



**MATERNAL INFANT AND YOUNG CHILD
NUTRITION (MIYCN) KNOWLEDGE, ATTITUDES,
BELIEFS AND PRACTICES (KABP)
SURVEY REPORT**

ISIOLO COUNTY

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Independent Consultant
Sophie Ochola (PhD)
P.O. BOX 61895 00200
NAIROBI
Email: ocholasa55@gmail.com
Tel: 0721 449 80



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TABLE OF CONTENTS

ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
ACRONYMS AND ABBREVIATIONS	vii
EXECUTIVE SUMMARY	viii
RECOMMENDATIONS	xi
1. Introduction	1
1.1 Background Information	1
1.2 Justification to conduct the survey	2
1.3 Survey objectives.....	2
1.4 Significance of the survey	2
2. METHODOLOGY	2
2.1 Survey Design	2
2.2. The Target Population	3
2.3 Sample Size Determination	3
2.3.1 Sample Size Determination for IYCN indicators	3
2.3.2 Calculation of number of clusters.....	3
2.3.3 Sample size for focus group discussions (FGDs)	4
2.4 Sampling Procedure.....	4
2.5 Data collection tools	5
2.6. Implementation of the Survey	5
2.6.1 Survey Team.....	5
2.6.2 Training of survey team members	6
2.6.3 Pre-testing.....	6
2.7 Data collection and quality control.....	6
2.8 Data management and analysis.....	7
2.9 Definition of key MIYCN indicators.....	7
3. RESULTS	9
3.1 Household characteristics	9
3.2 Child characteristics	9
3.3 Maternal/Caregivers' characteristics	10
3.4 Infant and young child feeding practices.....	11
3.4.1 Breastfeeding practices for children 0-23 months old	11
3.4.2 Bottle feeding practices	13
3.5 Complementary feeding practices	14

3.5.1: Types of foods eaten the previous day by children 6-23 months	14
3.5.2 Introduction and consumption to solid, semi-solid or soft foods	14
3.6 Factors influencing infant and young child (IYCN) feeding practices.....	16
3.6.1 Factors enhancing infant and young child feeding practices	16
3.6.2 Barriers to Infant and Young Child Feeding Practices	17
3.7 Responsive feeding of children 6-23 months old	17
3.8 Feeding during illness.....	18
Table 8: Feeding during illness	19
3.8.1 Knowledge on micronutrient powders (MNPs).....	19
3.8.2 Preparation of food and consumption of Micronutrient Powders (MNPs).....	20
3.9 Knowledge on infant and young child feeding practices.....	21
3.9.1 Knowledge on breastfeeding practices	21
3.9.2 Knowledge on complementary feeding practices	22
3.10 Attitudes on infant and young child feeding practices	23
3.11 Perceptions on infant feeding practices	24
3.12 Ante Natal Care (ANC) for pregnant women.....	25
3.12 Iron and folic acid (IFAS) supplementation for women pregnant during the survey.....	26
3.12.1 Pregnant women’s knowledge on IFAS	26
3.12.2 Provision and consumption of IFAS by pregnant women	27
3.13 Ante-natal care for mothers with children 0-23 months old.....	28
3.13.4 Factors influencing ANC attendance.....	30
3.14 Iron and folic acid supplementation (IFAS) for mothers with children 0-23 months old	31
3.14.1 Maternal knowledge on IFAS.....	31
3.14.2 Maternal provision and consumption of IFAS by mothers 0-23 months old	31
3.14.3 Factors influencing the consumption of IFAS.....	33
3.15 Post-natal care services for mothers with children 0-23 months of age	34
3.15.3 Factors influencing the uptake of PNC services.....	35
3.16: Dietary intake by women of reproductive age (15-49 years)	35
3.16.1 Foods eaten the previous day by women of reproductive age.....	36
3.16.2 Maternal dietary diversity.....	36
3.16.3 Factors influencing maternal dietary intake	37
3.18 Maternal and child nutritional status based on MUAC measurement	39
4: DISCUSSION	40
4.1 Infant and young child feeding practices.....	40
4.1.1 Breastfeeding practices.....	40
4.1.2 Complementary feeding practices	40
4.1.3 Barriers to IYCN practices	41

4.2 Maternal knowledge, attitudes and perceptions on IYCN.....	41
4.3 Responsive feeding practices.....	42
4.4 Feeding of children during illness	42
4.5 Access, preparation and consumption micronutrient powders (MNPs)	42
4.6 ANC attendance by pregnant women	42
4.7 Maternal knowledge on IFAS, provision and consumption by pregnant women	43
4.8 Dietary intake of women of reproductive age	43
5. CONCLUSIONS	43
6. RECOMMENDATIONS	46
7. REFERENCES	48
8. APPENDICES	49

LIST OF TABLES

Table 1: Calculation of sample size.....	3
Table 2: Child characteristics	9
Table 3: Maternal and caregivers' characteristics	10
Table 4:Pre-lacteal feeding/Types of Pre-lacteal feeds given to infants	12
Table 5: Types of foods eaten the previous day by children 6-23 months old.....	14
Table 6: Prevalence of Key complementary feeding practices.....	15
Table 7: Responsive feeding of children 6-23 months old.....	18
Table 8: Feeding during illness	19
Table 9: Maternal Knowledge on MNPs.....	20
Table 10: Preparation of food and consumption of micronutrient powders (MNPs)	21
Table 11: Maternal knowledge on breastfeeding practices	22
Table 12: Knowledge of complementary feeding practices	23
Table 13: Maternal attitudes on infant and young child feeding practices.....	24
Table 14: Maternal perceptions on infant feeding practices.....	25
Table 15: ANC care for pregnant women	26
Table 16: Pregnant women's knowledge on IFAS	27
Table 17: Services offered at the ANC clinic.....	30
Table 18: Maternal knowledge on IFAS for women with children 0-23 months old.....	31
Table 19: Provision of IFAS to mothers of children 0-23 months old	32
Table 20: Consumption of IFAS to mothers of children 0-23 months	32
Table 21: Post-natal care services mothers with children 0-23 months old	35
Table 22: Foods eaten by women the previous day.....	36
Table 23: Use of fortified foods	39
Table 24: Maternal and child nutritional status	39

FIGURES

Figure 1: Map of Isiolo County showing Livelihood Zones	1
Figure 2: Breastfeeding practices	11
Figure 3: Exclusive breastfeeding rates disaggregated by age of child.....	12
Figure 4: Practical support offered to mothers to start breastfeeding.....	13
Figure 5: Feeding of children using various containers.....	13
Figure 6: Consumption of foods and lipids to which MNPs was added.....	Error! Bookmark not defined.

Figure 7: ANC attendant for mothers with children 0-23 months old.....	29
Figure 8: Dietary diversity among women of reproductive age	37

ACRONYMS AND ABBREVIATIONS

ANC	Ante-natal care
CF	Complementary Feeding
CHMT	County Health Management Team
CHVs	Community Health Volunteers
CNC	County Nutrition Coordinator
EBF	Exclusive breastfeeding
ENA for SMART	Emergency Nutrition Assessment (ENA) for Standardized Monitoring and Assessment of Relief and Transitions
FAO	Food and Agriculture Organization
FGD	Focus Group Discussions
FGDs	Focus Group Discussions
IFAS	Iron, folic acid supplementation
IYCF	Infant and Young Child Feeding
IYCN	Infant and Young Child Nutrition
KABP	Knowledge, Attitudes, Beliefs and Practices
KAP	Knowledge, Attitudes and Practices
KDHS	Kenya Demographic Health Surveys
KIIs	Informed Key Interviews
MAD	Minimum Acceptable Diet
MDD	Minimum Dietary Diversity
MMD-W	Minimum Dietary Diversity for women of reproductive age
MIYCN	Maternal Infant and Young Child Nutrition
MMF	Minimum Meal Frequency
MNPs	Micronutrient Powders
MOH	Ministry of Health
MUAC	Middle Upper Arm Circumference
NGO	Non-governmental Organization
NSO	Nutrition Support Officer
ODK	Open Data Kit
PNC	Post-natal care
SCNC	Sub-County Nutrition Coordinator

EXECUTIVE SUMMARY

Introduction

This report summarizes the outcomes of a Knowledge, Attitudes, Beliefs and Practices (KABP) Maternal Infant and Young Child Nutrition (MIYCN) survey conducted in Isiolo County in October 2017. This was a baseline survey conducted to provide benchmarks against which to measure programme performance in the future as well as identify the barriers to appropriate MIYCN practices in the County.

Methodology

The survey adopted a mixed methods design using both quantitative and qualitative data collection methods. The quantitative data was collected at household level whereas qualitative data was collected through Key Informant Interviews (KIIs) with programme and Focus Group Discussions (FGDs) with mothers, fathers and Community Health Volunteers (CHVs).

The survey used a two-stage cluster sampling methodology based on proportion to population size to select 63 clusters of 16 households each. The clusters were selected from a comprehensive list of the smallest geographical unit (villages) for which population statistics were available. The target population was mothers/caregivers and their children aged 0-23 months. Data was collected for 977 children of whom 294 (30.1%) were infants less than 6 months of age and 1003 were mothers/caregivers. Data was also collected on Ante-natal care (ANC), Post-Natal Care (PNC) and Iron Folic Acid (IFAS). The data were entered and analyzed in SPSS version 22.0 for Windows. Qualitative data was analysed through content analysis based on the objectives of the survey.

Findings on key MIYCN indicators

Indicator	Prevalence (%)
Infant and Young Child Feeding Practices	
Breastfed in demand	80.4
Exclusively breastfed	74.1
Continued breastfeeding at 2 years	60.7
Continued breastfeeding at 1 year	92.8
Given pre-lacteal feeds	8.4
Given colostrum	95.2
Initiation of breastfeeding within 1 hour	83.7
Bottle feeding with nipple/teat	26.3
Complementary feeding practices	
Proportion of infants 6-8 months old who received solid, semi-solid or soft foods the previous day	68.5
Minimum Dietary Diversity (MDD)	
% 6-23 months old who received foods from ≥ 4 food groups	39.7
% 6-23 months who received foods from ≥ 4 food groups by breastfeeding status:	
• Not breastfed	57.3
• Breastfed	36.9
Minimum Meal Frequency (MMF)	
% of both breastfed and non-breastfed 6-23 months of age who received foods the minimum times or more	46.1
Breastfed:	
• 6-8 months old [2 times]	53.7
• 9-23 months old [3 times]	49.1
Non-breastfed:	
6-23 months old [4 times]	20.7

Minimum Acceptable Diet (MAD)	
% of children 6-23 months of age who receive a minimum acceptable diet	24.0
Consumption of iron-rich foods	43.3
Feeding during illness	
Offered less breastmilk to child than usual	78.5
Offered less non-breastmilk to child than usual	76.8
Offered less food to child than usual	73.9
Knowledge on breastfeeding and complementary feeding practices	
Breastfeeding should be initiated within 1 hour of birth	83.7
Baby should be given colostrum	93.9
Pre-lacteals should not be given	93.0
Duration of exclusive breastfeeding should be 6 months	88.6
Solid, semi-solid and soft foods should be introduced at 6 months	77.3
Attitudes on breastfeeding and complementary feeding practices	
A baby should be breastfed immediately after they are born	92.5
Would you feed your baby colostrum?	98.2
It is important for a baby to breast fed for 6 months without being introduced to anything else including water	89.5
Perceptions to infant feeding practices	
Do not believe that certain foods are taboo and should not be fed to pregnant women	81.7
Do not believe that a new born baby should be given liquids other than breastmilk	87.1
Do not believe that colostrum is dirty and should not be fed to new born babies	87.1
Do not believe that a baby cannot survive on exclusive breastfeeding for 6 months	87.6
Do not believe that certain foods are taboo and should not be fed to a child	85.4
do not believe that a young child should not be breastfed up to 2 years	84.5
Ante-Natal Care for mothers with children 0-23 months of age	
Attended ANC at least once	97.4
First ANC visit during the first trimester	29.6
Made at least 4 visits during pregnancy	62.9
IFAS for mothers when pregnant with children 0-23 months old	
Heard of IFAS	95.6
First source of information on IFAS:	
• Health staff from health facility	91.5
• Community Health Volunteers (CHVs)	6.8
Know benefits of IFAS	98.0
Number of days for which combined iron/folic acid tablets were given:	
Iron tablets: ≥90 days	19.2
Folic acid tablets: ≥90 days	20.4
Combined iron/folic acid tablets: ≥90 days	18.8
Number of days for which combined iron/folic acid tablets were consumed:	
Iron tablets: ≥90 days	17.3
Folic acid tablets: ≥90 days	17.9
Combined iron/folic acid tablets: ≥90 days	17.4
Dietary Diversity for women of reproductive age (MMD-W):	27.4
Attained Minimum Dietary Diversity (ate foods from at least 5 food groups)	

Breastfeeding practices: Overall the practices were optimal except for: provision of pre-lacteal feeds; continued breastfeeding at 2 years; practical support given to mothers to help start breastfeeding; and bottle feeding with teat/nipple. Efforts should continue to be made to ensure improvement in breastfeeding practices and also to ensure that the gains made are not lost. Despite the fact that EBF is high, the rate should be improved further to reach 90%, the minimum recommended by WHO to have impact on and reduce mortality by 13% among the underfives. It should also be noted that exclusive breastfeeding was stopped at 3 months for the majority of the children and there is need therefore to encourage mothers to continue the practice until 6 months.

Complementary feeding practices: Overall, the complementary feeding practices were sub-optimal implying that a majority of the children were not getting adequate diet; a diet that provides adequate nutrients in terms of quantity and variety for healthy development. Given that knowledge and cultural practices were not major hindrances to appropriate complementary feeding practices, there is need for innovative and nutrition-sensitive interventions to address food insecurity which was the major hindrance to appropriate feeding practices.

Knowledge on MIYCN practices was high and the attitudes and perceptions positive. This however, did not necessarily translate into appropriate MIYCN practices. Promotion of appropriate MIYCN messages should be up-scaled but the barriers to appropriate practices should be addressed to achieve impact. Messages to promote appropriate MIYCN practices should continue to be disseminated with particular emphasis on the remote, hard to reach areas where knowledge was reported to be low.

In terms of ANC attendance, the majority of the pregnant women make at least one visit to a skilled health provider. The challenge is with the frequency of ANC attendance as well with timing of the first visit to the ANC. It is therefore important to establish the reasons why mothers do not start attending ANC in a timely manner and at the recommended frequency. This information would be useful in addressing the development of messages on the health benefits of attending ANC and also useful in addressing the barriers to pregnant women attending ANC as recommended.

The coverage for the provision and consumption of IFA supplements to pregnant women was low. The majority of the pregnant women received and consumed IFAS for less than 60 days during the entire gestation period. This could be partly explained by the sporadic stock outs of the commodity experienced in the County. There is need to train the CHVs on IFAS so that they promote the consumption and address the mothers' challenges in the use of the supplements at the household level. It was reported that this training has yet to be conducted. May be frequent follow-up at the household level by the CHVs may encourage pregnant women and also remind them to take IFAS. One of the reasons given for not taking IFAS on a regular basis was forgetfulness.

Responsive feeding: Overall, positive as the majority of the mothers talked to children and encouraged them to eat and self-feed. There is need to discourage the practice of ordering and threatening children to eat as was reported by about one-quarter of the mothers.

Feeding during illness: Overall, poor feeding practices were reported during illness. These should be appropriately addressed in the behaviour change communication messages.

Maternal dietary intake: Maternal dietary intake needs improvement given that less than half of the mothers attained a minimum dietary diversity. The major hindrance to adequate dietary intake was food insecurity and poverty and therefore innovative strategies to address food security issues should be priority to improve mothers' dietary intake.

Factors influencing MIYCN practices

Factors influencing MIYCN positively

- **High level of knowledge on breastfeeding and complementary feeding practices** among the mothers and the community as a whole. This together with the positive attitudes and perceptions to IYCF practices may have contributed to the appropriate breastfeeding feeding practices. The knowledge, positive attitudes and perceptions towards complementary feeding did not necessarily translate to improved practices.
- It was also reported during the FGDs **that cultural beliefs** were no longer a barrier to MIYCN practices for the majority of the people.
- **High level of maternal knowledge** on the health benefits of ANC attendance and consumption of IFAS during pregnancy influenced mothers to seek these services. Despite this, many mothers did not seek ANC services regularly nor consume IFAS for the recommended number of days.
- The services provided at the ANC such as; growth monitoring of the foetus, checking of anaemia and provision of supplementary foods encouraged mothers to attend ANC encouraged mothers to attend ANC clinics.

Barriers to appropriate MIYCN practices

- **Household food insecurity** resulting into inadequate dietary intake affecting milk production among breastfeeding mothers. Similarly, food insecurity was a major factor contributing to inappropriate complementary feeding practices because of unavailability and inaccessibility of a variety of foods. Poverty was reported to be a major constraint to household food security. Poor household food security was also a major factor constraining maternal adequate dietary intake;
- **Family conflicts and violence** causing stress to the mother and therefore not able to produce adequate breastmilk and also take care adequate care of children;
- **High maternal workload** affecting time mother is available to provide quality care to the child and also to breastfeed and prepare appropriate complementary foods for the baby;
- **Alcoholism among some of the mothers** interfering with quality of care given to children including appropriate feeding practices;
- **Inadequate knowledge on complementary feeding practices** particularly on how to prepare foods for the children was reported to be a constraint to appropriate feeding practices.
- **The women who did not attend ANC regularly** were discouraged by: the high maternal workload; long distance to health facilities; were not comfortable to be attended by male health workers; mandatory HIV testing and some were discouraged by their husbands from attending.
- **The women who did not take IFAS on a regular basis** were discouraged by the side effects (nausea and vomiting) while some forgot to take the commodity.

RECOMMENDATIONS

Programme recommendations

Recommendations	Persons responsible	Timeline
Fully operationalize the County Social and Behaviour Change Communication Plan to promote adoption of appropriate MIYCN practices	MOH, UNICEF, Nutrition IPS	December 2018
Scale up functionalization of Community Units	CHMT	December 2018
Initiate Baby friendly Community Units in already functional Community Units	MOH, UNICEF, Nutrition IPS	September 2018
Recruit more nutritionists	County Government	April 2019
Establish Multi Sectoral Platform to enhance collaboration with nutrition sensitive sectors in addressing nutrition issues. This will facilitate partnering and building complementarities amongst various partners in the County	Departments of Health,	September 2018

	Agriculture, Child Protection Services, Water, and Education	
Train newly recruited health workers on MIYCN/MIYCN – E and BFCI modules.	MOH, UNICEF, Nutrition IPS	September 2018
Fully operationalize the County Complementary Feeding Action Plan address the below optimal complimentary feeding practices (MAD, MMF, MMD).	MOH, UNICEF, Nutrition IPS	December 2018
Train additional community units on Module 8. CHV's least provided information on complementary feeding	MOH, UNICEF, Nutrition IPS	December 2018
Use of local radio stations for messaging – themed messaging exclusively with Infant and Young Child feeding messages targeted towards behavior change and knowledge creation	MOH, UNICEF, Nutrition IPS	December 2018
Scale up and ensure fully functional MSG's to cover all Community Units.	CHMT	September 2018
Re-orientation of HW's on initiation of breastfeeding support once mothers deliver (Breast Crawl and KC)	CHMT	September 2018
Develop contextualized interventions targeting key influencers such as the mother in law who are a main source of information on infant and young child feeding	CHMT	December 2018

Recommendations for future surveys

- Conduct in-depth MIYCN KAPB qualitative surveys to provide detailed sub-county level information to allow for appropriate programming taking into account any differences in the sub-counties.
- The questionnaire should be shortened and made to focus on the key MIYCN indicators. Questions with a high possibility of recall bias e.g. IFAS for mothers with children 0-23 months old- the target population should be changed to mothers with younger children to minimize recall bias.
- Data analysis: It is recommended that qualitative data be analysed using data analysis software for improved efficiency. It is also recommended that basic inferential statistics be included in the analysis to provide information for more targeted MICYN messages.
- The ToR should include maternal nutrition and other-related indicators e.g. IFAS and ANC based on the WHO and MOH guidelines.

1. Introduction

1.1 Background Information

Isiolo County, located in the Pastoral North East cluster, is classified as arid and semi-arid lands of Kenya covering a surface area of 25, 336 square Kilometers (km²) with an estimated population of 181,7818. Consisting of three Sub-counties, Isiolo, Garbatulla and Merti, the county is characterized by recurrent droughts, hot and dry climate with low and erratic rainfall patterns. There are four main livelihood zones in the county namely Casual and Waged Labour, Pastoral (all Species), Pastoral Cattle and Goats, and Agro Pastoral livelihood zones comprising 32, 15, 35 and 15 percent of the population respectively as shown in Figure 1. Pastoralism, all species and cattle, goats and sheep, is the main source of livelihood in the county with little agro-pastoralism being practiced along Ewaso-Nyiro River whereas firewood selling, casual waged labour and some formal employment in big towns is the least of the livelihood zones.

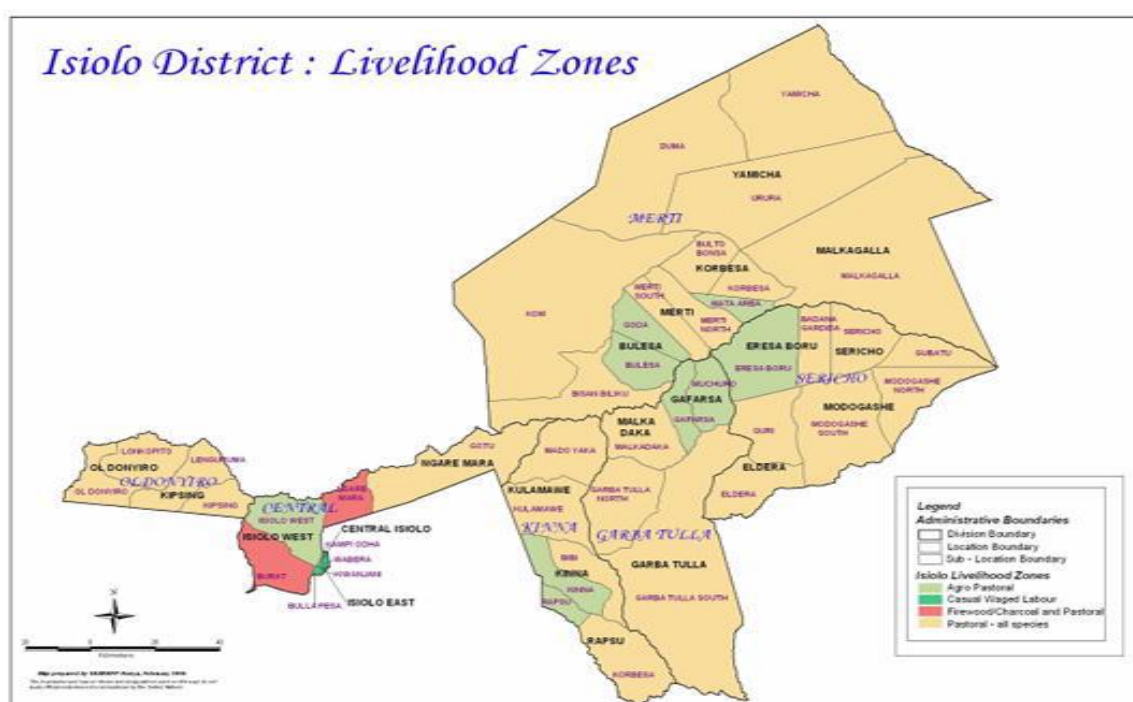


Figure 1: Map of Isiolo County showing Livelihood Zones

The nutritional status of children in Isiolo County has been deteriorating over the past years (2015-2018). An integrated SMART survey conducted in February 2016 unveiled a serious Global Acute Malnutrition (GAM) prevalence of 12.3% (9.6-15.8 95% CI) and Severe Acute Malnutrition (SAM) prevalence of 1.2% (0.4- 3.4 95% CI). In February 2018, the findings of another integrated SMART survey reported a GAM rate of 13.8% and SAM 2.6%. Stunting rate was 18% and underweight 19.2% from the findings of the same survey.

Stunting is as a result of extended periods of inadequate food intake, poor dietary quality, increased morbidity, poverty, low maternal education or a combination of these factors. Stunting and poor nutritional status eventually result to mortality among children. Nutrition interventions have been demonstrated to be the most effective preventive actions for reducing mortality among children under the age of five years. Of these actions, exclusive breastfeeding ranks first; being estimated as having the potential to prevent 13 percent of all deaths in this age group while appropriate complementary feeding, water, sanitation and hygiene would reduce 6 percent and 3 percent respectively (Lancet, 2003).

1.2 Justification to conduct the survey

According to KDHS 2014, data on exclusive breast feeding and complementary feeding practices is available at national level but not county level. At the national level, Kenya has made progress on exclusive breast feeding from 32% in 2008/09 to 61% in 2014. In Kenya, about two in ten (21 percent) children age 6-23 months consume an Minimum Acceptable Diet (MAD). The Nutrition Program Review (2016) has shown that current data on exclusive breastfeeding and complementary feeding practices is lacking in target Counties. The 2016 Communication for Development Secondary Data Analysis and Literature identified information gaps such as lack of sub-national level evidence on knowledge, attitudes, beliefs and practices in relation to appropriate feeding practices and lack of analysis on reasons for low exclusive breastfeeding in selected counties such as Isiolo. It was therefore important to gather evidence (quantitative and qualitative) that will guide nutrition program in terms of measuring progress and guiding programmatic strategies and activities based on WHO 2010 and Kenya MOH guidelines and data collection tools (June 2016).

1.3 Survey objectives

Overall, the main objective of this survey was to collect baseline information on knowledge, attitudes, beliefs and practices among mothers/caregivers in Isiolo County (Annex 3 for TOR).

1.4 Significance of the survey

In particular, the findings of this survey will be used to support MOH, ACF and UNICEF's work in nutrition, specifically by:

- Improving the understanding of the core IYCN indicators in Isiolo County; and
- Measuring progress and informing programme design and implementation through application of these findings.

2. METHODOLOGY

2.1 Survey Design

The survey adopted a mixed methods using both quantitative and qualitative data collection methods. The quantitative data was collected through household surveys to obtain information on maternal knowledge, attitudes, practices, beliefs and practices on MIYCN. Qualitative data collection involved Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs). KIIs were conducted with various stakeholders (Programme Officers from partner organizations, Country Nutrition Coordinators (CNCs), Sub-County Nutrition Coordinators (SCNCs). The KIIs solicited information on MIYCN practices in the County, the factors enhancing appropriate practices and the barriers to appropriate practices in the County. Focus Group Discussions (FGDs) were conducted with mothers, fathers and Community Health Volunteers (CHVs) to solicit their perceptions on the MIYCN practices in the County as well as the barriers to such practices, if, any and how they think these can be minimized. The qualitative information collected from the KIIs and FGDs was used to complement the quantitative data from the household survey and also to provide an in-depth understanding of the community's MIYCN practices and perceptions.

The survey was conducted in a participatory manner that involved consultations with Ministry of Health (MOH) Officials, NGO partners, UN agencies and beneficiaries.

2.2. The Target Population

The target population was mothers/caregivers and their children 0-23 months of age in Isiolo County. Children 0-23 months old were targeted because this is the window period for implementing appropriate infant and young child feeding practices otherwise the adverse consequences of inappropriate feeding may be irreversible after this period. The survey was conducted in the all the three sub-counties in Isiolo County; Merti, Garbatulla and Isiolo.

2.3 Sample Size Determination

2.3.1 Sample Size Determination for IYCN indicators

The sample size for the IYCN indicators was calculated based the Care International Step by Step Guide (2010). Based on this guide, the sample size for each of the **eight** IYCN core indicators was calculated and computed based on various parameters: the most recent estimate (prevalence/rate); level of precision; and design effect as shown in Table 1. Since this was the first KABP survey to be conducted in Isiolo, a 50% estimate was used for all the indicators. A 50% estimate gives the optimal (largest) sample size when all other parameters are held constant.

Table 1: Calculation of sample size

Indicator	Estimate (%)	Precision	Design Effect	Sample Size
Timely Initiation of breastfeeding	50	8.0	1.5	245
Exclusive Breastfeeding Rate	50	8.0	1.5	245
Continued breastfeeding at 1 year	50	8.0	1.5	245
Minimum Dietary Diversity	50	8.0	1.5	245
Minimum Meal Frequency	50	8.0	1.5	245
Minimum Acceptable Diet	50	8.0	1.5	245
Consumption of iron-rich or iron-fortified foods	50	8.0	1.5	245
Bottle feeding	50	8.0	1.5	245

The Care International Step-By-Step Guide (2010) recommends a precision of between 5% and 10%; in this survey, a precision of 8% was used for prevalence rates above 25% and therefore for all the indicators as shown in Table 1. A design effect of 1.5 was used for the eight indicators. This was based on the assumption that there is some level of heterogeneity in the IYCN practices within the County. A 95% Confidence Interval was used in the calculation of the sample size. The calculated sample size was 245 for all the indicators based on the stated parameters. This sample size (245) was multiplied by 4 to yield a total sample size of 980 children 0 to 23 months of age. As recommended by the Care International Step-by-step Guide (2010); the sample size was multiplied by 4 to allow for large enough samples for disaggregation into 4 age categories for children 0-23 months (0 – 5, 6 – 11, 12 – 17 and 18 – 23.9) during data analysis. This sample size (980) was then adjusted upward by a non-response rate of 2% to give **1000** as the final sample size for children aged between 0 and 23 months.

2.3.2 Calculation of number of clusters

The total number of clusters/villages for the survey was 63. This was obtained by dividing the calculated final sample size (**1000**) by **16** (total number of households to be visited per cluster per day). The number of households to be visited per cluster per day was based on experience from previous KABP surveys that used the same MIYCN KABP tool as used in this survey and conducted in Homa-Bay, West Pokot, and Turkana.

2.3.3 Sample size for focus group discussions (FGDs)

In total 20 FGDs were conducted in all the three sub-counties in Isiolo County. The FGDs were conducted in 20 villages across the villages/clusters sampled for the household survey. Half (10) FGDs were allocated to the mothers since they are the main stakeholders of IYCF issues, 6 FGDs for CHVs and 4 FGDs for men.

2.4 Sampling Procedure

A two-stage sampling methodology was used to select the target population (mothers/care givers) of children 0-23 months old.

Sampling Stage 1

The first stage of sampling involved selection of villages (clusters) which was the sampling unit. The village is the smallest geographical unit for which population statistics were available. All the villages in each of the three sub-locations in Isiolo County constituted the sampling frame with the exception of villages where there was insecurity. The population statistics used for sampling of the villages were from the National Census (2009) projections. Emergency Nutrition Assessment (ENA) for Standardized Monitoring and Assessment of Relief and Transitions (SMART) version November 2012 was used to randomly select the villages/clusters.

Each of the villages was listed together with its total population. The cumulative population was then calculated and used in the computation of a population proportional to size (PPS) sampling design to identify the specific villages to be covered by the survey. After computing the cumulative population, the sampling interval was determined by dividing the total cumulative population by the number of clusters required, i.e. 63. A random number (equal to or less than the sampling interval) was then selected from a Table of Random Numbers and the village where the random number fell was the first cluster to be selected for the survey. Subsequent villages were selected by adding the sampling interval to the number first selected. Through this process, the locations of the sampled villages/clusters were identified. This process was conducted using the ENA for SMART software.

Sampling Stage 2

The second stage involved selection of 16 households per cluster/village. A list of all households with children 0-23 months per village was obtained from the Community Health Volunteers (CHVs) and 16 households selected through simple random sampling using Table of Random Numbers. Once a house was selected, the survey team visited the household and inquired if the target respondent (mother/caregiver) of children 0-23 months of age lived that household. If the target population lived there and was willing to participate in the survey, then the relevant data was collected from the respondent. The same procedure was used in each of the selected 16 sampled households. Sampled households were revisited later during the day if, on first visit, the mother/caregiver was not present. If the target population did not live the sampled households then the same sampling procedure was followed to select another household.

If there was more than one child 0-23 months old in a household then the youngest one was included in the sample.

2.5 Data collection tools

The Kenya Ministry of Health (MoH) KAP questionnaire on Maternal, Infant and Young Child Nutrition (June 2015) shown in Appendix 1 was used to collect the quantitative data at the household level. The questionnaire was in English language. During the training, the key terms were translated into and described in Kiswahili (Kenyan national language) or/and the local languages spoken in Isiolo County and back translated into English to ensure accurate translation. The translation (from English to local language and back translation to English) was agreed upon through general consensus during the training.

FGD and KII guides were used to collect quantitative data from various groups of community members and Key Informants (MoH officials and programme officers) respectively (Annex 2). These guides were developed by the consultant to solicit information related to the objectives of the KAPBP survey. The guides were developed in English language and key terms and ideas were translated into Kiswahili and local languages in Isiolo County and back translated into English to ensure accurate translation during the training of the FGD team.

The questionnaires were pre-tested during the training for accuracy and validity. Minor corrections were incorporated after pre-testing. The questionnaires had provision for respondents to indicate their verbal informed consent before participating in the survey.

2.6. Implementation of the Survey

2.6.1 Survey Team

The survey team was composed of various groups of people:

- The coordination and supervisory team was composed of the consultant and two external technical assistants; CNC, NSO and officers from ACF.
- An ODK expert in charge of uploading questionnaire on to the ODK platform and ensuring their accuracy, managing data quality at the server and sharing the data with the relevant persons on a daily basis.
- The household survey team: Composed of 12 teams each comprising of 3 members making a total of 36 data collectors. Each team had 2 enumerators, and a team leader from the MoH and/or the partners.
- The FGD teams: Three FGD teams each composed of a facilitator/moderator, a recorder, an observer and a transcriber, making a total of 12 people.

The household survey team members had at least Kenya Certificate of Secondary Education (KCSE) with the majority having prior experience in surveys.

Note: The survey team members were mainly staff from the MoH (nurses, nutritionists, public health officers) and partners.

2.6.2 Training of survey team members

Four-day training for the household survey was conducted by the consultant and two external technical assistants in collaboration with the Nutrition Support Officer (NSO) Isiolo, Country Nutrition Coordinator (CNC) Isiolo and Officers from the partner ACF. The training took place from 10th to 13th October, 2017. The training focused on the objectives of the survey, uses of KABP surveys, cluster and household selection, interviewing techniques, accurate recording of responses and the use of mobile technology in data collection. Lectures, Question and Answer and demonstrations were used to train the participants. Role-plays on how to administer the questionnaire and record responses were also conducted. Participants were exposed to practical hands on experience on the use of mobile technology in data collection.

The FGD team was trained separately from the household survey team over a 3-day period from 11th to 13th October 2017 although they participated in the training for the household survey during the first day of the training (10th October). This was to enable them understand the survey purpose and objectives as this would assist them to better understand the kind of information they were required to collect through the FGDs. The training focused on the objectives of the FGDs, understanding the kind of information to be solicited through the FGDs, how to conduct FGDs, translation of the questions into the local language etc. Very important was how to record the discussions and deliberations. The transcribers were also trained on the transcription process.

2.6.3 Pre-testing

A one-day pre-testing of the questionnaires was conducted on the last day of training. This was to test for accuracy, clarity and validity and modified accordingly. Each team conducted 3 interviews and recorded responses on the tablets/mobile phones. The survey teams also tested the survey procedures; sampling, interviewing techniques, and the duration taken to sample and interview one household. The consultant and the supervision team members accompanied and observed the teams during the pre-testing in order to identify the weaknesses and strengths of the teams. All the filled in questionnaires were checked by the consultant, her assistants and the rest of the supervisory team (MOH and partners). Pre-test data was uploaded by the enumerators to the server and checked for data quality and accuracy by the consultant.

The FGD teams each conducted an FGD during the pre-testing; one team conducted an FGD for mothers, another for men and the third one for CHVs.

2.7 Data collection and quality control

The data was collected over a 6-day period, from 14th to 19th October 2017. Data was collected using face to face interviews at respondents' home. Data was collected by trained enumerators under the supervision of the consultant and the technical assistants, MOH officials, NSO, CNC and officers from ACF. Data was collected using android phones/tablets and the Open Data Kit (ODK software). Data entry process was conducted simultaneously with data collection. Validation and verification through comparisons of the data sets was done using Open Data Kit aggregate to obtain the final data. The enumerators were comprehensively trained in order to standardise the data collection method. The enumerators uploaded the data on the ODK server daily once the data had been checked by the team leaders. Data was also validated on a model installed into the phones through skip patterns to ensure that what was submitted was correct and accurate.

2.8 Data management and analysis

Quantitative data

The external ODK expert sent data uploaded to the server by the enumerators to the consultant on a daily basis and if there was need for corrections, the consultant passed this information to the expert who would then make the necessary changes to the data set. At the end of the survey, the expert sent the data set to the consultant in excel format. The consultant exported the data to SPSS version 22 and analysed the data based mainly on the WHO (2010) and MoH MIYCN indicators.

Qualitative data

The data from both focus group discussions and key informant in-depth interviews were transcribed and content analysis conducted. Content analysis involves the detailed exploration for common themes and assigning of labels to variable categories. The categories or themes were identified in advance, in line with the objectives and scope of the survey. The coding consisted of searching for the common themes which could be established as categories into which later information could be inserted. The themes were clustered into a patterned order so as to identify variables that predict general concepts and isolate repetitions. Inferences were made from particular data under each theme and conclusions drawn from the findings. The qualitative data was been used for triangulation of the findings; and to complement the quantitative data obtained from reported household interview information. The qualitative data has also been used to report findings on community's knowledge, attitudes, beliefs and practices of MIYCN as well as to identify the factors enhancing and barriers to appropriate MICYN practices.

2.9 Definition of key MIYCN indicators

A. **Household:** A group of persons who eat from the **same cooking pot**.

B. **Minimum Dietary Diversity for women of reproductive age [15 to 49 years of age] (MDD-W)** is a dichotomous indicator defined as: The proportion of women 15-49 years of age who consumed food items from at least five out of 10 food groups (FAO, 2016)¹. The ten food groups are as follows:

1. Grains, white roots and tubers, and plantains
2. Pulses (beans, peas and lentils)
3. Nuts and seeds
4. Dairy
5. Meat, poultry and fish
6. Eggs
7. Dark green leafy vegetables
8. Other vitamin A-rich fruits and vegetables
9. Other vegetables
10. Other fruits

¹ FAO (2016), Minimum Dietary Diversity for Women. A Guide to Measurement. Published by the FAO of the United Nations and USAID'S Food and Nutrition Technical Assistance Project III (FANTA), managed by FHI 360 Rome.

C. Definitions of IYCF indicators:

1. **Early initiation of breastfeeding:** Proportion of children born in the last 24 months who were put to the breast within one hour of birth (WHO, 2010).
2. **Exclusive breastfeeding under 6 months:** Proportion of infants 0-5 months of age who are fed exclusively with breastmilk (WHO, 2010).
3. **Continued breastfeeding at 1 year:** Proportion of children 12-15 months of age who are fed milk (WHO, 2010).
4. **Introduction of solid, semi-solid or soft foods:** Proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods (WHO, 2010).
5. **Minimum Dietary Diversity:** Proportion of children 6-23 months of age who receive foods from 4 or more food groups (WHO, 2010). The seven food groups are also as follows:
 11. Grains, roots and tubers
 12. Legumes and nuts
 13. Dairy products (milk, yoghurt, cheese)
 14. Flesh foods (meat, fish, poultry and liver/organ meats)
 15. Eggs
 16. Vitamin A-rich fruits and vegetables
 17. Other fruits and vegetables
6. **Minimum Meal Frequency:** Proportion of children 6-23 months of age who receive solid, semi-solid, or soft foods (including milk feeds for non-breastfed) the minimum number of times or more calculated as follows (WHO, 2010).:
 - **Breastfed children 6-23 months old who receive** solid, semi-solid, or soft foods the minimum number of times or more during the previous day **and non-breastfed children 6-23 months old who receive** solid, semi-solid, or soft foods the minimum number of times or more during the previous day.

Note: **For breastfed children**, the minimum number of times varies with age (2 times for children 6-8 months old and 3 times is 9-23 months old).

For non-breastfed children, the minimum number of times does not vary with age (4 times for all children).
7. **Minimum acceptable diet:** Proportion of children 6-23 months of age who receive a minimum acceptable diet (apart from breastmilk) calculated as follows (WHO, 2010).
 - **Proportion of breastfed children 6-23 months of age** who had at least the minimum dietary diversity and the minimum meal frequency during the previous day **and non-breastfed children 6-23 months of age** who had at least the minimum dietary diversity and the minimum meal frequency during the previous day.
8. **Consumption of iron-rich or iron-fortified foods:** Proportion of children 6-23 months of age who receive an iron-rich food or iron-fortified food that is specially designed for infants young and children during the previous day (WHO, 2010).

3. RESULTS

3.1 Household characteristics

The majority (88.3%) of the households were male-headed with only 11.7% being female-headed. The mean household size was 5.5 ± 2.1 .

3.2 Child characteristics

The total sample size for children 0-23 months was 977 out of which infants 0-5 months of age were 294 (30.1%) of the total number of children. This sample size was higher than the calculated sample size of 245. Children 6-23 months of age comprised of 69.9% of the total population. Disaggregated further by age, children 6-11 months old formed 24.0%, and those 12-17 months formed 22.7% whereas those 18-23 months old formed 20.8% of the total sample. The mean age of the children was 10.5 ± 6.8 (Table 2). For about two-thirds (65.7%) of the children, the age was verified using maternal and child health booklets and for 30.3% age was verified by other methods including maternal recall. The sex distribution of the children was almost equal but with a slightly higher majority (52.1%) being females. The majority of the children (59.3%) were born in health facilities and about one-third (31.1%) born at home (Table 2).

Table 2: Child characteristics

Child Characteristics	N=977	
	n	%
Children 0-23 months old	977	100
Children 0-5 months old	294	30.1
Children 6-23 months old	683	69.9
Children 6-11 months old	243	24.0
Children 12-17 months old	230	22.7
Children 18-23 months old	210	20.8
Age (mean +SD)	10.5 ± 6.8	
Age verified:		
Health Card	642	65.7
Birth certificate	17	1.7
Seasonal calendar of events	22	2.2
Others	296	30.3
Sex of child:		
Male	468	47.9
Female	509	52.1
Place of delivery:		
Hospital	600	59.3
Health centre	30	3.0
Dispensary	25	2.5
Home	316	31.3
Midwife's home	5	0.5
Others	1	0.1

3.3 Maternal/Caregivers' characteristics

The majority of the mothers/caregivers were relatively young with a mean age of 27.0 ± 6.3 years and a mean parity of 3.5 ± 2.1 children. The majority of mothers/caregivers (90.4%) were married whereas smaller percentages were either separated/divorced (3.3%) or were 3.9% were single or never married (Table 3). The majority (87.5%) of the mothers/caregivers were lactating with only 1.2% who reported to be pregnant and lactating. The mothers/caregivers' level of education was low; most of them 40.3% and 24.2% had no formal education or had less than primary education respectively. The majority (64.1%) of the mothers/caregivers were housewives and only 3.0% were in formal employment and others involved in casual labour (4.9%) and petty trading 4.8% (Table 3).

Table 3: Maternal and caregivers' characteristics

Characteristics	N=1003	
	n	%
Age (mean \pm SD)	27.0 \pm 6.3	
Religion:		
Christian	336	33.5
Muslim	625	61.8
Traditional	42	4.2
Marital status		
Currently married	907	90.4
Cohabiting	6	0.6
Separated/divorced	33	3.3
Widowed	18	1.8
Single/never married	39	3.9
Physiological status:		
Pregnant	38	3.8
Lactating	885	87.5
Pregnant and lactating	12	1.2
Not pregnant/Not lactating	68	6.7
Education:		
No formal education	407	40.3
Less than primary school	245	24.2
Primary school	222	22.0
Secondary school	93	9.3
College/University	35	3.2
Postgraduate school	1	0.2
Main occupation:		
Formal employment	30	3.0
Informal employment	18	1.8
Casual labour	50	4.9
Own business	54	5.3
Petty trading	49	4.8
Farming	8	0.8
Dependent	26	2.6
Housewife	641	64.1
Others	10	1.0
Parity (mean\pm)	3.5 \pm 2.1	

3.4 Infant and young child feeding practices

Infant feeding and complementary feeding practices were determined based on a 24-hour recall as recommended by WHO (2010) and the Kenya Ministry of Health (MoH) guidelines. The key indicators are also based on the same guidelines (refer to section 2.9 Definitions of IYCF indicators).

3.4.1 Breastfeeding practices for children 0-23 months old

Breastfeeding was universal with almost all the children (99.5%) having ever breastfed. The majority (83.7%) of the children were initiated to breastfeeding timely (within one hour of birth) as per the WHO recommendations (WHO 2010). A majority of the children (95.2%) were fed colostrum, 92.8% of the one year old children were still breastfeeding and 60.7% of those who were two years old were still breastfeeding. The majority (80.4%) of the children were fed on demand. The exclusive breastfeeding practice was 71.4% (Figure 2). These findings demonstrate that breastfeeding practices were, on the whole, optimal.

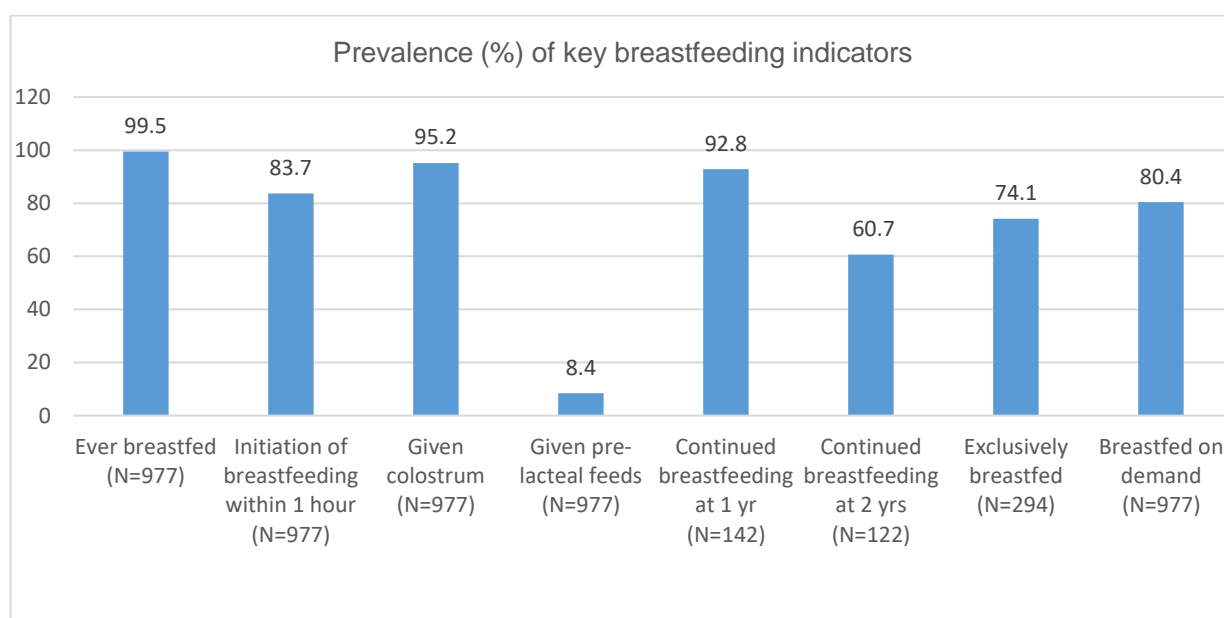


Figure 2: Breastfeeding practices

Disaggregated by age exclusive breastfeeding rate was highest among infants 0-1 month (79.1%) followed by those 0-3 months old at 77.2% and the lowest rate was for infants 4-5 months old (Figure 2) showing a decline in the practice as the child become older.

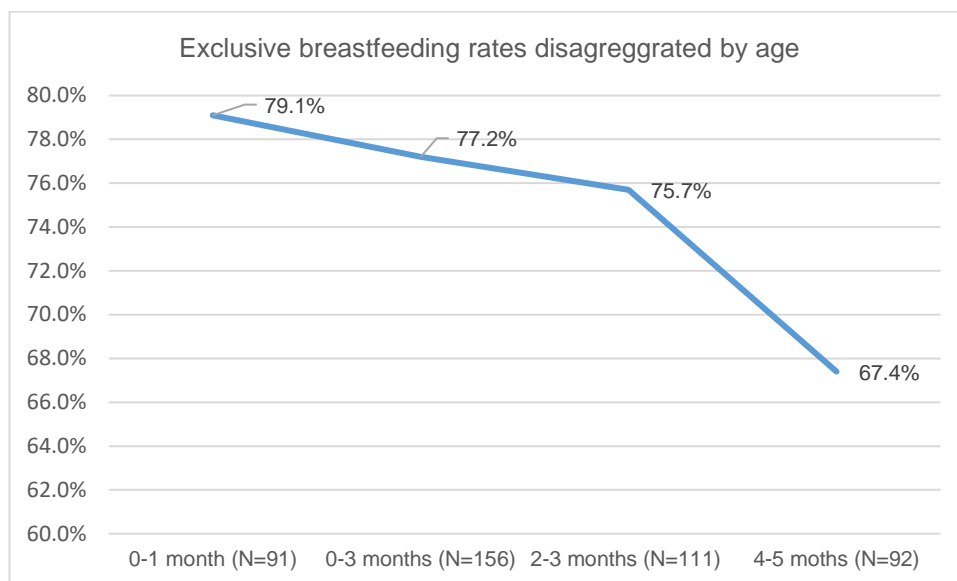


Figure 3: Exclusive breastfeeding rates disaggregated by age of child

Pre-lacteal feeds were given to 8.4% of the children (Table 4), a practice that should be discouraged because it interferes with the establishment of lactation. The most commonly given pre-lacteal feed was plain water by 43.0% followed by other milks (35.4%). The main reason for giving pre-lacteal feeds was that the mother does not or have little breastmilk stated by 80.8% of the mothers who gave pre-lacteal feeds (Table 4).

Table 4: Pre-lacteal feeding/Types of Pre-lacteal feeds given to infants

Giving of pre-lacteal feeds	N=977	
	n	%
Given pre-lacteal feeds	82	8.4
Pre-lacteal feeds given (N=82):		
Other milks	28	35.4
Plain water	34	43.0
Sugar/glucose water	14	17.7
Gripe water	2	2.2
Sugar/salt solution	2	2.2
Infant formula	9	9.9
Animal fat	1	1.1
Reasons for giving pre-lacteals:		
No/little breastmilk	59	80.8
Baby cries too much	16	21.9
Cultural reasons	4	5.5
Weather too hot	1	1.1

Support offered to mothers to help start breastfeeding

In terms of breastfeeding support given to mothers to start breastfeeding; 56.7% received such support whereas 43.3%, a relatively large proportion did not receive this vital support (Figure 4).

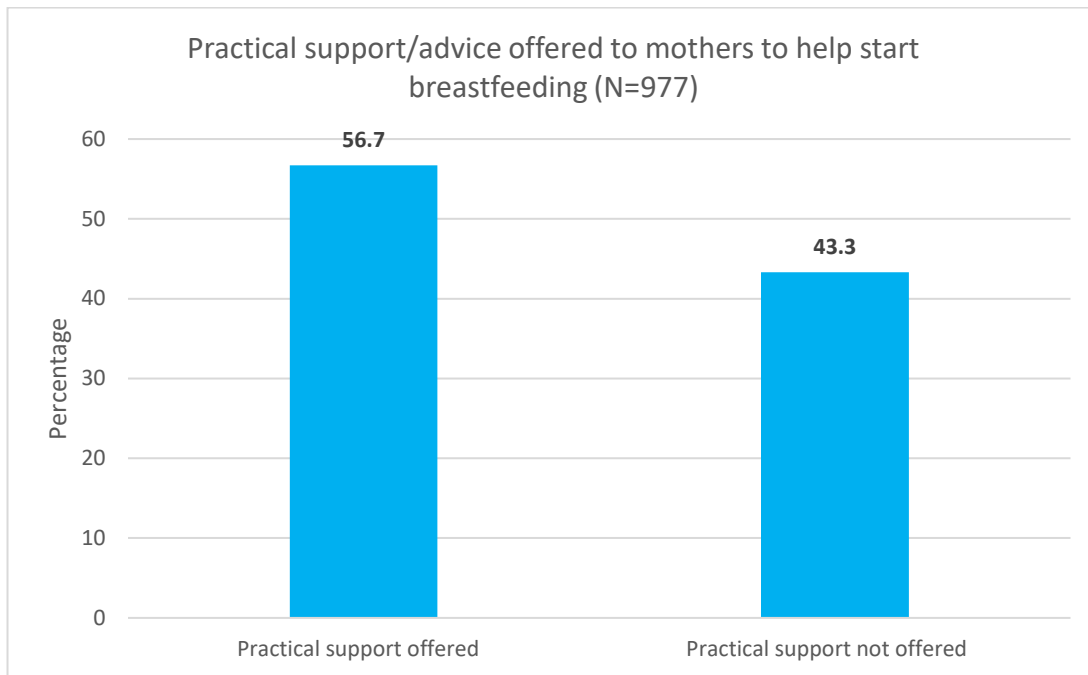


Figure 4: Practical support offered to mothers to start breastfeeding

3.4.2 Bottle feeding practices

Over one-quarter (26.3%) of the children were fed using a bottle with a nipple/teat the day before the survey, a practice that is not recommended because of hygienic reasons because since it is difficult to keep the teat clean especially for mothers with poor hygiene practices. About one-quarter of the children (24.9%) who were fed from a container were correctly fed using a cup only as is the recommended practice (Figure 5).

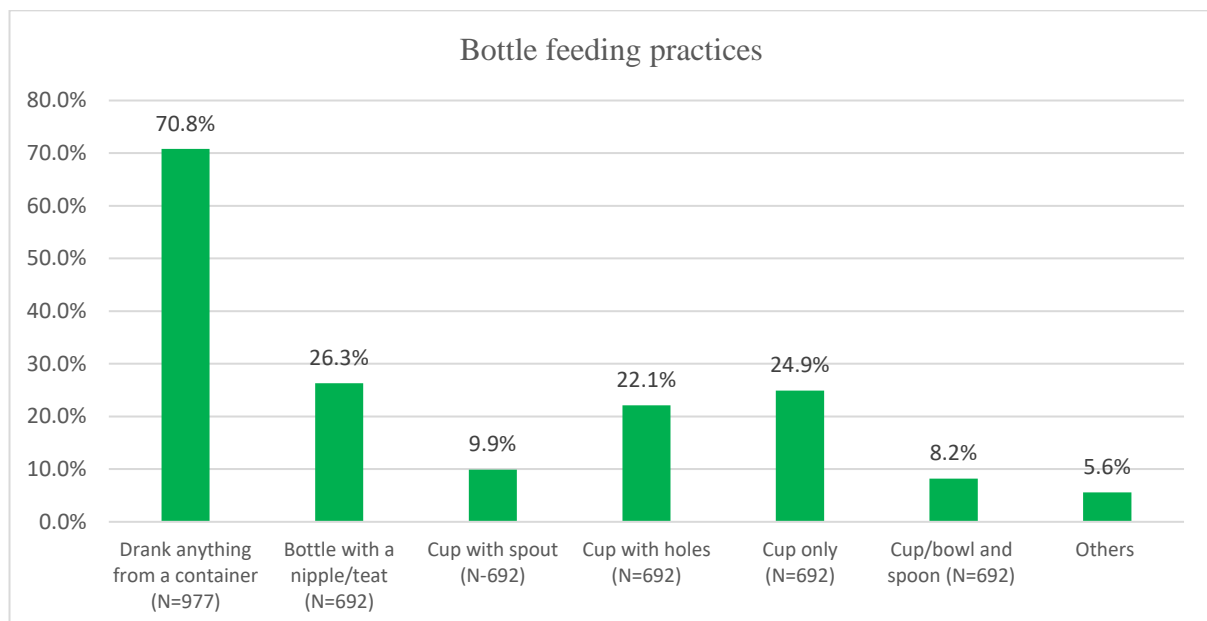


Figure 5: Feeding of children using various containers

3.5 Complementary feeding practices

The main decision maker on what the child ate was reported to be the mother by 98.2% of the respondents and only 0.4% of the fathers were reported as main decision makers.

3.5.1: Types of foods eaten the previous day by children 6-23 months

The most consumed foods as is expected were cereals by 82.9% of the children followed by foods from the milk and milk products group by 74.1% and tubers 55.6%. The most consumed protein foods were legumes by 42.6% of the children. The least consumed food groups were fresh and dried and fish by 2.2% and liver, kidney and heart and other organ meats by 10.7% (Table 5).

Table 5: Types of foods eaten the previous day by children 6-23 months old

Foods eaten the previous day	N=655	
	n	%
Fortified food like cerelac	101	14.8
Cereals (maize, rice, wheat, porridge, sorghum, bread, or other foods grains	566	82.9
Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside	143	20.9
White potatoes, white yams, cassava or any other foods made from roots	380	55.6
Dark green vegetables	258	37.8
Ripe mangoes, papayas, pawpaw, guava (yellow or orange on the inside of the fruit	167	24.5
Any other fruits or vegetables	109	16.0
Liver, kidney, heart or other organ meats	73	10.7
Meat such as beef, pork, lamb, goat, chicken, or duck	227	33.2
Eggs	109	16.0
Fresh or dried fish	15	2.2
Bean, lentils, or nuts	291	42.6
Cheese and other foods made from milk	506	74.1
Any other solid foods	326	47.7

3.5.2 Introduction and consumption to solid, semi-solid or soft foods

A fairly large proportion of children 6-8 months old (68.5%) were introduced to solid, semi-solid or soft foods at the appropriate age. Only 39.7% of both breastfed and non-breastfed children attained the Minimum Dietary Diversity (MDD), that is ate foods from **four** or more out of **seven** food groups (WHO, 2010) (see section 2.9 on definitions of IYCF indicators). Disaggregated by breastfeeding status, the percentage of breastfeeding children who attained MDD was 36.9% compared to 57.3% non-breastfed children (Table 6).

The percentage of both breastfed and non-breastfed children who attained the Minimum Meal Frequency (MMF) was 46.1% (Table 6). Disaggregated by age, younger children tended to attain the minimum meal frequency than older children; 49.4% of children 6-11 months old attained the MMF, 44.8% of those 12-17 months old and 43.8% of children 18-23 months old. Disaggregated by age and breastfeeding status 53.7% of breastfed children 6-8 months old attained the MMF and 49.1% of breastfed children 9-23 months old attained the MMF. In contrast, a lower percentage (20.7%) of non-breastfed children 6-23 months old attained the MMF (Table 6).

The percentage of children 6-23 months old who received a Minimum Acceptable Diet (MAD) was low at 24% (Table 6) implying that about three-quarters of the children were not receiving

diverse diets and also the meals were not as frequent as they should be. The children are therefore not getting adequate diet in terms of diversity and quantity.

Consumption iron-rich or iron-fortified foods was low as less than half of the children (43.3%) consumed such foods the day before the survey (Table 6).

Table 6: Prevalence of Key complementary feeding practices

Feeding practices	N=683	
	n	%
Proportion of infants 6-8 months old who received solid, semi-solid or soft foods the previous day: (N=124)	85	68.5
Minimum Dietary Diversity (MDD)		
Proportion of children 6-23 months old who received foods from ≥ 4 food groups the previous day: (N=683)	271	39.7
Proportion of children 6-23 months who received foods from ≥ 4 food groups the previous day disaggregated by breastfeeding status:		
<ul style="list-style-type: none"> • Not breastfed (N=96) • Breastfed (N=586) 	55 216	57.3 36.9
Minimum Meal Frequency (MMF)		
Proportion of both breastfed and non-breastfed 6-23 months of age who received foods the minimum times or more the previous day [3 times or more) (N=683)	315	46.1
Proportion of both breastfed and non-breastfed who received foods the minimum times or more the previous day disaggregated by age as follows:		
<ul style="list-style-type: none"> • 6-11 months [2 times] (N=243) • 12-17 months old (N=230) • 18-23 months old [3 times] (N=210) 	120 103 92	49.4 44.8 43.8
Proportion of breastfed children who received foods the minimum times or more the previous day by breastfeeding status and age:		
Breastfed:		
<ul style="list-style-type: none"> • 6-8 months old [2 times] (N= 123) • 9-23 months old [3 times] (N= 468) 	66 230	53.7 49.1
Non-breastfed:		
<ul style="list-style-type: none"> • 6-23 months old [4 times] (N=92) 	19	20.7
Minimum Acceptable Diet (MAD)		
Proportion of children 6-23 months of age who receive a minimum acceptable diet: (N=683)	164	24.0
Consumption of iron-rich or iron-fortified foods (N=683)	296	43.3

3.6 Factors influencing infant and young child (IYCN) feeding practices

Information on factors influencing IYCN practices was collected majorly through FGDs and KIIs and to a smaller extent through quantitative information collected through the household survey.

3.6.1 Factors enhancing infant and young child feeding practices

Overall, the findings indicated high levels of knowledge among the mothers/caregivers, the fathers and the other community members. The attitudes and perceptions on IYCN practices were also very positive and may have contributed to influencing breastfeeding practices positively. As a whole, culture was not reported to be a major constraint to appropriate IYCN practices except in a few areas.

Breastfeeding practices

Overall, the practice of exclusive breastfeeding (EBF) was reported to be improving at the community level but with variability from one area to another. It was reported during the FGDs that the majority of the children were being exclusively breastfed with a few areas reporting low exclusive rates. In Wabera village for example, it was reported in an FGD with men that the practice was not common. Similarly, in an FGD with women in Biligi village exclusive breastfeeding was not common.

One of the factors that is probably contributing to improved breastfeeding practices and in particular EBF rates is high level of knowledge in the community about breastfeeding practices. The quantitative findings showed the majority of the respondents to be knowledgeable about the critical aspects of breastfeeding such as duration and importance of EBF, timely initiation of breastfeeding, the health benefits of colostrum to the baby and that pre-lacteal feeds should not be given to the baby. These findings were corroborated by those from the FGDs. The community members including the men demonstrated high level of knowledge on breastfeeding practices.

In addition, community views on breastfeeding practices were positive. Exclusive breastfeeding practices, for example, was viewed as imparting a lot health benefits to the baby. The community members reported in the FGDs that exclusive breastfeeding of children makes them grow well; prevents diarrhoea because it boosts immunity and therefore it reduces expenses of going to health facility for medication because the baby hardly gets sick. It was reported that the household visits by CHVs and the health education given at the health facilities were majorly responsible for high community knowledge and positive attitudes and perceptions towards appropriate breastfeeding practices. It was reported that cultural factors did not hinder the practice of EBF in most areas and communities.

Complementary feeding practices

There was high knowledge demonstrated by mothers and other community members on appropriate complementary feeding practices. For example, the community members knew that complementary foods should be introduced at 6 months of age. In one of the FGDs, a participant reported:

“Complementary feeding should be introduced at 6 months. After 6 months breast milk alone is not enough for child growth and development”.

The knowledge did not always translate into appropriate practices. During the FGDs, it was reported in most of the villages that complementary feeding practices were inadequate for the

majority of the children. Many children were introduced to complementary feeding either before or after 6 months and many were not given a variety of foods as recommended. This finding was in agreement with the quantitative data which showed high level of knowledge on and at the same time inappropriate feeding practices based on most of the key indicators of complementary feeding. Many mothers were not able to translate the knowledge on complementary feeding into feeding practices because of factors beyond their control such as unavailability and inaccessibility of foods.

The only community reported to practice near-optimal complementary feeding practices was the Meru community because they had higher access to a variety of foods than other communities in the County.

3.6.2 Barriers to Infant and Young Child Feeding Practices

During the FGDs, many barriers were reported to be interfering with appropriate infant feeding practices as indicated below:

- Inadequate food for mothers affecting milk production among breastfeeding mothers;
- Family conflicts and violence causing stress to the mother and therefore not able to produce adequate breastmilk;
- EBF in particular is not practical when mother is sick;
- High maternal workload affecting time mother is available to breastfeed and prepare appropriate complementary foods for the baby;
- Alcoholism among some of the mothers interfering with quality of care given to children;
- Another pregnancy before the child is 2 years and this means the mother has to stop breastfeeding prematurely;
- High rate of adolescence pregnancy implying that the child has to be left in the care of the grandmother while the mother goes to school. The baby cannot therefore be exclusively breastfed and grandmother will give other foods;
- Inadequate knowledge on complementary feeding practices particularly on how to prepare foods for the children was reported to be a constraint to appropriate feeding practices;
- Unavailability of foods to provide appropriate complementary feeding to the children;
- Poverty making food inaccessible to the majority of the households; and
- Lifestyle (nomadism) making the mother not have adequate time to take care of children.

3.7 Responsive feeding of children 6-23 months old

Most of the children 6-23 months old (95.6%) were fed by their mothers/caregivers the day before the survey. Over half (55.0%) of the children ate all the food served to them at the main meal (Table 7). Most of the mothers/caregivers (80.7%) encouraged the children to eat during meals and 81.3% did so verbally. The majority of the mothers/caregivers who talked to the children (69.5%) praised them in order to encourage them to eat. About one-quarter of the children (22.2%) ordered the child to eat (Table 7). About two-fifths of the children self-fed during the main meal with the minority (15.2%) having self-fed during all the time during the meal (Table 7).

Table 7: Responsive feeding of children 6-23 months old

Responsive feeding of children 6-23 months old (N=683)	N=683	
Mother/caregiver fed the child the previous day:		
YES	653	95.6
NO	30	4.4
Child ate all the food at the main meal		
YES	359	55.0
NO	285	43.6
DNK	9	1.4
Did you do anything yesterday during the main meal to encourage the child to eat? (N=683)		
YES	527	80.7
NO	126	19.3
How child was encouraged to eat: (N=527)		
Offered another food or liquid	119	22.6
Encouraged verbally	341	67.7
Modeled eating (with or without toy)	10	1.9
Ordered strongly or forced the child to eat	31	5.9
Another helped feed the child	11	2.1
Another person encouraged the child	15	2.8
Talked to the child during the main meal:		
YES	531	81.3
NO	111	17.0
DNK	11	1.7
If YES, What did you say? (N=531)*		
Ordered child to eat	118	22.2
Praised the child	369	69.5
Asked the child questions	40	7.5
Talked about the food	79	14.9
Threatened the child	17	3.2
Told the child that she liked the food	41	5.3
Talked about other things	24	4.5
Did the child self-feed at any moment during the meal? (N=683)		
YES	276	40.4
NO	397	58.1
DNK	10	1.5
Did the child feed all the time during the main meal? (N=276)		
All the time	42	15.2
Half the time	120	43.5
Little bit of the time	112	40.6
DNK	2	0.7

*Multiple responses so total more than 100%

3.8 Feeding during illness

Appropriate feeding during illness is important to provide immunity to the child and also to prevent the child getting from getting malnourished. The majority of the children (78.5%) were offered less breast milk during the last time the child was ill. The same was true for the amount of non-breast milk liquids as 76.8% sick children was offered less amounts than usual. Similarly, the majority of the sick children (73.9%) were fed less food during illness than normal times. The reasons for this was that the children did not want the food or the liquids because of lack of

appetite (Table 8). Over one-third of the children (38.7%) were offered more food during recovery period and 37.2% offered the same amount of food as usual during recovery period (Table 8).

Table 8: Feeding during illness

	n	%
Has child ever been sick? (N=977)		
YES	548	56.1
NO	423	43.3
DNK	6	0.6
The amount of breast milk the child was offered during the last time illness (N=548)		
• Less, because the child did not want it	430	78.5
• Less because mother decided to give less	10	1.8
• More	28	5.1
• The same	66	12.0
• Child never breastfed or child not breastfeeding before illness	11	2.0
• DNK	3	0.5
The amount of non-breast milk liquids offered to the child during illness: (N=548)		
• Less, because the child did not want it	421	76.8
• Less because of mother's decision	16	2.9
• More	22	4.0
• The same	54	9.9
• Child never fed on non-breastfed liquids	30	5.5
• Does not know	5	0.9
The amount of food offered to the child during illness: (N=548)		
• Less, because the child did not want it	405	73.9
• Less because of mother's decision	22	4.0
• More	17	3.1
• The same	66	12.0
• Child never fed foods	32	5.8
• Does not know	6	1.1
The amount of food offered to the child after illness ended: (N=548)		
• Less, because the child did not want it	102	18.6
• Less because of mother's decision	11	2.0
• More	212	38.7
• The same	204	37.2
• DNK	19	3.5

3.8.1 Knowledge on micronutrient powders (MNPs)

When asked about awareness on MNPs, 44.1% of the mothers and caregivers indicated that they had seen or heard of them. About one-third of the mothers/caregivers (31.9%) had first seen or heard of them from the health facility and 7.4% from CHVs (Table 9). Only 10.5% of the children had received the commodity in the last 6 months with 5.8% of them having received the commodity from the health facility and 4.1% from the CHVs.

Table 9: Maternal Knowledge on MNPs

	n	%
Seen or heard of micronutrient powders (N=977):		
YES	431	44.1
NO	524	53.6
DNK	45	5.7
Where first seen or heard of micronutrient powders (N=977)		
Health facility	312	31.9
CHV	72	7.4
Support group	1	0.1
Community members (barazas/church/neighbor/friend)	18	1.8
Other family member	20	2.0
Mass media	2	0.2
Other	6	0.6
Did child receive micronutrient powders in the last six months: (N=977)		
YES	103	10.5
NO	328	33.6
Where the micronutrient powders was sourced from (N=977)		
Free from health facility	57	5.8
Bought from health facility	6	0.6
Free from CHV	40	4.1
Reasons why child did not receive micronutrient powder: (N=977)		
Do not know about micronutrient powder	39	3.9
Discouraged from what I heard from others	15	1.5
The child has not fallen ill, so have not gone to health facility	35	3.6
Health facility or outreach is far	9	0.9
Child receiving therapeutic or supplementary foods	3	0.3
I was not offered micronutrient powder at the health facility	153	15.6
Others	74	7.6

3.8.2 Preparation of food and consumption of Micronutrient Powders (MNPs)

The majority of the mothers/caregivers (73.8%) indicated that they stayed with the children most of the days for more than half a day for 0-1 day (Table 10). This is an indication that they took care of the children including feeding them by themselves most of the time. A large percentage of the children ate all the food served to them as 41.0% never left any food on the plate. About one-third (33.8%) left food on the plate a few times. In terms of what is done to the food that remained on the plate, 30.6% of the mothers reported that they gave the food to other children whereas 28.1% stated that they threw away the food whereas 19.6% put the left-over food in a cupboard to feed the baby later.

In terms of consumption of MNPs only 18.4% of the children were given the commodity at the appropriate frequency – every third day with 35.9% of the children being given daily and 32.0% every other day (Table 11). About one-fifth of the children (19.0%) were given food to which MNPs have been added daily. In terms of food preparation with micronutrient powders, the majority of the mothers (86.4%) mixed MNPs with cooked solid or semi-solid food that is warm and ready to eat which is the recommended practice. About half of the mothers (55.3%) mixed MNPs with the amount of food which the child could eat at once and 41.9% with all the food cooked for the child (Table 11).

Table 10: Preparation of food and consumption of micronutrient powders (MNPs)

	n	%
How often are you/mother away from the baby for most of the day? (N=977)		
Always (6 days/week)	68	7.0
Often (4-5 days/week)	39	4.0
Sometimes (2-3 days/week)	149	15.3
Never/few days (0-1 day/week)	721	73.8
How often the child's food remain on the plate: (N=977)		
Most of the times/always	115	11.8
Often/several times	131	13.4
Few times/once in a while	330	33.8
Never	401	41.0
What is done to the food that remains on the plate: (N=576)		
Put in the fridge to feed baby later	6	1.0
Put in a cupboard to feed baby later	74	12.8
Put elsewhere to feed baby later	113	19.6
Thrown away	162	28.1
Given to other children	176	30.6
Others	45	7.8
How frequent do you give your child micronutrient powders: (N=576)		
Every day	37	35.9
Every other day	33	32.0
Every third day	19	18.4
2 days per week at any day	4	3.9
At any day when I remember	6	0.6
Cannot remember/Do not know	4	0.4
Preparation of food with micronutrient powders: (N=103)		
Cook with child's food	6	5.8
Mix with cooked solid or semi-solid food that is warm and ready to it	89	86.4
Mix with water	5	4.9
Mix with child's drink	1	1.0
Other	2	1.9
Quantity of food mixed with the micronutrient powder: (N=103)		
All the amount of food prepared for the child	43	41.7
Quantity that a child can eat once	57	55.3
Other	3	2.9

3.9 Knowledge on infant and young child feeding practices

3.9.1 Knowledge on breastfeeding practices

Overall, the mothers/caregivers were knowledgeable on breastfeeding practices. The majority of the mothers (83.7%) knew the right time to initiate breastfeeding. Majority (93.9%) stated that a baby should be given colostrum and also knew the health benefits of colostrum to the child. Many mothers (55.0%) stated that colostrum was nutritious and 12.8% reported that colostrum prevents diseases and infections in the child (Table 11). About one-quarter (23.1%) of the mothers did not know the benefits of feeding colostrum to the baby. Most of the mothers (93.0%) also stated that babies should not be given pre-lacteals. Maternal knowledge on the duration of exclusive breastfeeding was high with 88.6% reporting that EBF should be conducted for 6 months. About one-quarter of the mothers (26.3%) reported that babies should be fed liquids with a bottle with nipple/teat indicating (Table 11). One-quarter (24.9%) and 25.1% of the mothers reported that babies should be fed liquids with cup/bowl and spoon and cup only respectively which is the recommended practice. In contrast, about the same percentage of mothers reported that babies should be fed liquids with bottle and nipple/teat, a practice that is

likely to cause infections to the child because of the challenges of keeping the nipple clean especially among mothers where hygiene and supply of clean water is an issue.

Table 11: Maternal knowledge on breastfeeding practices

Breastfeeding practices	n	%
How long after birth should a baby be put to the breast? (N=972)		
• Less than one hour	814	83.7
• More than one hour	137	14.1
• More than 24 hours	21	2.2
Should a baby be given colostrum? (N=977)		
YES	917	93.9
NO	26	2.7
What are the benefits of feeding the baby colostrum? (N=962)*		
• Nutritious to the baby	529	55.0
• Prevents diseases/infections	123	12.8
• Cleans baby's stomach	42	4.4
• Nothing specific	8	0.8
• Others	38	4.0
• Don't know	222	23.1
Within the first three days after delivery, should a baby be given anything to drink/eat other than breast milk? N=977		
YES		
NO	60	6.1
DNK	909	93.0
	8	0.8
If YES, What should be given? N=60*		
Milk other than breastmilk	26	43.3
Plain water	33	55.0
Sugar/glucose water	7	11.7
Gripe water	3	5.0
Sugar/salt solution	4	6.7
Fruit juice	1	1.7
Infant formula	3	5.0
Others	1	1.7
For how long (in months) should a child be fed on breast milk without being given anything else even water?		
Less than 6 months	28	2.8
6 months	896	88.6
7-12 months	58	5.7
>12 months	29	2.9
What should be used to feed liquids to a baby? (N=1011)		
Bottle with nipple/teat	257	26.3
Cup with spout	97	9.9
Cup with holes	245	25.1
Cup only	243	24.9
Cup/bowl and spoon	80	8.2
Feeding with palm/strokes	2	0.2
Gourd	2	0.2
Others	51	5.2

*Multiple responses

3.9.2 Knowledge on complementary feeding practices

In terms of having received information on complementary feeding practices, about two-thirds (67.9%) of the mothers/caregivers reported that they had received the information. The source of information for the majority of the mothers/caregivers was the health worker (53.4%) and mother/mother in law by 30.2%. The CHVs was a source of information for 9.4% of the

mothers/caregivers (Table 12). A large majority of the mothers 77.3% knew that solid, semi-solid or soft foods should be introduced to the child at 6 months of age whereas 15.6% stated that it should at between 7-12 months of age.

Table 12: Knowledge of complementary feeding practices

Knowledge on complementary feeding practices	n	%
Received information about feeding (N=977)		
YES	663	67.9
NO	312	31.9
DNK	2	0.2
Source of information on feeding: (N=663)		
Mother/mother in law	200	30.2
• Father/father in law	2	0.3
• Other relative	9	1.4
• Neighbour/friend	15	2.3
• Day care centre	6	0.9
• Siblings	2	0.3
• Health worker	354	53.4
• Community Health volunteer (CHV)	62	9.4
• Others	13	2.0
Age at which solid, semi-solid and soft foods should be introduced to a child (N=977)		
< 6 months	46	4.7
6 months	771	77.3
7-12 months	152	15.6
>12 months	1	0.1

3.10 Attitudes on infant and young child feeding practices

On the whole, maternal attitudes on infant and young child feeding practices were positive. Most of the mothers (92.5%) were of the opinion that babies should be put to the breast immediately after birth (Table 13). A large majority 98.2% also stated that they would feed their babies colostrum and 89.5% reported that it is important to exclusively breastfeed the baby without giving anything else or drink including water for 6 months (Table 13).

Table 13: Maternal attitudes on infant and young child feeding practices

Attitudes on infant and young child feeding practices	n	%
In your opinion should a baby be put to the breast immediately they are born (N=977)		
YES	904	92.5
NO	51	5.2
DNK	77	2.3
Would you feed your baby colostrum? (N=977)		
YES	959	98.2
NO	10	1.0
DNK	8	0.8
Why would you not feed your baby colostrum? (N=10)		
Dirty milk	8	80.0
Others	2	20.0
In your opinion is it important for a baby to be breast fed on for 6 months without being introduced to anything else or drink including water? (N=977)		
YES		
NO	874	89.5
DNK	86	8.8
	17	1.7

3.11 Perceptions on infant feeding practices

Overall, the maternal perceptions towards infant feeding practices were positive. The majority of the mothers (81.7%) disagreed with the idea that certain foods are taboo and should not be fed to pregnant women (Table 14). Similarly, 87.1% the mothers disagreed with the idea that a newborn baby should be given liquids or semi-liquids and the same percentage disagreed with the idea that colostrum is dirty and should not be given to children. A majority of the mothers (87.6%) disagreed with the idea that a baby cannot survive on breastmilk alone for six months. In terms of cultural practices, 85.4% of the mothers disagreed with the perception that certain foods are taboo and should not be fed to a child. A large percentage (84.5%) of mothers disagreed with the belief that young children should not be breastfed up to 2 years (Table 14).

Table 14: Maternal perceptions on infant feeding practices

Perceptions on infant feeding practices	N=977	
	n	%
Some people believe that certain foods are taboo and should not be fed to pregnant women		
Agree	158	18.9
Not sure/neutral	54	5.5
Disagree	799	81.7
Some people believe that a new-born baby should be given other liquids/semi-liquids		
Agree	75	7.8
Not sure/neutral	85	8.7
Disagree	851	87.1
Some people believe that colostrum is dirty and should not be fed to new born babies:		
Agree	66	6.7
Not sure/neutral	81	8.7
Disagree	864	87.1
Some people believe that a baby cannot survive on exclusive breastfeeding for six months?		
Agree	102	10.4
Not sure/neutral	54	5.4
Disagree	855	87.6
Some people believe that certain foods are taboo and should not be fed to a child.		
Agree	82	8.4
Not sure/neutral	94	9.6
Disagree	835	85.4
Some people believe that a young child should not be breastfed up to 2 years.		
Agree	110	11.2
Not sure/neutral	71	7.3
Disagree	830	84.5

3.12 Ante Natal Care (ANC) for pregnant women

Women who were currently pregnant during the survey were asked questions about ante-natal care during the current pregnancy. A majority (60.0%) of the women had received ANC services (Table 15). The mean age of gestation at which the first ANC visit was made was 4.7 ± 1.8 months. In terms of frequency of ANC attendance, the mean was 3.4 ± 1.4 times. The majority of the women received services from public health facilities: hospital (26.7%); public health centre (23.3%) and 10.0% from dispensaries. About one-quarter 23.3% received the services from private hospital. Only 6.7% mothers received services from private clinics and another 6.7% from faith-based clinics. The majority (76.7%) of the women were attended to by nurses/midwives. Most of the women received the essential services which should be offered in ANC clinics (Table 15). The least offered services were weight measurements offered to only 56.7%; de-worming tablets given to 43.3%; MUAC measurements taken for only 56.7%; breastfeeding information to 53.3% and infant feeding information to 43.3%.

When asked to state the services offered at least once during the ANC visits; the least offered services were counselling on breastfeeding received by 53.3% of the mothers and information on infant feeding by 43.3% (Table 15). The overall picture is that nutrition services were not offered to the same extent as the other health services. The major source of the information was the nurse (63.3%).

Table 15: ANC care for women pregnant during the survey

	n	%
Seen anyone for ANC during this pregnancy (N=50)		
YES	30	60
NO	20	40
Mean gestation age when first receive Ante-natal care (N=30)	Mean 4.7 (\pm 1.8)	
Mean number of times received ante-natal care	Mean 3.4 (\pm 1.4)	
Where ANC services were received: (N=30)		
Public Hospital	8	26.7
Public Health Centre	7	23.3
Public Dispensary	3	10.0
Private Hospital	7	23.3
Private clinic	1	3.3
Faith-based Hospital/Clinic	2	6.7
Others	2	6.7
Who attended to you during ANC visits: (N=30)		
Doctor	5	16.7
Nurse/Midwife	23	76.7
Others	2	6.7
Services offered at ANC at least once (N=30)*		
Weight measurement	17	56.7
BP measurement	28	93.3
Iron folic acid supplementation	24	80.0
Anti-malaria drugs	9	30.0
Blood sample/HB	26	86.7
Urine sample	25	83.3
Tetanus vaccine	20	66.7
De-worming tables	13	43.3
HIV test	26	86.7
Mosquito net provided	20	66.7
MUAC measurement	17	56.7
Information or counseling that you have received during this pregnancy on the following: (N=30) *		
Test during pregnancy	26	86.7
Birth planning	18	60.0
Place of delivery	21	70.0
Own health & hygiene	18	60.0
Own nutrition	21	70.0
HIV/AIDS	23	76.7
Breastfeeding	16	53.3
Infant feeding	13	43.3
Iron folate supplementation	20	66.7
Growth monitoring	21	72.4
The source of information given:		
Doctor	7	23.3
Nurse	19	63.3
Others	4	13.3

*Multiple responses

3.12 Iron and folic acid (IFAS) supplementation for women pregnant during the survey

3.12.1 Pregnant women's knowledge on IFAS

Pregnant women were asked questions to establish their knowledge on IFAS. The majority of the women (92.0%) had heard about IFAS and the same percentage (92.0%) first heard of IFAS at the health facility (Table 16). A high percentage of the women (88.7%) reported that they knew the benefits of IFAS. The women were highly knowledgeable on the health benefits of IFAS during pregnancy; with a large majority (86.7%) reporting that IFAS increased blood;

about one-quarter (22.0%) prevents anaemia and 17.1% stating that it prevents dizziness as among other correct responses (Table 16).

Table 16: Pregnant women’s knowledge on IFAS

	n	%
Heard information on IFAS for pregnant women: (N=50)		
YES	46	92.0
NO	4	8.0
Where first heard information on IFAS: (N=50)		
Health staff of health facility	46	92.0
CHVs	2	4.0
Friend/support group	2	4.0
Know benefits of taking IFAS during pregnancy (N=977)		
YES	867	88.7
NO	144	14.3
The benefits of taking IFAS tablets during pregnancy:* (N=867)		
Prevents anaemia among pregnant women	191	22.0
Prevents dizziness	148	17.1
Increases blood	752	86.7
Helps development of the foetus	122	14.1
Improves immunity	79	9.1
Increases energy	77	8.9
Improves concentration	4	2.5
Others	22	4.8
Do not know	42	0.5

* Multiple responses

3.12.2 Provision and consumption of IFAS by pregnant women

The pregnant women were asked to state whether they had received IFAS or not. Over two thirds (68.0%) of them reported that they had received the supplements. Of those who received the supplements, 38.0% received either iron tablets of folic acid whereas 20.0% received the combined supplements (Table 17). Iron tablets were provided more commonly compared to either folic acid alone or combined iron and folic acid tablet. The pregnant women received iron only tablets for a mean number of days of 44.5 ± 26.2 ; folic acid tablet 36.3 ± 20.5 and combined iron and folic acid for 48.0 ± 25.3 days.

There was a discrepancy in the number of the supplements given and the number consumed with the number given being higher than that consumed implying that the pregnant women did not consume the supplements on a daily basis. The mean number of days for which the pregnant women consumed iron supplements was 39.2 ± 25.2 ; folic acid tablets 31.5 ± 22.6 days and the combined iron and folic acid tablet 33.8 ± 19.8 days (Table 17) indicating that there were some days that the supplements were not consumed despite the mothers having received them. When asked if there were days the women had the supplements but did not take them, about one third of them (34.0%) responded in the affirmative. The most common reason given for not taking the supplements was the negative side effects reported by 52.9% and 35.0% who reported that they forgot to take the supplements. These findings however should be interpreted cautiously because of the relatively small size (N=17) as shown in Table 17.

The pregnant women were also asked whether they were currently taking food supplements fortified with micronutrients. Only a small percentage were taking such supplements; 32.0%

were taking either CSB, Advantage PLUS or UNIMIX and 18.0% were taking ready to use supplementary foods. It should be noted that almost one-quarter of the women (24.0%) were consuming soil or mineral stones (Table 17).

Table 17: Provision and consumption of IFAS by pregnant women

Provision of IFAS		
	n	%
Have received the following: (N=50) ¹		
YES	34	68.0
NO	16	32.0
Types of IFAS received:		
Iron tablets/syrup (N=50)*	19	38.0
Folic acid tablets	19	38.0
Combined iron/folic acid	10	20.0
Number of days for which the supplements were given: (mean ±)		
Iron tablets/syrup	44.5±26.2	
Folic acid tablets	36.3± 20.5	
Combined iron/folic acid	48.0±25.3	
Consumption of IFAS		
Number of days the supplements have been consumed (mean ±)		
Iron tablets/syrup		
Folic acid tablets	39.2±25.2	
Combined iron/folic acid	31.5±22.6	
	33.8±19.8	
Days you had IFAS at home but did not take them (N=50)		
YES	17	34.0
NO	33	66.0
Reasons for not taking them* (N=17)		
Forgot	6	35.3
Side effects	9	52.9
Felt better and did not think I needed them anymore	1	5.9
Did not know the benefits of taking IFAS	1	5.9
Other	1	5.9
Currently taking any of the following:* (N=50)		
CSB, Advantage PLUS, UNIMIX	16	32.0
Ready to use supplementary feed	9	18.0
Herbal supplements	1	2.0
Soil/mineral stones	12	24.0

*Multiple responses

3.13 Ante-natal care for mothers with children 0-23 months old

Frequency and timing of ANC clinic attendance

Mothers of children 0-23 months old were asked questions about their ANC attendance when pregnant with the youngest child. A large percentage (97.4%) of the mothers attended ANC at least once (Figure 6). Only 2.7% of the mothers made a first ANC visit during the first month of pregnancy. Most of the mothers (63.8%) made their first visit during the second trimester followed by 29.6% during the first trimester and 6.5% during the third trimester. About two-thirds (62.9%) made four or more ANC visits during the entire pregnancy period (Figure 6). The mean number of times that the mothers attended ANC was 4.2±1.5.

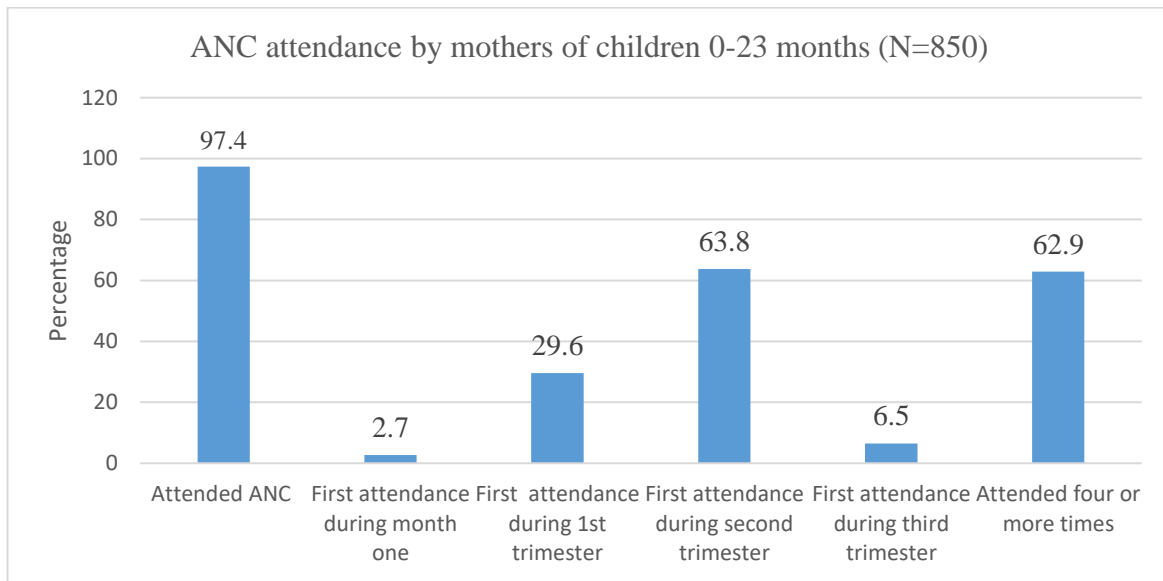


Figure 6: ANC attendant for mothers with children 0-23 months old

Reasons for not attending ANC clinic

The reasons given by the few mothers who did not attend ANC at all was that the health facility was too far by 9.8% and that the TBA services were adequate by 6.7%. Other reasons given for not attending ANC clinic by relatively smaller percentages of the mothers were that the mothers were not aware of the importance of ANC services, unfriendly health workers and cultural barriers such as being attended to by male or young staff members.

Services offered at ANC clinic

Mothers were asked to report the information or counselling offered during the ANC clinic visits. Most of the essential services supposed to be offered during ANC were offered as reported by a majority of the mothers (Table 17). Almost all the women (98.0%) went through a pregnancy test and 95.6% HIV/AIDS test. The least provided information to the mothers was on infant feeding at 71.1%.

When asked what services were offered at least once during the ANC visits, most of the services had been offered to a large majority of mothers: weight measurement to 96.8%; BP measurement to 96.9%, IFAS supplementation to 92.8% and the rest of the services were offered to over 85.0% of the mothers with the exception of de-worming tablets at 59.3% and MUAC measurement at 74.0% (Table 17).

Table 17: Services offered at the ANC clinic

	n	%
Information or counseling that you received during this pregnancy on the following:* (N=850)		
Test during pregnancy	833	98.0
Birth planning	666	78.4
Place of delivery	731	86.0
Own health & hygiene	753	88.6
Own nutrition	720	84.7
HIV/AIDS	813	95.6
Breastfeeding	721	84.8
Infant feeding	604	71.1
Iron folate supplementation	774	91.1
Growth monitoring	753	88.6
Services offered at ANC at least once * (N=850)		
Weight measurement	823	96.8
BP measurement	824	96.9
Iron folic acid supplementation	789	92.8
Blood sample/HB	786	88.0
Urine sample	748	92.5
Tetanus vaccine	752	88.5
De-worming tables	504	59.3
HIV test	816	96.0
Mosquito net provided	729	85.8
MUAC measurement	629	74.0

3.13.4 Factors influencing ANC attendance

During the FGDs it was reported that ANC attendance among the majority of the pregnant women was irregular with very few women attending 4 times or more during the entire duration of the pregnancy. It was also reported that the majority of the women start attending ANC late. It was stated during one of the FGDs with men in Wabera village that:

“The majority of the women attend ANC clinics though not regularly. The women also start attending ANC late – some starting as late as 8 months. They start late so that they do not visit many times”.

The main reasons which encouraged mothers to attend ANC clinics were to receive the services offered at the ANC clinic such as: checking of HIV status; monitoring of the health of the developing foetus; health education; to get IFAS; STIs investigation; checking of blood pressure and blood group and the weight of the mother checked.

The following reasons were given for irregular visits to the ANC clinics:

- Distance to the health facilities;
- Some of the women do not understand the importance of ANC;
- Pastoralism lifestyle causes the mothers to follow livestock when they migrate to greener pastures;
- Insecurity in some places making mothers not be able to access health facilities; and
- Lack of transport to some areas make it a challenge to access health facilities.

3.14 Iron and folic acid supplementation (IFAS) for mothers with children 0-23 months old

3.14.1 Maternal knowledge on IFAS

Mothers were asked questions to establish their knowledge on various aspects of IFAS. The majority of the mothers had heard of IFAS (95.6%). The main source of information where mothers first heard of IFAS was the health facility by 91.5%. The next common source of information was the CHVs for 6.8% of the mothers (Table 18). The majority of the women who were aware about IFAS (85.3%) reported that they knew the benefits of taking IFAS during pregnancy. The most commonly known benefit of IFAS to a majority of the women was that it increases blood (86.9%) and that it prevents anaemia by 24.2% and 20.0% knew that it prevents dizziness. Other health benefits mentioned by relatively smaller percentages of the mothers included improving immunity to the baby to be born, improves concentration and helps in the development of the foetus (Table 18).

Table 18: Maternal knowledge on IFAS for women with children 0-23 months old

	n	%
Heard information on IFAS for pregnant women: (N=850)		
YES	813	95.6
NO	37	4.4
Where first heard of information on IFAS: (N=813)		
Health staff of health facility	744	91.5
CHVs	55	6.8
Community members (<i>baraza</i> /church/neighbour)	3	0.4
Friend/support group	4	0.5
Husband/male partner	2	0.2
Other family member	4	0.5
Other	1	0.1
Know benefits of taking IFAS during pregnancy (N=850)		
YES	833	98.0
NO	17	2.0
The benefits of taking IFAS tablets during pregnancy:* (N=833)		
Prevents anaemia among pregnant women	202	24.2
Prevents dizziness	167	20.0
Increases blood	724	86.9
Helps development of the foetus	111	13.3
Improves immunity	83	10.0
Increases energy	86	10.3
Improves concentration	4	0.5
Other	14	1.7
Do not know	19	2.5

3.14.2 Maternal provision and consumption of IFAS by mothers 0-23 months old

Mothers were asked about the number of IFAS they received during the pregnancy with their youngest child aged 0-23 months old. The majority (91.1%) reported that they had received IFAS during the pregnancy (Table 19). Just over half (53.1%) received IFAS in the form iron tablets with smaller percentages having received folic acid tablets (45.7%) and combined iron and folic acid (46.2%). Majority of the mothers received relatively few tablets (to last for less than 60 days) for each of the three types of IFAS; 70.1% for iron supplements, 69.7% for folic acid and 69.5% for the combined iron/folic acid. Those who received the supplements for ≥ 90 days were

relatively few; 19.2% for iron supplements, 20.4% for folic acid and 18.8% for the combined iron and folic acid supplements (Table 19).

Table 19: Provision of IFAS to mothers of children 0-23 months old

	n	%
Received any of the following when pregnant with child:* (N=873)	795	91.1
Received Iron tablets/syrup	422	53.1
Received Folic acid tablets	363	45.7
Received Combined iron/folic acid	367	46.2
Number of days for which the supplements were given: (N=422)		
Iron tablets/syrup:		
<60 days	296	70.1
60-89 days	45	10.7
≥ 90 days	21	19.2
Folic acid tablets: (N=363)		
<60 days		
60-89 days	253	69.7
≥ 90 days	36	9.9
	74	20.4
Combined iron/folic acid: (N=367)		
<60 days		
60-89 days	255	69.5
≥ 90 days	43	11.7
	69	18.8

In terms of the number of days the mothers consumed IFAS during the entire pregnancy period, the majority consumed the supplements for less than 60 days; 91.1% (iron tablets), 83.3% folic acid supplements and 78.6% combined iron and folic acid supplements (Table 20). Those who consumed the three types of supplements for ≥ 90 days were less than 15.0% for each of the three types of supplements.

Table 20: Consumption of IFAS to mothers of children 0-23 months

	n	%
Received any of the following when pregnant with child:* (N=873)	795	91.1
Received Iron tablets/syrup	422	53.1
Received Folic acid tablets	363	45.7
Received Combined iron/folic acid	367	46.2
Number of days for which the supplements were given: (N=422)		
Iron tablets/syrup:		
<60 days	296	70.1
60-89 days	45	10.7
≥ 90 days	21	19.2
Folic acid tablets: (N=363)		
<60 days	253	69.7
60-89 days	36	9.9
≥ 90 days	74	20.4
Combined iron/folic acid: (N=367)	255	69.5
<60 days	43	11.7
60-89 days	69	18.8
≥ 90 days		
Currently taking any of the following: (N=873)		
CSB, Advantage PLUS, UNIMIX	175	20.0
Ready to use supplementary feed	102	11.7
Herbal supplements	25	2.9
Soil/mineral stones	175	20.0

Less than half of the mothers (44.7%) reported that there were days that they had the supplements at home but did not take them (Table 20). The main reasons given by those who did not take the supplements despite having them at home were forgetting to take the supplements mentioned by 47.9% of the mothers, side effects such as nausea reported by 55.9% and 10.3% stated that they felt better and therefore did not see the need to continue taking the supplements.

Mothers were asked if they were currently taking any other supplements. One-fifth (20%) of the mothers reported that they were taking either CSB, Advantage PLUS or UNIMIX. A SIMILAR proportion ate soil or mineral stones and 11.7% consumed ready to use supplementary feeds (Table 20).

Table 20: Consumption of IFAS by mothers of children 0-23 months

	n	%
Number of days the supplements were consumed throughout the pregnancy		
Iron tablets/syrup (N=45):		
<60 days	310	73.5
60-89 days	39	9.1
≥ 90 days	73	17.3
Folic acid tablets (N=45):		
<60 days	269	74.1
60-89 days	29	8.0
≥ 90 days	65	17.9
Combined iron and folic acid (N=45):		
<60 days	266	72.5
60-89 days	37	10.1
≥ 90 days	64	17.4
Days you had IFAS at home but did not take them: (N=873)		
YES	390	44.7
NO	483	55.3
Reasons for not taking them*: (N=390)		
Forgot	187	47.9
Side effects	218	55.9
Felt better and did not think I needed them anymore	40	10.3
Did not know for how long I should take the tablets	7	1.7
Did not know the benefits of taking IFAS	6	1.5
Other	21	5.4
Currently taking any of the following: (N=873)		
CSB, Advantage PLUS, UNIMIX	175	20.0
Ready to use supplementary feed	102	11.7
Herbal supplements	25	2.9
Soil/mineral stones	175	20.0

3.14.3 Factors influencing the consumption of IFAS

During the FGDs it was reported that many pregnant women did not consume IFAS on a regular basis despite the majority being knowledgeable on the health benefits of the commodity. The level of knowledge varied from one area to another and among men and women. In general, women were more knowledgeable than men on the benefits of IFAS. The majority of the women

in the FGDs were aware of the health benefits of IFAS. The sentiments expressed by a woman in an FGD among the Borana community demonstrates the high knowledge among the women in the community; *“There is a woman in this village who did not take IFAS during pregnancy and gave birth to child with neural tube defect”*.

Some men also knew the health benefits of IFAS for pregnant women and unborn child. A man in an FGD in Ola Jorale village reported that; *“The tablets add blood during pregnancy and helps the unborn child to grow healthily”*.

The majority of the men were however not knowledgeable on the health benefits of IFAS. During an FGD for men in Wabera village, one participant stated that: *“I did not know IFAS tablets. I thought they were for family planning”*. In another FGD among the Turkana community it was reported that: *“Men are not aware of the benefits of IFAS. It is only women who are educated on benefits of IFAS, men are not”*.

The main reasons reported for non-adherence to taking IFAS were the side effects. A woman expressed the following sentiments in an FDG; *“IFAS causes vomiting because it has a bad smell. IFAS also causes dizziness and headaches”*.

The findings on adherence to taking IFAS from the FGDs was in agreement with the quantitative data which indicated that there were days the pregnant women had the IFAS at home but did not take them.

Other reasons reported for poor adherence of IFAS included:

- Long distance to health facilities;
- Negative attitude of health workers towards clients; and
- Limited knowledge among some women particularly the illiterate ones and those living far away from health facilities.

3.15 Post-natal care services for mothers with children 0-23 months of age

Mothers of children 0-23 months old were asked questions about post-natal services they received after the delivery of their youngest child. Majority of the mothers (65.2%) delivered at a health facility and about one quarter (24.2%) delivered at home assisted by TBAs. Smaller percentage of mothers; 7.0% and 2.1% delivered at home without assistance and assisted by a nurse respectively (Table 21). Of those mothers who did not deliver in a health facility, 43.4% took the child to the clinic within 2 weeks of birth, 21.7% after one month and 16.6% did not take the child to the clinic (Table 21).

The majority of those mothers who did not deliver in a health facility received postnatal care from a health care worker within time ranging from one week (23.9%), within two weeks (23.9%) to within one month 22.5% (Table 21). A relatively large percentage of mothers (21.5%) did not receive post-natal care from a health care worker.

Table 21: Post-natal care services mothers with children 0-23 months old

	n	%
Place of delivery of child (N=873)		
At home by TBA	211	24.2
At home by nurse	18	2.1
At home without assistance	61	7.0
Hospital	569	65.2
Other	14	1.6
If not at health facility, how long did it take before you took child to clinic for the first time? (N=290)		
Immediately (within 24 hours)	27	9.3
Within the first 2 weeks	126	43.4
Between 2 weeks to one month	23	7.9
After one month	63	21.7
Child not taken	48	16.6
Does not intend to take child to clinic	3w	1.0
If you did not deliver at health facility, how long after delivery were you seen by a health care worker?(N=289)		
Immediately (within first 48 hours)	24	8.3
Within one week	69	23.9
Within two weeks	69	23.9
After one month	65	22.5
Not seem	62	21.5

3.15.3 Factors influencing the uptake of PNC services

The uptake of PNC services was reported to be low during the FGDs, a finding that concurs with that from the quantitative data. The main reason for attending PNC was for child immunization. The other factors reported to encourage PNC attendance included: treatment of mother and child when sick; monitoring of child growth; provision of incentives such as bed nets; information on breastfeeding; checking of HIV status and provision of family planning services; and malnourished children and mothers enrolled in food programmes.

In an FGD for men, one participant stated that; *“Our wives attend PNC clinics to get information on child immunization, to have the growth of the child monitored, get information on family planning and also to know their HIV status”*.

The main barriers to the uptake of PNC services included: poor attitude by the health workers towards the clients (some nurses are rude to the clients); inconsistent provision of health talks and long distance to health facility.

3.16: Dietary intake by women of reproductive age (15-49 years)

Information was collected to establish the quality of dietary intake by mothers. Twenty-four hour (24 hour-recall) method was used to collect information on dietary intake so as to establish the types of foods eaten and the dietary diversity of the women.

3.16.1 Foods eaten the previous day by women of reproductive age

Mothers/caregivers were asked to state the foods they ate the previous day. The foods consumed were categorized into foods groups as shown in Table 22. The majority of the mothers/caregivers (96.7%) ate cereals followed by fats and oils and spices and condiments (mostly used for cooking food) by 93.6% and 78.8% respectively. Sweets mainly in the form of sugar in tea and other beverages were also consumed by a majority of the mothers/caregivers at 87.6%. The least consumed foods were vitamin A-rich vegetables and tubers by 25.2%, vitamin A-rich fruits by 21.7%, organ meat by 15.6% and eggs by 16.3% (Table 22).

Table 22: Foods eaten by women the previous day

Food groups	N=1003	
	n	%
Cereals (maize, rice, wheat, sorghum, millet or any other grains or foods made from these foods)	970	96.7
White roots and tubers (white potatoes, white yam, white cassava and other foods)	486	48.5
Vitamin A-rich vegetables and tubers	253	25.2
Dark green leafy vegetables	419	41.8
Other vegetables (tomato, onion, eggplant etc.)	271	27.0
Vitamin A-rich fruits	218	21.7
Other fruits (inclusive of wild fruits)	166	16.6
Organ meat	156	15.6
Eggs	163	16.3
Flesh meat	422	42.1
Fish and sea food	19	1.9
Legumes, nuts and seeds	508	50.6
Milk and milk products	565	56.3
Oils and fats	939	93.6
Sweets (sugar, honey, sweetened soda, sweetened juices, sugary foods such as chocolates, candies, cookies and cakes)	879	87.6
Spices and condiments	790	78.8

13.6.2 Maternal dietary diversity

Consumption of a minimum of foods from at least 5 out of 10 food groups based on FAO guidelines (FAO, 2016) [see section 2.9 under methodology for details of food groups] was considered an attainment of minimum dietary diversity (MDD) for the women of reproductive age (MDD-W). The percentage of women who attained the MDD was 27.4% (Figure 7) implying that most women were consuming diets limited in a variety of nutrients. The mean MDD-W was (4.4±2.6).

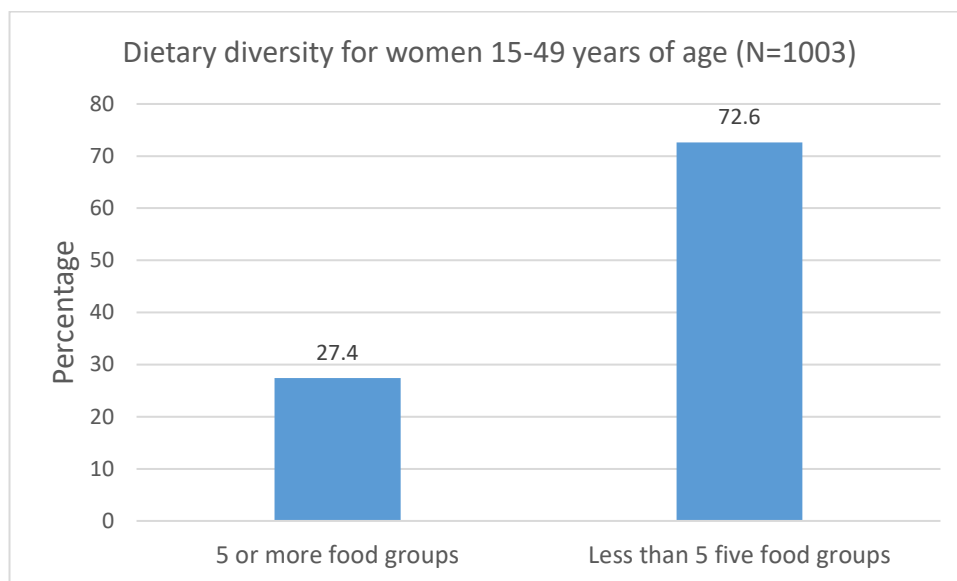


Figure 7: Dietary diversity among women of reproductive age

13.6.3 Factors influencing maternal dietary intake

The findings of the FGDs corroborated these quantitative findings which showed that the dietary intake of both pregnant and lactating women was inadequate with limited variation between the ethnic groups (Borana, Samburu, Meru and Turkana). The factors influencing maternal nutrition and dietary intake of women reported among these communities were majorly the same. Availability of foods was reported as a major factor negatively influencing dietary intake among women; the markets were either too far or transport costs too high for the people to access foods. In addition, it was reported that there was no variety of foods available in the markets and this contributed to the low dietary diversity consumed by the women. Another major factor contributing to inadequate dietary intake was poverty; the majority of the households had limited income or purchasing power to buy adequate foods for the women particularly pregnant and lactating women. High maternal workload including women herding livestock left them with limited time to prepare adequate meals. Insecurity and banditry was another factor reported to influence dietary intake among women. In some of the communities, cultural factors also influenced the foods eaten by pregnant and lactating women. Among the Borana for example, some foods were not recommended for pregnant women for various reasons.

“Some people believe that eating a lot of food will cause the foetus to grow big resulting in difficult birth, so they tend not to eat much”, stated a man in an FGD in Wabera Village.

It was also reported among the Boranas and Somalis that, *“ Certain foods; eggs, avocado, potatoes and milk to which water should not be eaten by pregnant women because they will make the foetus grow big and consequently cause challenges during delivery”*, reported a women in FGD in Eldera village.

In contrast, the factors reported to influence women’s diet among the Turkana was livelihood; some men migrate with animals in search for pasture leaving families without food. Prolonged drought was stated as a major factor contributing to inadequate dietary intake among the women because of shortage of food. Inadequate knowledge on the proper diet for women was also mentioned to contribute to the type of foods eaten especially by pregnant and lactating women.

Among the Turkana, culture did not influence the foods eaten by pregnant women. This is demonstrated by the sentiments expressed in the statement below:

“In our community, pregnant women are not denied any food for cultural reasons”, stated a woman in an FGD among the Turkana community. Nonetheless, among the foods recommended for pregnant women were:

- Blood to increase blood in the mother reported by the Turkana.
- Green vegetables and fruits to boost immunity.
- *Terere or mchicha* to prevent anaemia as mentioned by a lady in an FGD among the Meru community.
- *Porridge mixed with potatoes to add energy to the body*- reported by a lady from the Meru community.

Among the foods recommended for pregnant women were:

- Blood to increase blood in the mother reported by the Turkana.
- Green vegetables and fruits to boost immunity.
- *Terere or mchicha* to prevent anaemia as mentioned by a lady in an FGD among the Meru

The following statement expresses the overall diet of pregnant and lactating women’s diet in Isiolo:

“There is no special diet for the pregnant and lactating women. They eat the same food as the rest of the family because the family cannot afford special foods due to poverty”, stated a CHV in an FGD.

3.17 Use of fortified foods by households

Mothers/caregivers of children 0-23 months old were asked questions about use of fortified foods in their households and the benefits of feeding fortified foods to children. The majority of the mothers/caregivers (68.2%) reported that they used foods and food products enriched with vitamins and minerals (Table 23). When asked the specific fortified foods they consumed, almost all the households (91.7%) reported that they consumed fortified maize flour, whereas 82.7% consumed fortified wheat flour, 85.4% fortified salt and 73.4% fortified cooking fats and oils. Only 14.3% consumed fortified margarine (Table 23). The main oil/fat consumed by the households was oil by 57.8% of the households followed by vegetable fat by 39.3% of the households (Table 23).

The mothers/caregivers were asked about the benefits of feeding children fortified flours and oils with vitamins and minerals. One-third of the mothers/caregivers (33.6%) reported that the fortified foods improve the body’s ability to fight diseases and 23.4% that the fortified foods makes the healthy, strong and active (Table 23). Many of the respondents (38.1%) did not know the benefits of feeding children with these foods.

Table 23: Use of fortified foods

	n	%
Use of foods and food products enriched with vitamins and minerals (N=1003)		
YES	684	68.2
NO	319	31.8
Used fortified foods used:* (N=684)		
Maize flour	627	91.7
Wheat flour	566	82.7
Margarine	98	14.3
Cooking fats and oils	502	73.4
Salt	584	85.4
Other	3	0.4
What is the main oil/fat consumed by your household? (N=1003)		
Vegetable fat	400	39.9
Animal fat	23	2.3
Oil	580	57.8
In your opinion, what are the benefits of feeding children flours and oils fortified with vitamins and minerals* (N=1003)		
Improve body's ability to fight diseases	337	33.6
Improves child's appetite	174	17.4
Improve child's to learn and develop	167	16.7
Makes children healthy, strong and active	235	23.4
Prevent vitamins and minerals deficiency	108	10.8
Others	4	0.4
DNK	383	38.1

* Multiple responses

3.18 Maternal and child nutritional status based on MUAC measurement

Maternal nutritional status based on MUAC measurement showed that 4.8% of the women were wasted (Table 24). This finding may be an indication that the women were probably getting adequate macronutrients but inadequate micronutrients as only 27.4 of them consumed a diet the recommended minimum dietary diversity. The rate of wasting among the children (MUAC <125mm) was high 7.2% with 1.2% being severely wasted (Table 24).

Table 24: Maternal and child nutritional status

Maternal and child nutritional status	n	%
Maternal Nutritional Status (N=1002)		
Normal >210 mm	954	95.2
Wasted <210 mm	48	4.8
Child nutritional status (N=665)		
Severely wasted <115 mm	7	1.1
Moderately wasted >115 mm to <125mm	43	6.5
At risk 125 to <135 mm	180	27.1
Normal ≥135 mm	654	65.4

4: DISCUSSION

This discussion focuses on the key indicators of MIYCN. An attempt is made to discuss the plausible reasons for the observed rates in these indicators based on both the quantitative and qualitative findings. Qualitative data from this survey has been used wherever appropriate to triangulate, or provide in-depth information, to the quantitative findings. Discrepancies between quantitative and qualitative findings, if any, are highlighted. The findings of this survey will provide baseline information useful for setting benchmarks and measuring progress of MYICN interventions in Isiolo County since this is the first KABP survey to be conducted in the County.

4.1 Infant and young child feeding practices

Appropriate infant and young child feeding practices play a major role in the healthy growth and development of children. The impact of undernutrition during the “window of opportunity” from minus 9 to 24 months (i.e. from pregnancy to two years old) has irreversible long-term effects on health and on cognitive and physical development.

4.1.1 Breastfeeding practices

Overall, the breastfeeding practices were optimal except for the following indicators: giving of pre-lacteal feeds; continued breastfeeding at 2 years; practical support given to mothers to help start breastfeeding and bottle feeding with teat/nipple. The optimal breastfeeding practices may have been contributed to by the high level of knowledge among mothers, fathers and other community members. The findings on the high level of knowledge from the FGDs concurs with that from the quantitative data.

The attitudes and perceptions towards breastfeeding practices were positive and again there was agreement in the findings from the household survey and those from the FGDs. Also, there was limited cultural barriers to the adoption of scientifically appropriate feeding practices. Nonetheless, despite the relatively high exclusive breastfeeding rate recorded in this survey, effort is still needed to improve the rate to at least 90%, the minimum recommended by WHO to have impact on and reduce mortality by 13% among the underfives (Lancet, 2003). It should also be noted that most children were exclusively breastfed for 3 months and therefore the need for concerted efforts to encourage mothers to continue with the practice up to 6 months.

The current KABP survey is the first to be conducted in Isiolo County and therefore the findings of this survey will be used as a baseline upon which progress of interventions at County level will be measured in the future.

4.1.2 Complementary feeding practices

Overall, the complementary feeding practices were sub-optimal despite the high knowledge and positive attitudes and perceptions among the community members. Cultural beliefs and practices were reported to be no longer a major barrier to adoption of appropriate IYCN practices. The majority of the children were receiving foods with limited dietary diversity and less than recommended frequency of meals, implying that they were not getting enough of a variety of nutrients for healthy growth and development. The children were therefore most likely deficient in micronutrients. This was compounded by the fact that consumption of MNPs among the children was very limited. There was agreement in the quantitative findings from the household survey and those from the FDGs.

The major barriers to adoption of appropriate feeding practices were reported to unavailability and inaccessibility to foods. It was reported by the county personnel that there was a prolonged drought just before the survey and therefore this exacerbated the food insecurity situation probably contributing to the poor indicators of complementary feeding practices.

4.1.3 Barriers to IYCN practices

The adoption of appropriate IYCN practices was constrained by a range of factors including; food insecurity, livelihood and lifestyle, economic, social and psychosocial issues. Household food insecurity constrained the dietary intake of mothers consequently affecting milk production among breastfeeding mothers and also affecting provision of adequate complementary feeding practices; family conflicts and violence was causing stress to the mothers and affecting production of breastmilk and interfering with the right mindset for mothers to provide quality care to the children; high maternal workload affecting time mother was available to breastfeed and prepare appropriate complementary foods for the baby; alcoholism among the mothers interfering with quality of care given to children; high rate of adolescence pregnancy implying that the child has to be left in the care of the grandmother while the mother goes to school.

These findings imply the need for multi-sectoral interventions to improve the quality of IYCN practices in the County as nutrition and health interventions alone will not adequately address the issues around IYCN and the barriers to appropriate practices.

In particular, concerted efforts should be put into place to improve complementary feeding practices in the County. Knowledge alone will not improve the practices. There is need for innovative strategies to address the causes of inadequate complementary feeding practices. These strategies should include nutrition sensitive interventions to address food security issues which is the major cause of poor complementary feeding practices.

4.2 Maternal knowledge, attitudes and perceptions on IYCN

Knowledge on IYCN practices was high and attitudes and perceptions were positive. The high level of knowledge among mothers and caregivers was demonstrated by the findings from the household surveys and corroborated by the findings from the FGDs. The knowledge levels were on the whole higher for breastfeeding indicators than complementary feeding practices. A smaller proportion of mothers/caregivers had received information on complementary feeding practices compared to those who had received information on breastfeeding practices. This may probably imply that more emphasis was placed on breastfeeding at the expense of complementary feeding practices.

The high level of knowledge on breastfeeding was attributed to the intensive promotion of IYCN messages at the household level by the CHVs and mothers/mothers in laws and less by health workers at the health facility as reported by the FGD participants. The main source of information on complementary feeding practices were the CHVs with fewer mothers having received this information at the health facilities

There should be more emphasis on the promotion of complementary feeding practices at the health facilities and there is need to include demonstrations on the preparation of complementary feeding foods particularly at the community level by CHVs.

4.3 Responsive feeding practices

Overall the findings on responsive feeding practices were positive as the majority of the mothers talked to the children and verbally encouraged them to eat. Most of the mothers encouraged the children to self-feed which was a positive practice. Nonetheless, there is need to discourage mothers not to order children. About one-quarter of the mothers did so. This practice could have detrimental effects on eating habits as the child may associate meals with unpleasant times or may develop negative perceptions about meals.

4.4 Feeding of children during illness

Appropriate feeding during illness is important to provide immunity to the child and also to prevent the child getting from getting malnourished. Feeding of children during illness was poor. The majority of the children received less food, less liquids and less breastmilk during illness mainly because the child did not want the food because of low appetite. This may imply that the children whose diets are not adequate based on the findings of this survey face a higher risk of malnutrition when sick. During illness the body requires more nutrients to fight the infection and boost the immunity system. During recovery, a higher proportion of children were given more or the same amount of food as they usually eat when they are not ill – but the percentage who received more food was low. Feeding during illness therefore needs more emphasis in the messages on appropriate feeding of children.

4.5 Access, preparation and consumption micronutrient powders (MNPs)

On the whole, the coverage for the key indicators of MNPs were low. The knowledge on MNPs was limited as less than half (44.1%) of the mothers had heard of MNPs. Access to MNPs was a challenge as less than one-quarter of the children received MNPs in the last 6 months. The limited access may be partly explained by the fact that the majority of the mothers had not heard of MNPs and therefore they would not have gone to the health facilities to access the commodity. It should be noted that the County did not have stock outs of MNPs in 2017. Appropriate messages on the health benefits of MNPs, preparation and frequency of consumption should be developed and disseminated to all stakeholders.

4.6 ANC attendance by pregnant women

The major objective of antenatal care during pregnancy is to identify and treat problems such as anaemia and infections. Screening for complications take place during ANC visits and advice is given on a range of issues, including place of delivery and referral of mothers needing further medical attention. The WHO recommendations, adopted by the MOH in Kenya stipulates that pregnant women should visit ANC at least 4 times during pregnancy and that the first visit should take place during the first trimester.

Overall, the majority of the pregnant women (those with children 0-23 months old at the time of the study) attended ANC at least once, most of them making their first visit during the second trimester instead of the recommended first trimester. This first visit, if started at the right time offers good opportunity for women to be reached with the full ANC service package including assessment, counselling on key IFAS messages etc. Less than half the women made the recommended 4 ANC visits. The majority of the mothers received the essential services that should be offered at the ANC clinics at least once during the entire pregnancy period. The overall implication of these findings is that the women were not getting critical services including check-

ups on a frequent basis as per the recommendations because they do not visit ANC clinics regularly neither do they make timely first visit.

The interventions geared towards improving ANC attendance should address the factors hindering attendance for most women including: distance to health facilities, high maternal workload, and cultural issues such as women not allowed to expose their nakedness to men.

4.7 Maternal knowledge on IFAS, provision and consumption by pregnant women

Maternal knowledge on the health benefits of IFAS to the pregnant and unborn baby was high but this did not necessarily translate into consumption of the supplements, one per day during the entire pregnancy period as per the WHO and MOH recommendations. The main source of information for the majority of the mothers was the health facility and fewer from the CHVs. In terms of provision, the majority of the mothers received the combined IFAS to last less than 60 days and the majority also consumed the IFAS for less than 60 days. This may be partly explained by the sporadic stock outs of IFAS in 2017. The provision of IFAS for less than 60 days may also be explained by the fact that the pregnant women do not attend ANC frequently and therefore they do not get adequate supply of IFAS.

The main reasons for the inadequate consumption was reported to be the side effects (nausea and vomiting) and forgetfulness. The community (all stakeholders including fathers) should be sensitized to understand the benefits of and the appropriate frequency of taking IFAS during pregnancy. It was reported during one of the FGDs with men;

“We fathers do not know the benefits of IFAS. The education on IFAS is only given to women. If we know the benefits IFAS we can encourage our wives to take them as recommended”.

This findings indicates that all stakeholders and not only mothers should be educated on the benefits of IFAS.

4.8 Dietary intake of women of reproductive age

Dietary diversity is an indicator of diet quality; the Minimum Dietary Diversity for women of reproductive age (MDD-W) is the consumption of at least five foods from five or more of ten food groups as per FAO, 2016 guidelines (refer to section 2.9 in the methodology section). Those women who attain the MDD-W highly likely to consume at least one animal- source food and either pulses or nuts/seeds and food items from two or more of the fruit/vegetable food groups.

Maternal dietary intake was poor given that less than one-third of the women attained the MDD-W. The MDD-W was low indicating low quality diet. The major reasons for poor dietary intake were food insecurity and lack of purchasing power because of poverty. Cultural factors were reported not to be a major barrier to dietary practices – the majority of people are doing away with them as reported in the FGDs.

5. CONCLUSIONS

Breastfeeding practices: Overall the practices were optimal except for: provision of pre-lacteal feeds; continued breastfeeding at 2 years; practical support given to mothers to help start breastfeeding; and bottle feeding with teat/nipple. Efforts should continue to be made to ensure further improvement in breastfeeding practices and also to ensure that the gains made are not lost. Despite the fact that EBF has improved significantly, the rate should be improved further

to reach 90%, the minimum recommended by WHO to have impact on and reduce mortality by 13% among the underfives. The practice of exclusive breastfeeding should also be encouraged up to 6 months as most women stopped at three months.

Complementary feeding practices: Overall, the CF practices were sub-optimal implying that a majority of the children are not getting adequate diets. Most of the children received diets that did not provide adequate nutrients in terms of quantity and variety for healthy development. Given that knowledge and cultural practices were not the major hindrances to appropriate complementary feeding practices, there is need for innovative and nutrition-sensitive interventions to address food insecurity which is the major hindrance to appropriate feeding practices.

Knowledge on MIYCN practices was high and the attitudes and perceptions positive. Promotion of appropriate MIYCN messages should be up-scaled. Messages to promote appropriate MIYCN practices should continue to be disseminated with particular emphasis on the remote, hard to reach areas where knowledge was reported to be low. The health facilities should also improve in their efforts to provide information on appropriate complementary feeding practices. Only a limited proportion of mothers reported to have received information on complementary feeding and even a smaller percentage did so from the health facilities. The CHVs were reported to be the major source of information on complementary feeding practices. This is commendable and should be encouraged.

In terms of ANC attendance, the majority of the pregnant women make at least one visit to a skilled health provider. The challenge is with the frequency of ANC attendance as just about two-thirds of the pregnant women received ANC services at least 4 times by a skilled health provider as per the WHO and MOH recommendations. The other challenge is the timing of the first visit to the ANC; only 29.6% of the women make first ANC visit during the first trimester. It is therefore important to establish the reasons why mothers do not start attending ANC in a timely manner and at the recommended frequency. This information would be useful in addressing the development of messages on the health benefits of attending ANC and also useful in addressing the barriers to pregnant women attending ANC as recommended.

The coverage for the provision and consumption of IFA supplements to pregnant women is low. The majority of the pregnant women received and consumed IFAS for less than 60 days probably contributed to by the fact that the County experience sporadic stock outs of the commodity in 2017. There is need to train the CHVs on IFAS so that they promote the consumption and address the mothers' challenges in the use of the supplements at the household level. It was reported that this training has not been conducted yet. May be frequent follow-up at the household level by the CHVs may encourage pregnant women and also to remind them to take IFAS. One of the reasons given for not taking IFAS on a regular basis was forgetfulness.

Responsive feeding: Overall, positive as the majority of the mothers talked to children and encouraged them to eat and self-feed. There is need to discourage the practice of ordering and threatening children to eat as was reported by about one-quarter of the mothers.

Feeding during illness: Overall, poor feeding practices and should therefore be appropriately addressed in the behaviour change communication messages.

Maternal dietary intake: Maternal dietary intake needs improvement given that slightly more than one-quarter of the mothers attained a minimum dietary diversity. The major hindrance to

adequate dietary intake is food insecurity and poverty. So addressing food security issues would improve mothers' dietary intake.

Factors influencing MIYCN practices

Factors influencing MIYCN positively

- **High level of knowledge and positive attitudes and perceptions on breastfeeding and complementary feeding practices among the mothers and the community as a whole** may have contributed to the appropriate breastfeeding feeding practices. The knowledge and positive attitudes and perceptions towards complementary feeding did not necessarily translate to improved practices;
- It was also reported during the FGDs **that cultural beliefs** were no longer a barrier to IYCN practices for the majority of the people;
- **High level of maternal knowledge** on the health benefits of ANC attendance and consumption of IFAS during pregnancy influenced mothers to seek these services. Despite this, many mothers did not seek these services regularly and neither did they start the ANC visits timely; and
- The services provided at the ANC such as; growth monitoring of the foetus, checking of anaemia and blood pressure and provision of supplementary foods encouraged mothers to attend ANC encouraged mothers to attend ANC clinics.

Barriers to appropriate MIYCN practices

- **Household food insecurity** resulting into inadequate dietary intake affecting milk production among breastfeeding mothers. Similarly, food insecurity was a major factor contributing to inappropriate complementary feeding practices because of unavailability and inaccessibility of a variety of foods. Poverty and loss of livestock were reported to major constraints to household food security. Poor household food security was also a major factor constraining maternal adequate dietary intake;
- **Family conflicts and violence** causing stress to the mother and therefore not able to produce adequate breastmilk and also take care adequate care of children;
- **High maternal workload** affecting time mother is available to provide quality care to the child and also to breastfeed and prepare appropriate complementary foods for the baby;
- **Alcoholism among the mothers** interfering with quality of care given to children including appropriate feeding practices;
- **Inadequate knowledge on complementary feeding practices** particularly on how to prepare foods for the children was reported to be a constraint to appropriate feeding practices;
- **The women who did not attend ANC regularly** were discouraged by: the high maternal workload; long distance to health facilities; were not comfortable to be attended by male health workers; mandatory HIV testing and some were discouraged by their husbands from attending; and
- **The women who did not take IFAS on a regular basis** were discouraged by the side effects (nausea and vomiting) while some forgot to take them. The women also reported that negative attitudes towards them by health workers also discouraged them from seeking health services.

6. RECOMMENDATIONS

Recommendations for programming

Recommendations	Persons responsible	Timeline
Fully operationalize the County Social and Behaviour Change Communication Plan to promote adoption of appropriate MIYCN practices	MOH, UNICEF, Nutrition IPS	December 2018
Scale up functionalization of Community Units	CHMT	December 2018
Initiate Baby friendly Community Units in already functional Community Units	MOH, UNICEF, Nutrition IPS	September 2018
Recruit more nutritionists	County Government	April 2019
Establish Multi Sectoral Platform to enhance collaboration with nutrition sensitive sectors in addressing nutrition issues. This will facilitate partnering and building complementarities amongst various partners in the County	Departments of Health, Agriculture, Child Protection Services, Water, and Education	September 2018
Train newly recruited health workers on MIYCN/MIYCN – E and BFCI modules.	MOH, UNICEF, Nutrition IPS	September 2018
Fully operationalize the County Complementary Feeding Action Plan address the below optimal complimentary feeding practices (MAD, MMF, MMD).	MOH, UNICEF, Nutrition IPS	December 2018
Train additional community units on Module 8. CHV's least provided information on complementary feeding	MOH, UNICEF, Nutrition IPS	December 2018
Use of local radio stations for messaging – themed messaging exclusively with Infant and Young Child feeding messages targeted towards behavior change and knowledge creation	MOH, UNICEF, Nutrition IPS	December 2018
Scale up and ensure fully functional MSG's to cover all Community Units.	CHMT	September 2018
Re-orientation of HW's on initiation of breastfeeding support once mothers deliver (Breast Crawl and KC)	CHMT	September 2018
Develop contextualized interventions targeting key influencers such as the mother in law who are a main source of information on infant and young child feeding	CHMT	December 2018

Recommendations for future surveys

- Conduct in-depth MIYCN KAPB qualitative surveys to provide detailed sub-county level information to allow for appropriate programming taking into account any differences in the sub-counties.
- The questionnaire should be shortened and made to focus on the key MIYCN indicators. Questions with a high possibility of recall bias e.g. IFAS for mothers with children 0-23 months old- the target population should be changed to mothers with younger children to minimize recall bias.
- Data analysis: It is recommended that qualitative data be analysed using data analysis software for improved efficiency. It is also recommended that basic inferential statistics be included in the analysis to provide information for more targeted MICYN messages.
- The ToR should include maternal nutrition and other-related indicators e.g. IFAS and ANC based on the WHO and MOH guidelines.

7. REFERENCES

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8. APPENDICES



KAP
QUESTIONNAIRE 151



ADDITIONAL
QUESTIONS for UNIC



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KABPS_2017_ISIOLO
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KABPS_2017_ISIOLO
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ISIOLO Survey
findings presented ;



NITWG validated
UNICEF KABP MIYCN



Training Schedule
ISIOLO KABP 2017.d