infection of the child.

Level of awareness about HIV/AIDS continues to be relatively low in spite of several interventions from Government and Non-Government Sectors. 59.3% of mothers stated they have heard of HIV/AIDS. However, mothers' knowledge on HIV/AIDS in project direct zone is almost twice that in indirect zone (85.3% compared to 46.1%). Knowledge about the means of transmitting and preventing as well as reducing the risk of HIV infection has also increased significantly compared to baseline. The proportion of mothers who reported knowing at least two ways of reducing the risk of HIV infection was 45.0% according to the end line survey while only 3.85% was recorded for the base line.

4.2 RECOMMENDATIONS

4.2.1 Breastfeeding and Feeding Practice

1. Although the breastfeeding practices (early initiation as well as exclusive breastfeeding) improved significantly from baseline to endline, the improvement made in supplementary feeding among infants aged 6-9 months was not significant. Messages promoting optimal infant young child feeding practice as a whole should therefore continue to be disseminated. Future interventions should make deliberate efforts to reach out with these messages young mothers who were found to be less knowledgeable about child care and mothers-in-laws and fathers who played significant roles in decision making for feeding and care seeking practices.

Furthermore, interventions to address barriers that prevent people from translating their knowledge into practice (e.g., livelihood constraints / food insecurity) should be strengthened in future in order to create a lasting impact on nutritional status of the population.

2. Institutional deliveries and baby friendly initiatives should also be promoted by MOHS staff which would encourage early initiation and exclusive breastfeeding and timely complementary feeding.
3. The goal of Universal Salt Iodization (USI) initiative is to have achieved 90% iodization by 2005; the KPC survey 2008 indicates that the target has not yet been met. Policy makers should build the promotion of iodized salts into Family Package. By this, the promotion and monitoring of iodized salt consumption can be integrated into subsequent child survival activities at community-level health facilities and outreach services. Also Government and stakeholders should ensure that locally/home produced salt is iodized and imported iodized salt be affordable (by packaging in smaller units) to households/families.

4.2.2 Immunizations

1. Although immunization coverage considerably increased in the five chiefdoms where the project operated, greater awareness on the benefits of immunization to all communities is critical. Furthermore, increased outreach services need to be undertaken by health workers to ensure that all children are fully immunized. In order to sustain project efforts; MOHS should continue collaborating closely with UNICEF and other child survival agencies to ensure effective coverage in the district at large.

2. EPI services of the PHUs should be further strengthened by effectively using tickler boxes for defaulter tracing, integrating EPI messages into other interventions like CBGP and IMCI and making sure that vaccines (BGG and DPT) are always available for the constant expansion of the access through both static and outreach sites. To further reduce the dropout rate between DPT1 and DPT3, MOHS should ensure interrupted supply of ITNs to PHUs as ITN free distribution for children receiving DPT3 seems to be an effective incentive for DPT3 uptake.
3. Future programs should work in collaboration with MOHS to strengthen measles vaccine coverage through increased outreach services and dissemination of messages emphasising the importance of the vaccine.
4. Although postpartum Vitamin A coverage has significantly improved, there is still a space for improvement as regards to vitamin A supplementation coverage for children. Integration of Vitamin A with other interventions should be encouraged by future programs.
5. Future programs should further study the exact barriers to access to under five cards and take appropriate actions.

4.2.3 Maternal and Newborn Care

1. Government and stakeholders should upgrade the skills of MCH Aides through trainings and increase the number of trained MCH Aides to be able to provide maternal and newborn care services across the district.
2. Appropriate BCC strategies should be developed by future programs to address the knowledge gap on recognition of danger signs during pregnancy, labour and delivery among mothers and other decision makers (men and mothers-in-laws, etc.) with regard to where babies are delivered including referrals.
3. Future programs should scale up MNC activities which are proven effective to other chiefdoms within the district. MOHS and partners also ensure that the gap between direct and indirect communities is filled through scaling-up of the proven interventions.

4.2.4 Diarrhoea

1. Although appropriate health care-seeking is relatively high, effective treatment with ORS/SSS is certainly low. Correct description of preparing the recommended home fluids is particularly low. Health care providers should ensure that the oral rehydration

therapy is available at all times and affordable at PHUs and in the communities. Efforts should continue in remote communities to ensure proper preparation and use of home fluids.

2. Nutritional care for children with diarrhoea especially in indirect communities continues to be inadequate. Home and nutritional care during diarrhoea need to improve. Future programs therefore should intensify BCC efforts around feeding of the sick child.

4.2.5 Fever/Malaria

1. To ensure effective treatment of fever/malaria, it is important that mothers/caretakers maintain early care-seeking *at an appropriate health facility*.
2. Community Health Workers/Health Clubs (CHWs/HCs) should be empowered and continue to serve as links between vulnerable communities and the PHUs. It is obvious that CHWs have been critical in assuring compliance with anti-malarial drugs through counseling of families on recognizing illness and care-seeking as well as home care through support of home management of malaria (HMM) program or C-IMCI (community-based treatment program).
3. Also there is a need to incorporate drug peddlers into health system especially in remote communities where formal health sector is not readily available. As they play vital role including door to door service in those communities, they should be guided so that the quality of their drugs/work can be controlled.
4. Related to the above, there is a need to raise awareness around the dangers of buying expired drugs among population and future BCC efforts should incorporate this message. General BCC efforts should also be continued to further improve knowledge on transmission of malaria and use of ITNs.

4.2.6 Acute Respiratory Infection (ARI) Care-Seeking

1. Although the prevalence of ARI reduced considerably among children in project intervention area, BCC messages on early care-seeking at the appropriate health care facility should continue.
2. There is a need to increase access to treatment and make readily available antibiotics at community-level/ health care facilities at affordable cost. Community based management of ARI using C-IMCI approach is therefore recommended.

4.2.7 Integrated Management of Childhood Illness (IMCI)

1. Mothers/caretakers' knowledge on recognition of danger signs should be improved through increased community sensitization as well as early role-out of IMCI both at facility and community levels.
2. Future program should intensify BCC messages on feeding of sick child during illness and recovery.

4.2.8 Knowledge on HIV/AIDS

1. Mothers' knowledge on HIV prevention and transmission should be reinforced by community health workers taking into account cultural barriers.
2. Precise BCC messages on knowledge on MTCT should be designed and disseminated among mothers in future programs.

APPENDICES

APPENDIX A: FINAL QUANTITATIVE SURVEY KEY INDICATOR RESULTS

Indicators	Direct Zone	Indirect Zone	Overall Result
Nutrition/feeding practice			
Percent of children aged (0-23) months who were breastfed within the first hour after birth.	78.7% (118/150)	64.3% (191/297)	69.1% (309/447)
Percentage of children (0-23) months who received pre-lacteal feeding;	8.1% (12/149)	18% (52/289)	14.6% (64/438)
% of children aged (0–5) months who were exclusively breastfed during the last 24 hours	82.0% (41/50)	60.7% (54/89)	68.3% (95/139)
% of children aged (6–9) months who received breast milk and complementary foods during the last 24 hours.	70.6% (12/17)	75.5% (40/53)	74.3% (52/70)
Percent of children aged 0-23 months who were underweight (weight less than -2 standard deviation).	17.4% (25/144)	19.4% (58/299)	18.8% (83/443)
Maternal and Newborn Care			
% of women aged (15-49) years who know at least two symptoms that indicate the need to seek referral for emergency obstetric care.	84.1% (127/151)	69.6% (206/296)	74.5% (333/447)
% of women (15-49) years who had antenatal care during last pregnancy with youngest child.	90.7% (136/150)	80.1% (238/297)	83.7% (374/447)
% of children aged (0–23) months whose births were attended by skilled health personnel. *(includes doctor, nurse, MCH Assistant; TBAs were not considered skilled)	47.3% (71/150)	27.6% (82/297)	34.2% (153/447)
% of mothers of children (0-23) months who delivered at a health care facility	50.0% (75/150)	26.4% (79/297)	34.5% (154/447)
% of mothers with (0-23) months able to report at least two known neonatal danger signs.	52.0% (78/150)	40.1% (119/297)	44.1% (197/447)
% of mothers who received/bought ≥ 90 iron supplements while pregnant with the youngest child less than 24 months of age.	94.7% (142/150)	82.5% (245/297)	86.6% (387/447)
% of mothers who received a Vitamin A dose during the first two months after delivery.	76.7% (115/150)	62.6% (186/297)	67.3% (301/447)
% of mothers who received de-worming medication during the second or third trimester of a pregnancy within the last two years.	78.0% (117/150)	68.4% (203/297)	71.6% (320/447)
% of mothers who took anti-malarial medicine to prevent malaria during pregnancy of youngest child.	79.3% (119/150)	69.7% (207/297)	72.9% (326/447)
EPI			
% of mothers with children aged (0–23) months who received at least two tetanus toxoid injections during pregnancy of youngest child	74.7% (112/150)	66.3% (197/297)	69.1% (309/447)
% of children aged (12–23) months who are fully vaccinated (against the five vaccine-preventable diseases) before first birthday.	70.4% (38/54)	63.9% (69/108)	66.0% (107/162)
% of children aged (12–23) months who received a measles vaccine.	72.2% (40/54)	69.4% (75/108)	70.4% (115/162)
% of children aged (6–23) months who received a Vitamin A dose in the last 6 months.	76.5% (65/85)	72.0% (116/161)	73.6% (181/246)
% of children aged (6–23) months who received de-worming medication during last 6 months.	49.0% (49/100)	39.4% (82/208)	42.5% (131/308)
Fever/Malaria			
% of children aged (0–23) months that slept under an ITN the previous night.	91.3% (137/150)	76.1% (226/297)	81.2% (363/447)
% of children aged (0-23) months with a febrile episode that ended during the last two weeks who were treated with an effective anti-malarial drug (ACT) within 48 hours after the fever began.	52.0% (51/98)	39.5% (17/43)	48.2% (68/141)
Other childhood illnesses			
% of children aged 0-23 months with an episode of diarrhoea that ended during the last two weeks who were effectively treated with an ORS or SSS.	29.0% (9/31)	42.5% (31/73)	38.5% (40/104)

Indicators	Direct Zone	Indirect Zone	Overall Result
Percent of children (0-23) months with an episode of cough with fast breathing during the last two weeks who were taken to an appropriate health care.	61.5% (16/26)	50% (31/62)	53.4% (47/88)
Knowledge % of mothers of children aged (0–23) months who know at least two signs of childhood illness that indicate the need for treatment.	90.0% (135/150)	74.7% (222/297)	79.9% (358/447)
% of children aged (0–23) months that received increased fluids and continued feeding during an episode of diarrhoea in the past two weeks.	16.1% (5/31)	6.8 (5/73)	9.6% (10/104)
% of children aged (0–23) months that received increased fluids and continued feeding during an illness in the past two weeks.	12.6% (13/103)	5.1% (10/197)	7.7% (23/300))
% of mothers with children aged 0–23 months that cite at least two known ways of reducing the risk of HIV infection.	64.7% (97/150)	35.0% (104/297)	45.0% (201/447)
% of mothers with children aged 0–23 months that list at least two known ways of preventing HIV transmission.	61.3% (92/150)	31.3% (93/297)	41.4% (185/447)
Other Indicators % of households that have access to safe drinking water	94.1%	37.4%	56.4%
% of mothers with children age 0-23 months who wash their hands with soap/ash before food preparation, before feeding children, after defecation and after attending to a child who has defecated.	25.3% (38/150)	17.8% (53/297)	20.4% (91/447)
% of children age 0–23 months who were born at least 24 months after the previous surviving child	82.4% (61/74)	83.2% (119/143)	82.9% (180/217)

Note: The parentheses present the numerators and denominators for the calculation of the results.

APPENDIX B: CONFIDENCE LIMITS OF KEY INDICATOR RESULTS

Indicators	Numerator	Denominator	Overall Result	Confidence Limits
Nutrition/feeding practice				
Percent of children aged (0-23) months who were breastfed within the first hour after birth.	309	447	69.1%	(63.0%-75.2%)
Percentage of children (0-23) months who received pre-lacteal feeding.	64	438	14.6%	(9.9%-19.3%)
% of children aged (0–5) months who were exclusively breastfed during the last 24 hours	195	139	68.3%	(57.4%-79.2%)
% of children aged (6–9) months who received breast milk and complementary foods during the last 24 hours.	52	70	74.3%	(59.8%-88.8%)
Percent of children aged 0-23 months who were underweight (weight less than -2 standard deviation).	83	443	18.8%	(15.1%-22.6%)
Maternal and Newborn Care				
% of women aged (15-49) years who know at least two symptoms that indicate the need to seek referral for emergency obstetric care.	333	447	74.5%	(68.8%-80.2%)
% of women (15-49) years who had antenatal care during last pregnancy with youngest child.	374	447	83.7%	(78.9%-88.5%)
% of children aged 0–23 months whose births were attended by skilled health personnel. *(includes doctor, nurse, MCH Assistant; TBAs were not considered skilled)	153	447	34.2%	(28.0%-40.4%)
% of mothers of children (0-23) months who delivered at a health care facility	154	447	34.5%	(27.8%-40.2%)
% of mothers with (0-23) months able to report at least two known neonatal danger signs.	197	447	44.1%	(37.6%-50.6%)
% of mothers who received/bought ≥ 90 iron supplements while pregnant with the youngest child less than 24 months of age.	387	447	86.6%	(82.1%-91.1%)
% of mothers who received a Vitamin A dose during the first two months after delivery.	301	447	67.3%	(61.1%-73.5%)
% of mothers who received de-worming medication during the second or third trimester of a pregnancy within the last two years.	320	447	71.6%	(65.7%-77.5%)
% of mothers who took anti-malarial medicine to prevent malaria during pregnancy of youngest child.	326	447	72.9%	(67.1%-78.7%)
EPI				
% of mothers with children aged 0–23 months who received at least two tetanus toxoid injections during pregnancy of youngest child	309	447	69.1%	(63.1%-75.2%)
% of children aged (12–23) months who are fully vaccinated (against the five vaccine-preventable diseases) before first birthday.	107	162	66.0%	(55.7%-76.3%)
% of children aged (12–23) months who received a measles vaccine.	115	162	70.4%	(60.5%-80.3%)
% of children aged (6–23) months who received a Vitamin A dose in the last 6 months.	181	246	73.6%	(65.8%-81.4%)
% of children aged (6–23) months who received de-worming medication during last 6 months.	131	308	42.5%	(34.7%-50.3%)
Fever/Malaria				
% of children aged 0–23 months that slept under an ITN the previous night.	363	447	81.2%	(76.1%-86.3%)
% of children aged (0-23) months with a febrile episode that ended during the last two weeks who were treated with an effective anti-malarial drug (ACT) within 48 hours after the fever began.	68	141	48.2%	(36.6% - 59.9%)
Other childhood illnesses				
% of children aged 0-23 months with an episode of diarrhoea that ended during the last two weeks who were effectively treated with an ORS or SSS.	40	104	38.5%	(25.3%-51.7%)

Indicators	Numerator	Denominator	Overall Result	Confidence Limits
Percent of children (0-23) months with an episode of cough with fast breathing during the last two weeks who were taken to an appropriate health care.	47	88	53.4%	(38.7%-68.1%)
Knowledge % of mothers of children aged (0-23) months who know at least two signs of childhood illness that indicate the need for treatment.	358	447	79.9%	(74.6%-85.2%)
% of children aged (0-23) months that received increased fluids and continued feeding during an episode of diarrhoea in the past two weeks.	10	104	9.6%	(1.6%-17.6%)
% of children aged (0-23) months that received increased fluids and continued feeding during an illness in the past two weeks.	23	300	7.7%	(3.4%-12.0%)
% of mothers with children aged 0-23 months that cite at least two known ways of reducing the risk of HIV infection.	201	447	45.0%	(38.5%-51.5%)
% of mothers with children aged 0-23 months that list at least two known ways of preventing HIV transmission.	185	447	41.4%	(34.9%-47.9%)
Other Indicators % of households that have access to safe drinking water	254	450	56.4%	(49.9%-62.9%)
% of mothers with children age 0-23 months who wash their hands with soap/ash before food preparation, before feeding children, after defecation and after attending to a child who has defecated.	91	447	20.4%	(15.1%-25.7%)
% of children age 0-23 months who were born at least 24 months after the previous surviving child	180	217	82.9%	(75.9%-90.0%)

APPENDIX C: FINAL QUANTITATIVE SURVEY QUESTIONNAIRE

1. Chiefdom	2. Section	3. Village	1=Direct 2=Indirect	4. Respondent	5. Date ___/___/08	6. Team
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	Name of the youngest child (0-23 months)	Name: _____
001.	Date of Birth (as recorded on: birth certificate, antenatal card or under-five card).	_____/_____/_____ Day Month Year (skip to 003)
002.	If no documentation available, record mothers estimation in months. If there is a card write N/A in the space provided for number of months.	Number of months

003.	Sex	Male1 Female.....2
004	May I weigh and take the height of (Name)?	Yes.....1 No.....2 (If no go to 007)
005	Weight of child	_____. ____kg
006	Height of child	_____. ____cm
007	Does child have oedema?	Yes.....1 No.....2

100. Child Immunization (Record information for the youngest child that is <24 months)

101.	Does (name) have an under-five card?	Yes 1 (If yes, ask to see it) Not available (lost/Misplaced)..... 2 Never had a card..... 3 (If not available or never had a card go to 112)
102.	Record all vaccinations dates (mm/dd/yy) from the card. BCG	Yes..... 1 Date: ____/____/____ No 2 Yes, scar 3
103.	Polio 0 (polio given at birth)	Yes..... 1 Date: ____/____/____ No 2
104.	Polio 1	Yes..... 1 Date: ____/____/____ No 2
105.	Polio 2	Yes..... 1 Date: ____/____/____ No 2
106.	Polio 3	Yes..... 1 Date: ____/____/____ No 2
107.	Pentavelent 1	Yes..... 1 Date: ____/____/____ No 2
108.	Pentavalent 2	Yes..... 1 Date: ____/____/____ No 2
109.	Pentavelent 3	Yes..... 1 Date: ____/____/____ No 2
110	Has (name) been vaccinated for Measles ?	Yes (verified)..... 1 Date: ____/____/____ Yes (no card) 2 No3 N/A4 (<9 months)
111.	Has (name) been vaccinated for Yellow Fever?	Yes (verified)..... 1

		Date: ____/____/____ Yes (no card) 2 No 3 N/A 4 (<9 months)
112.	Did (name) take a vitamin A dose in the last 12 months? (only for children >6 months)	Yes 1 No 2 Don't know 8 N/A 3
113.	Did (Name) receive de-worming medicine in the last six months? (only for children >12 months)	Yes 1 No 2 Don't know 8 N/A 3
114.	Did you (the mother of survey child) receive de-worming medicine between the 4 th -9 th months of your pregnancy with (name)?	Yes 1 No 2 Don't know 8
115.	Did you receive blood tablets while you were pregnant with (name)? Be sure to show her the sample tablets.	Yes 1 No 2 Don't know 8
116.	Did you receive a dose of vitamin A during the first two months after delivery of (name)? Be sure to show her the sample capsule.	Yes 1 No 2 Don't know 8

200. Socio-Demographic Data

201	What is your marital status?	Married 1 Divorced 2 Widow 3 Single 4
202	How old are you? Record age of respondent in years.	___ ___ Years
203	How many children living in this household are under age five?	_____
204	How many of those children are your biological children?	_____
205	How many live births have you had?	One 1 Two 2 Three 3 Four 4 Five 5 Six 6 Seven plus 7
206	Of these live births, are all these children alive today?	Yes 1 If yes, go to 301) No 2
207	If not, how many have died?	_____

300. Economic Status

301	What type of house do you live in?	Mud and wattle w/grass roof..... 1 Mud and wattle w/iron sheets roof..... 2 Mud Brick w/grass roof..... 3 Mud Brick w/iron sheets Roof.....4 Cement Brick w/grass Roof.....5 Cement Brick w/iron sheet Roof.....6 Hut (single round structure with 2 doors) .7 Other.....8																														
302	Does your household have?	<table> <tr> <th></th><th>Yes</th><th>No</th></tr> <tr> <td>Radio.....</td><td>1</td><td>2</td></tr> <tr> <td>Tape recorder.....</td><td>1</td><td>2</td></tr> <tr> <td>Charcoal pot.....</td><td>1</td><td>2</td></tr> <tr> <td>Stove (single-burner).....</td><td>1</td><td>2</td></tr> <tr> <td>Stove(multi-burner).....</td><td>1</td><td>2</td></tr> <tr> <td>Bicycle.....</td><td>1</td><td>2</td></tr> <tr> <td>Motorcycle.....</td><td>1</td><td>2</td></tr> <tr> <td>Sewing machine.....</td><td>1</td><td>2</td></tr> <tr> <td>Large cooking pot.....</td><td>1</td><td>2</td></tr> </table>		Yes	No	Radio.....	1	2	Tape recorder.....	1	2	Charcoal pot.....	1	2	Stove (single-burner).....	1	2	Stove(multi-burner).....	1	2	Bicycle.....	1	2	Motorcycle.....	1	2	Sewing machine.....	1	2	Large cooking pot.....	1	2
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Bicycle.....	1	2																														
Motorcycle.....	1	2																														
Sewing machine.....	1	2																														
Large cooking pot.....	1	2																														
303	What fuel do you use to cook with normally?	Wood..... 1 Charcoal..... 2 Kerosene..... 3 Other..... 4																														
304	Does your household own Poultry?	Yes..... 1 No..... 2																														
305	Does your household own sheep/goats?	Yes.....1 No..... 2																														
306.	Does your household have a back -yard garden?	Yes..... 1 No..... 2																														
307.	Does your household own cattle?	Yes..... 1 No..... 2																														

400. Breastfeeding/Feeding practices (Record information for the youngest child that is < 24 months)

401.	Did you ever breastfed (name)?	Yes.....1 No2 (if no, go to 408)
402.	How long after birth did you first put (name) to the breast?	Immediately/within first hour after birth.....1 After the first hour0 Don't remember.....8
403.	During the first three days after delivery, did you give (name) the liquid that came from your breasts?	Yes.....1 No.....2 Don't know.....8
404.	During the first three days after delivery, did you give (Name) anything else to eat or drink other than breast milk?	Yes.....1 No.....2 (If no, go to 406)
405.	What did you give (Name) to drink? Anything else?	Milk (other than breast milk)..... A Plain water or tea..... B Water with sugar and/or

	Do not read the list	salt..... C Fruit juice..... D Liquid or semi-liquid traditional medicine..... F
	Record all mentioned by circling letter for each one mentioned.	
406.	Are you currently breastfeeding (Name)?	Yes..... 1 (Go to 408) No..... 0
407.	For how long did you breastfeed (Name)? If less than one month, record ‘00’ months	Months..... <input type="text"/> <input type="text"/>
408	Did (name) drink anything from a bottle with a nipple yesterday or last night	Yes..... 1 No..... 0 Don't know..... 8
409.	Now I would like to ask you about the types of liquids (name) drank yesterday during the day and night. Did (Name) drink any of the following liquids yesterday during the day or at night? Read the list of liquids (A through H starting with breast milk). Place a check mark in the box if child drank liquid in question. A Breast milk? B Plain water? C Commercially produced infant Formula? D Any fortified, commercially available infant and young child food (e.g., Bennimix) E Any (other) porridge or gruel?	A..... <input type="checkbox"/> B..... <input type="checkbox"/> C..... <input type="checkbox"/> D..... <input type="checkbox"/> E..... <input type="checkbox"/>
410	Now I would like to ask you about (other) liquids or foods that (Name) may have had yesterday during the day or at night, either separately or combined with other foods. Did (Name) drink/eat any of the following? Read the list (A through F starting with breast milk). Place a check mark in the box if child drank/eat items in question. A Pap or soft Rice B Any fortified baby food C Any food from tubers D Any fruit E Any green vegetables F Any meat or fish or egg G Any beans food H Any cheese or yoghurt	A..... <input type="checkbox"/> B..... <input type="checkbox"/> C..... <input type="checkbox"/> D..... <input type="checkbox"/> E..... <input type="checkbox"/> F..... <input type="checkbox"/> G..... <input type="checkbox"/> H..... <input type="checkbox"/>
411.	How many times did (Name) eat solid, semi-solid, or soft foods other than liquids yesterday during the day and at night? IF CAREGIVER ANSWER SEVEN OR MORE TIMES, RECORD “7” SEMI-SOLID FOODS COULD BE PAP, MASHED RICE, PORRIDGE ETC.	Number..... <input type="text"/> Don't know..... <input type="text"/>
412.	May I see the salt that is used for cooking?	Fortified (≥ 15 ppm)..... 1 Not fortified ($0 \text{ ppm} < 15 \text{ ppm}$)..... 0 Not available for check..... 8

413.	Did (Name) receive a Vitamin A dose like this during the last six months? SHOW CAPSULE	Yes.....1 No.....0 Don't know.....8
414.	Is (Name) currently taking iron tablets or iron syrup (like this, or any of these)? SHOW THE IRON TABLET.	Yes.....1 No.....0 Don't know.....8

500. Diarrhoea Record information for the child that is < 24 months

501.	Has (Name) had diarrhoea in the past two weeks?	Yes.....1 No2 (if no, go to 601)
502.	Did you breastfeed (name) while he had diarrhoea?	Child not breastfed1 Less than usual2 As usual3 More than usual4 Don't know.....8
503.	Did you give (name) food while he had diarrhoea?	No1 Less than usual2 As usual3 More than usual4 Don't know.....8
504.	Did you give (name) liquids while he had diarrhoea?	No1 Less than usual2 As usual3 More than usual4 Don't know.....8
505.	Did you feed (name) during the recovery period? <i>If the child still has diarrhea code as N/A=5</i>	No1 Less than usual2 As usual3 More than usual4 N/A5 Don't know.....8
506.	What did you give (name) when he had diarrhoea? (circle all that apply)	Nothing.....1 Water.2 ORS3 Water meresin.....4 Rice pap.....5 Pills.....6 Syrup7 Don't know.....8 Jelly water.....9 Other.....10
507	Did you seek treatment from someone outside the home for (name's) diarrhoea?	Yes.....1 No2 (if no, go to 511)

508.	Where did you first go for treatment?	District hospital1 Clinic2 TBA3 Traditional4 BFV5 Spiritual6
509.	Who decided that you should go there for (Name's) illness?	Self1 Husband.....2 In-laws3 Auntie4 Friend5 Health worker6
510.	Where did you go next for treatment?	District hospital1 Clinic2 TBA3 Traditional4 N/A5
511.	Have you heard of ORS?	Yes.....1 No2 (If no, go to 513)
512.	Please describe how you prepare ORS? Correct description: 1. Use 1 liter of clean drinking water (1liter = 3 soft drink pints) 2. Use the entire packet 3. Dissolve the powder fully (Stir well) Once mother has provided a description record whether she described ORS preparation correctly or incorrectly. If she mentioned all three of the above circle '1', Anything else circle '2'	Correctly1 Incorrectly2
513.	Have you heard of SSS?	Yes.....1 No2 (if no, go to 601)
514.	Please describe how you prepare wata merresin? Correct description: 1. Use 1 liter of clean drinking water (1liter = 3 soft drink pints) 2. Add 8 level teaspoons (or bottle stoppers) sugar and 1 level teaspoons (or bottle stoppers) salt 3. Stir well Once mother has provided a description record whether she described SSS preparation correctly or incorrectly. If she mentioned all three of the above circle '1', Anything else circle '2'	Correctly1 Incorrectly2

600. Acute Respiratory Infections (Record information for the child that is < 24 months)

601.	Has (Name) had an illness with a cough in the past two weeks?	Yes.....1 No2 (if no, go to 701)
------	---	--

602.	When (name) had an illness with a cough, did he/she have trouble breathing or breathe faster than usual with short fast breaths?	Yes1 No2 Don't know8
603.	Did you seek treatment for the cough/fast breathing?	Yes1 No2 (if no, go to 701)
604.	How long after you noticed (Name's) cough and fast breathing did you seek treatment?	Same day1 Next day.....2 Two days3 Three days or more.....4
605.	Where did you first go for treatment?	District hospital.....1 Clinic2 TBA3 Traditional4 Spiritual5 BFV6 Drug peddlers7 Pharmacy8
606.	Who decided that you should go there for (Name's) illness?	Self.....1 Husband.....2 In-laws3 Auntie4 Friend.....5 Health worker6 BFV7
607.	Where did you go next for treatment?	District hospital.....1 Clinic2 TBA3 Traditional4 Spiritual5 BFV6 Drug peddlers7 N/A8
608.	Which medicines were given to (name)?	Nothing1 Aspirin2 Panadol3 Septine.....4 Pen VK5 Herbs.....6 Amoxil.....7 Don't know8

700. Malaria: Record information for the youngest child that is < 24 months

701.	Has (Name) been ill with fever in the past two weeks?	Yes1 No2 (if no, go to 713)
702.	Does (Name) have a fever now?	Yes1 No2 Don't know.....3
703.	Did you seek advice or treatment for (name's) fever?	Yes1 No2 (if no, go to 713)
704.	Where did you go first for treatment?	District hospital.....1 Clinic2 TBA3 Traditional4

		Spiritual5 BFV6 Drug peddlers7
705.	How long after you noticed (names) fever did you seek treatment from that person/place?	Same day1 Next day.....2 Two days3 Three days or more ..4
706.	Who decided that you should go there for (name's) illness?	Self.....1 Husband.....2 In-laws3 Auntie4 Friend.....5 Health worker6
707	Did you go anywhere else for advice or treatment for (Name)'s fever?	Yes1 No0 (if no, go to 709)
708.	Where did you go next for treatment?	District hospital.....1 Clinic2 TBA3 Traditional4 Spiritual5 Drug peddlers6 N/A7
709	How long after you noticed (names) fever did you seek treatment from that person/place?	Same day1 Next day.....2 Two days3 Three days or more ..4
710.	Was (name) treated with any medicine?	Yes1 No2 (if no, go to 713)
711	<p>Which medicines were given to (NAME) for his/her fever?¹ CIRCLE ALL MEDICINES THAT WERE GIVEN.</p> <p>IF MOTHER IS UNABLE TO RECALL DRUG NAME(S), ASK HER TO SHOW THE DRUG(S) TO YOU. IF SHE IS UNABLE TO SHOW THEM TO YOU, SHOW HER TYPICAL ANTI-MALARIALS AND HAVE HER IDENTIFY WHICH WERE GIVEN.</p> <p>FOR EACH ANTI-MALARIAL MEDICINE ASK: How long after the fever started did (NAME) start taking the medicine?</p> <p>CIRCLE THE APPROPRIATE CODE.</p> <p><u>CODES:</u> SAME DAY = 0 NEXT DAY AFTER THE FEVER = 1 TWO DAYS AFTER THE FEVER = 2 THREE OR MORE DAYS AFTER THE FEVER = 3 DON'T KNOW=8</p>	<p>ANTI-MALARIAL DRUGS</p> <p>A. CHLOROQUINE 0 1 2 3 8</p> <p>B. FANSIDAR0 1 2 3 8</p> <p>C. ACT (AMODIAQUINE & ARTESUNATE) 0 1 2 3 8</p> <p>D. QUININE.....0 1 2 3 8</p> <p>OTHER DRUGS</p> <p>G. ASPIRIN</p> <p>H. PANADOL</p> <p>I. CO-TRIMOXAZOLE</p> <p>J. OTHER_____</p> <p>(SPECIFY)</p> <p>Z. UNKNOWN DRUG</p>
712.	Did (name) receive an injection (mark late) at anytime for his fever?	Yes1 No2 Don't know8

713.	What causes Malaria? Record all mentioned.	Mosquito bites.....1 Witchcraft.....2 Injection/drip.....3 Sucking oranges.....4 Drinking beer.....5 Others.....6 Sharing razor blade.....7 Don't know.....8
714.	Do you have bed nets in your house? If she responds yes, ask if you can see the net.	Yes (verified).....1 No2 (If no, go to 717) Yes (not verified).....3
715.	Who slept under the bed net last night?	Child1 Myself.....2 Husband.....3 Myself w/child4 Myself w/husband.....5 All of the above6
716.	Is the bed net an insecticides treated net (ITN)?	Yes.....1 No2 Don't know.....8
717.	When you were pregnant with (name) did you take any drugs to prevent you from getting malaria?	Yes.....1 No2 (if no, go to 801) Don't know.....8 (if don't know, go to 801)
718.	Which drugs did you take?	Chloroquine1 Fansidar2 Herbs.....3 Don't know.....8

800. Maternal and Newborn Care

801.	Did you see anyone for Antenatal care while you were pregnant with (name)?	Yes.....1 No.....2
802.	Do you have a maternal health card for your pregnancy with (name)? Ask to see the card if mother responds yes	Yes (verified).....1 No2 Yes (not verified).....3 Don't know.....8
803.	Before you gave birth to (Name) did you receive an injection (marklate) in the arm to prevent the baby from getting tetanus that is convulsions after birth?	Yes.....1 No2 (if no, go to 805) Don't know.....8
804.	How many times did you receive such an injection (marklate)?	Once1 Twice.....2 More than twice.....3 Don't know.....8
805.	Now I would like to ask you about the time when you gave birth to (Name). Where did you give birth?	Home1 Other home.....2 Clinic.....3 Hospital4 Other.....5
806.	Who assisted you with (Name's) delivery?	TBA.....1 Nurse/MCH Aide.....2 Doctor.....3

		Family member4 No one5
807.	What instrument was used to cut the navel cord?	New razor blade1 Old razor blade2 Knife.....3 Scissors.....4 Other.....5 Don't know.....8
808.	Where was (name) put immediately after birth?	With mother.....1 In cot.....2 On floor3 Bath4 Taken away5 Don't know.....8
809.	What did you do with (name) immediately after birth?	Breastfed.....1 Bathed2 Let sleep3 Nothing.....4 Don't know.....8
810.	What are the symptoms immediately after birth that could indicate the child is not well? Circle all that is mentioned	Not breathing.....1 Jaundice/Yellow2 Convulsions.....3 Not crying.....4 Conjunctivitis5 Others6 Don't know.....8
811.	How far (in miles) are you from the nearest health facility?	Distance (in miles)_____
812.	How would you get there?	Walk1 Bicycle.....2 Hammock3 Motorcycle4 Vehicle5
813.	How long would it take you to get there?	Less than 1 hour1 1-3 hours.....2 More than 3 hours3 Don't know.....8
814.	Who would decide that you should go there?	Self1 Husband.....2 In-laws.....3 Auntie4 Friend5 Health worker6 BFV7
815.	What are the symptoms during pregnancy indicating the need to seek health care? (Circle all that are mentioned)	Fever.....1 Shortness of breath.....2 Bleeding3 Swelling of body4 Paleness5 Persistent vomiting.....6 Abdominal pain7 Don't know.....8 Others9

816.	Where is the first place you would go for care if you had these symptoms?	District hospital1 Clinic2 TBA.....3 Traditional4 N/A.....5 Don't know.....8
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900. Knowledge on HIV and AIDS

901.	Have you ever heard an illness called AIDS (SIDA)?	Yes.....1 No.....2 (if no, go to 1001)
902.	Where did you hear about HIV/AIDS? Circles all mentioned	Radio1 Health Centre.....2 Workshops.....3 Village health talks.....4 Handouts.....5 NGOs.....6 Family members7 Friends.....8 Others9
903.	How is HIV/AIDS transmitted? Circles all mentioned	Unprotected sex.....1 Blood transfusion2 Mother to child3 Communal use of sharp instruments...4 Don't know.....5
904	What can a person do to avoid getting AIDS or the virus that causes AIDS? Circle all mentioned.	
A	Nothing	A.0 1
B	Abstain from sex	B.0 1
C	Use condoms	C.0 1
D	Limit sex to one partner / stay faithful to one partner	D.0 1
E	Limit number of sexual partners	E.0 1
F	Avoid sex with prostitutes	F.0 1
G	Avoid sex with persons who have many partners	G.0 1
H	Avoid intercourse with persons of the same sex	H.0 1
I	Avoid sex with persons who inject drugs intravenously	I.0 1
J	Avoid blood transfusions	J.0 1
K	Avoid injections	K.0 1
L	Avoid kissing	L.0 1
M	Avoid mosquito bites	M.0 1
N	Seek protection from traditional healer	N.0 1
O	Avoid sharing razors, blades	O.0 1
W	OTHER _____ (SPECIFY)	W: _____
Z	DON'T KNOW	Z.0 1
	<u>CODES:</u> Mentioned = 1 Not mentioned = 0	
905	Can people reduce their chances of getting AIDS virus by having just one sex partner who is not infected and who has no other partners?	Yes.....1 No.....2 Don't Know.....8

906	Can people get the AIDS virus from mosquito bites?	Yes.....1 No.....2 Don't Know.....8												
907	Can people reduce their chances of getting the AIDS virus by using condom every time they have sex?	Yes.....1 No.....2 Don't Know.....8												
908	Can people get the AIDS virus by sharing food with a person who had AIDS?	Yes.....1 No.....2 Don't Know.....8												
909	Can people reduce their chances of getting the AIDS virus by abstaining from sexual intercourse?	Yes.....1 No.....2 Don't Know.....8												
910	Is it possible for a healthy looking person to have the AIDS virus?	Yes.....1 No.....2 Don't Know.....8												
911	Is it possible that a healthy looking person who has the AIDS virus could transmit it to his/her sexual partner?	Yes.....1 No.....2 Don't Know.....8												
912	Can the virus that causes AIDS be transmitted from a mother to her baby (Interviewer asks A-C) A) During pregnancy? B) During delivery? C) By breastfeeding?	<table> <tr> <th>Yes</th><th>No</th><th>DK</th></tr> <tr> <td>1</td><td>2</td><td>8</td></tr> <tr> <td>1</td><td>2</td><td>8</td></tr> <tr> <td>1</td><td>2</td><td>8</td></tr> </table>	Yes	No	DK	1	2	8	1	2	8	1	2	8
Yes	No	DK												
1	2	8												
1	2	8												
1	2	8												
913	When you were pregnant with (Name), did you see anyone for antenatal care?	Yes.....1 No.....2 Don't Know.....8												
914	During any of the antenatal visits for the pregnancy , did any one talk to you (interviewer asks A-C) a) Babies getting the AIDS virus from their mother? b) Things that you can do to prevent getting the AIDS virus? c) Getting tested for the AIDS virus?	<table> <tr> <th>Yes</th><th>No</th><th>DK</th></tr> <tr> <td>1</td><td>2</td><td>8</td></tr> <tr> <td>1</td><td>2</td><td>8</td></tr> <tr> <td>1</td><td>2</td><td>8</td></tr> </table>	Yes	No	DK	1	2	8	1	2	8	1	2	8
Yes	No	DK												
1	2	8												
1	2	8												
1	2	8												

1000. HOUSEHOLD WATER AND SANITATION

1001.	First I would like to ask some questions about your household. What is the main source of drinking water for members of your household?	Open well in Yard/plot1 Open public well2 Protected well in yard/plot.....3 Protected public well.....4 Spring/river/stream.....5 Rainwater.....6 Other.....96 (specify)
1002.	Do you get your drinking water from this source throughout the year?	Yes.....1 No.....2 Don't know.....8
1003.	What happens with the stools of babies and young children in your household who do not use the toilet facility	Thrown in toilet/latrine.....1 Buried in yard.....2 not disposed of/left on the ground...3 Other.....96 (specify)

1004	What do you do with your garbage?	Open pit.....1 Closed pit.....2 Anywhere3 Burning4 Garbage collector.....5 Other.....96 (specify)												
1005	Does your household have a special place for hand washing?	Yes.....1 No.....2 (Go to 1007)												
1006	ASK TO SEE THE PLACE USED MOST OFTEN FOR HAND WASHING AND OBSERVE IF THE FOLLOWING ITEMS ARE PRESENT	<table> <thead> <tr> <th></th><th>YES</th><th>NO</th></tr> </thead> <tbody> <tr> <td>(a) Water/tap.....</td><td>1</td><td>2</td></tr> <tr> <td>(b) Soap, ash or other cleansing agent.....</td><td>1</td><td>2</td></tr> <tr> <td>(c) Basin.....</td><td>1</td><td>2</td></tr> </tbody> </table>		YES	NO	(a) Water/tap.....	1	2	(b) Soap, ash or other cleansing agent.....	1	2	(c) Basin.....	1	2
	YES	NO												
(a) Water/tap.....	1	2												
(b) Soap, ash or other cleansing agent.....	1	2												
(c) Basin.....	1	2												
1007	When do you wash your hands with soap/ash? <i>RECORD ALL MENTIONED</i>	Never1 Before food preparation.....2 Before feeding children3 After defecation.....4 After attending to a child who has defecated.....5												

1100. Integrated Management of Childhood Illnesses (IMCI)

1101.	Sometimes children get sick and need to receive care or treatment for illnesses. What are the signs of illness that would indicate your child needs treatment? DO NOT PROMPT. CIRCLE ALL MENTIONED.	Don't know1 Looks unwell or not playing normally...2 Not eating or drinking3 Lethargic or difficult to wake4 High fever.....5 Fast or difficult breathing6 Vomits everything7 Convulsions8 Other (Specify: _____)
1102.	Did (Name) experience any of the following in the past two weeks? READ CHOICES ALOUD AND CIRCLE ALL MENTIONED BY RESPONDENT.	Diarrhoea 1 Blood in stool 2 Cough 3 Difficult breathing 4 Fast breathing / short, quick breaths ...5 Fever6 Malaria7 Convulsions8 None of the above9 (If none, finish the interview)
1103.	When (Name) was sick, was he/she offered less than usual to drink, about the same amount, or more than usual to drink?	Less than usual1 Same amount2 More than usual3
1104.	When (Name) was sick, was he/she offered less than usual to eat, about the same amount, or more than usual to eat?	Less than usual1 Same amount2 More than usual3

Interviewer.....

Sign after complete

Supervisor.....

Sign after checked for completeness

APPENDIX D: SURVEY PERSONNEL

I. SURVEY TEAMS

TEAM 1 -Dembelia Sinkunia Chiefdom

1. Joseph Lansana – DHMT (**Team Leader**)
2. Andrew T. Koroma - CARE/CSP
3. Mohamed J. Marah - Community Volunteer

TEAM 2 - Folosaba Dembelia Chiefdom

1. Jeniffer Suma - MOHS (**Team Leader**)
2. Abu Bakarr Jalloh - CARE/CSP
3. Mohamed Kamara - DHMT
4. Alim Bah - Community Volunteer

TEAM 3 - Neini Chiefdom

1. Peier T. Sesay - Community Volunteer (**Team Leader**)
2. Abu Bakarr Marah - CARE/CSP
3. Bockarie Sesay - CARE/CSP (M & E Officer)
4. Abdulai Conteh - DHMT
5. Sunkarie Jawara - MOHS

TEAM 4 - Sengbeh Chiefdom

1. Daniel Kamara - CARE/CSP (**Team Leader**)
2. Fayamba Marah - Community Volunteer
3. Halimatu Kamara - MOHS
4. Megan Wall - CARE/CSP

TEAM 5 - Wara Wara Yagala Chiefdom

1. Princess Lahai - CARE/CSP (**Team Leader**)
2. Tejan Bah - CARE/CSP
3. Isatu Turay - MOHS
4. Mohamed Koroma - Community Volunteer

II. TECHNICAL STAFF

1. Yuki Suehiro - Health Sector Coordinator CARE

2. Ahmed Ag. Aboubacrine	- DM & E Coordinator	CARE
3. Sowu Lebbie	- Project Manager	CARE/CSP
4. Bockarie Sesay	- M & E Officer	CARE/CSP
5. Dr.S.A.S. Kargbo	- DHMT Leader/DMO	MOHS
6. Mohamed B. Moigua	- Consultant	INDEPENDENT