



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

**WAJIR COUNTY**

NOVEMBER 2017



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The UNICEF Kenya office provided overall technical lead and oversight.

## **ACRONYMS**

ASF	Animal Source Foods
CHV	Community Health Volunteer
EBF	Exclusive Breastfeeding
ENA	Emergency Nutrition Assessment
FGD	Focus Group Discussion
HH	Households
IYCF	Infant and Young Child Nutrition
KABP	Knowledge Attitudes Beliefs and Practices
KDHS	Kenya Demographic Health Survey
KNBS	Kenya National Bureau of Statistics
MIYCN	Maternal Infant and Young Child Nutrition
MoH	Ministry of Health
ODK	Open Data Kit
PPS	Probability Proportional to Size
SPPSS	Statistical Package for Social Sciences
UNICEF	United Nations Children's Fund
WHO	World Health Organization

## EXECUTIVE SUMMARY

The survey covered all MIYCN components. This executive summary only presents IYCN summary findings. Details of the full survey are in the report.

### Introduction

Wajir County is situated in the former North Eastern Province of Kenya. Its capital and largest town is Wajir. According to Kenya Census, 2009 the county has a population of 661,941 and an area of 55,840.6 km<sup>2</sup>. The county has six sub counties: Wajir North, Wajir West, Wajir East Wajir South, Tarbaj and Eldas. According to KDHS, 2014 data stunting levels in North Eastern region was (26.4%). Additionally, North Eastern region has a higher proportion of underweight (19%).

### Methodology

This survey was implemented in Wajir County-wide. The target population for this survey was primary caregivers of children aged between 0 and 23 months. Both quantitative and qualitative data collection methods were used in the survey. The sample size calculation was based on the IYCF Survey calculator proposed by the step-by-step IYCF Survey guide (Care 2010), giving a sample size of 996 children aged 0-23 months.

### Results

Results for key IYCF indicators are as presented below;

INDICATORS	%	N
Ever breastfed	98.4	1001
Timely Initiation of breastfeeding (0-23 months)	87.6	985
Exclusive breastfeeding under 6 months (0-5 months)	69.9	309
Continued breastfeeding at 1 yr (12-15 months)	83.3	215
Continued breastfeeding at 2 yrs (20-23 months)	40.3	72

Complementary feeding indicators are shown below;

INDICATOR	%	N
Introduction of solid, semi-solid or soft foods (6-8 months)	65.2	138
<b>Minimum dietary diversity (= &lt;4)</b>		
6-11 months	19.2	271
12-17 months	26.4	273
18-23 months	36.5	148
6-23 months	25.7	692
<b>Minimum meal frequency</b>		
6-8 months (2 times)	29.0	138
9-23 months (3 times)breastfed	30.3	554
6-23 months (combined) breastfed	27.6	692
<b>Minimum acceptable diet</b>		
6-8 months	12.3	138

9-23 months breastfed	13.0	554
6-23 months combined breastfed	12.4	692
<b>Child dietary diversity</b>		692
Grains roots and tubers	79.3	
Legumes and nuts	48.8	
Dairy	85.8	
Meats	15.9	
Eggs	19.8	
Vitamin A rich fruits and vegetables	9.5	
Other fruits and vegetables	6.1	
<b>Consumed of Iron Fortified solid , Semi solid or soft foods</b>	21.4	692
Cerelac	20.9	148
Plumpy Nut	15.5	148
Corn Soy Blend	3.4	148
Weetabix	1.4	148
Quick Porridge Oats	14.2	148
White oats	3.4	49
Formular	14.3	
<b>At what age in months should on introduce complementary foods?</b>		1001
0-5	3.1	
6	56.7	
7 and above	39.4	
<b>Consumed foods with added powder or sprinkles</b>	4.8	692
<b>Consumed LNS</b>	6.6	692

## Conclusion

Breastfeeding practices reveal; high levels of breastfeeding initiation, low use of pre-lacteals, Exclusive breastfeeding was high, but continued breastfeeding at 2 years is low. Appropriate introduction of complementary was moderate, overall complementary feeding indices show poor child feeding. With very low consumption of fortified foods to children.

## Recommendations

There is need for interventions to address the barriers identified through the survey that inhibit optimal breastfeeding and complementary practices.

## **INTRODUCTION**

Wajir County is situated in the former North Eastern Province of Kenya. Its capital and largest town is Wajir. According to Kenya Census, 2009 the county has a population of 661,941 and an area of 55,840.6 km<sup>2</sup>. The county has six sub counties: Wajir North, Wajir West, Wajir East Wajir South, Tarbaj and Eldas. It covers an area of 55,840.6 square kilometers (Km<sup>2</sup>).

In Kenya, the prevalence of stunting is 26% and affects an estimated two million children (KDHS, 2014). 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. According to KDHS, 2014 data stunting levels in North Eastern region was 24.7% and Wajir at 26.4%. Additionally, North Eastern region has a higher proportion of underweight (19%). The KDHS data on exclusive breast feeding and complementary feeding practices is available at national level but not county level. Nutrition interventions have been acknowledged as being among 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 complementary feeding, water, sanitation and hygiene would reduce 6 percent and 3 percent respectively (Lancet, 2003). With this in mind there was need for Knowledge, attitudes, beliefs and practices (KABP) survey in this county to determine the core IYCF indicators. Consequently, findings will provide information unto which program design and implementation will be developed with key focus in reducing malnutrition and improving the nutritional status in the County.

The 2016 nutrition program review has shown that current data on exclusive breastfeeding and complementary feeding practices is lacking in Wajir. 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

### **Survey Objectives**

- Overall, the main objective of this survey was to collect baseline information on knowledge, attitudes, beliefs and practices among caregivers and communities in the Wajir County.

Specifically, this survey will be used to support UNICEF's work in nutrition, specifically by



1. Improving our understanding of the core IYCN indicators in the context of Wajir County
2. Measuring progress and informing programmer design and implementation through application of these findings.

## **METHODOLOGY**

This survey was implemented in Wajir County-wide. The target population for this survey was primary caregivers of children aged between 0 and 23 months. Both quantitative and qualitative data collection methods were used in the survey.

### **Sample size**

The sample size calculation was based on the IYCF Survey calculator proposed by the step-by-step IYCF Survey guide (Care 2010). Based on the guide, the sample size for each of the eight IYCN core indicators was calculated and computed as shown in the table below:

Table 1 Estimated sample size

<b>Indicator</b>	<b>Estimate</b>	<b>Precision</b>	<b>Design effect</b>	<b>Sample Size</b>
1. Timely Initiation of Breastfeeding (0 – 23.9 Months)	50	8%	1.5	245
2. Exclusive Breastfeeding (0 – 5.9 Months)	50	8%	1.5	245
3. Continued breastfeeding at 1 year	50	8%	1.5	245
4. Minimum Dietary Diversity (6 – 23.9 Months)	50	8%	1.5	245
5. Minimum Meal Frequency (6 – 23.9 Months)	50	8%	1.5	245
6. Minimum Acceptable Diet (6 – 23.9 Months)	50	8%	1.5	245
7. Consumption of Iron Rich or Iron Fortified Foods (6 – 23.9 Months)	50	8%	1.5	245
8. Bottle Feeding (6 – 23.9 Months)	50	8%	1.5	245

### **Note:**

There being no Wajir County specific data, a prevalence of 50% was used, and this gives optimal sample size when all other parameters are held constant

Based on the parameters above, the maximum sample size (among the eight indicators) was then selected among the indicator with the highest figure then multiplied by 4 to yield a total sample size of children aged between 0 and 23 months. As recommended by the step-by-step guide by Care (2010); the sample size is multiplied by 4 since there are 4 age categories for children 0-23 months (0 – 5, 6 – 11, 12 – 17 and 18 – 23.9). This resulted to a total sample size of **976** for Wajir County. The total sample size was then adjusted upward by a non-response rate of 2% for the final sample size as of children aged between 0 and 23 months. After the 2% attrition consideration we ended up with a sample size of 996.

### **Sampling procedure**

The survey adopted a two stage cluster sampling survey design where Wajir County was used as the sampling frame.

- In Wajir County, the first stage sampling involved the selection of villages/clusters to be included in the survey.
- The second stage sampling was the random selection of households with children aged between 0 and 23 months from the sampled villages/clusters

### **Selection of clusters and households**

A village which is the smallest administrative unit was deemed as a cluster. The clusters to be sampled were selected using probability proportional to size (PPS), and ENA for SMART Software used for the clusters selection. The clusters and population figures for PPS were based on the KNBS population projections from the 2009 Census. Households to be surveyed were selected using simple random sampling method. This was done using the Table of Random Numbers. Listing of households with children 0-23.9 months was done in the field, by a CHV or village elder.

The selection of households per cluster was based on a review of previous KABP) surveys that have used the MIYCN KABP tool (Homa-Bay, West Pokot, Turkana etc.). In Wajir County, an average of 16 households's per cluster were randomly selected. With 16 Households per cluster  $996/16=62.25$  rounded off to 63 clusters giving an increased sample size target of 1008. In each household 1 child under 23months of age was eligible.

N/B- Insecure villages in Wajir were excluded from sampling after consultation with the CNC and Sub-County teams.

### **Case definitions**

*Household definition*- refers to people who eat from the same pot and have a common household head.

*Cluster* – in this survey it refers to the village which is the smallest unit of administration.

### **IYCF indicators**

*Timely Initiation of Breastfeeding* – refers to proportion of children born in the last 24 months who were put to the breast within one hour of birth (0 – 23.9 Months).

*Exclusive Breastfeeding*- refers to proportion of infants 0–5 months of age who are fed exclusively with breast milk (0 – 5.9 Months).

*Continued breastfeeding at 1 year*- refers to proportion of children 12–15 months of age who are fed breast milk.

*Minimum Dietary Diversity* - refers to proportion of children 6–23 months of age who receive foods from 4 or more food groups.

*Minimum Meal Frequency* - refers to proportion of breastfed and non-breastfed children 6–23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more.

*Minimum Acceptable Diet* - refers to proportion of children 6–23 months of age who receive a minimum dietary diversity and the minimum meal frequency.

*Consumption of Iron Rich or Iron Fortified Foods* - refers to proportion of children 6–23 months of age who receive an iron-rich food or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home.

*Bottle Feeding* - refers to proportion of children 0–23 months of age who are fed with a bottle or other container not recommended for child feeding.

*\*Definition of IYCF indicators adopted from Indicators for assessing infant and young child feeding practices: Part 2 – Measurement by WHO, 2010.*

### **Questionnaire training and supervision**

*Data collection tools*

Both quantitative and qualitative data was collected. The tools were pretested prior to the actual survey data collections. This was done in sampled clusters that were not included in the main survey.

#### *MIYCN questionnaire*

An interviewer administered MIYCN Questionnaire formed the basis of the quantitative approach. The survey adopted the June 2015 Version of the MIYCN KAP Survey Tool recommended by the Nutrition Information Working Group. Additional 6 questions on beliefs were accepted by NITWG for inclusion. Data was collected using ODK programmed tablets. A total of 1006 households were interviewed for the Wajir KABP survey.

#### *Focused group discussions*

Focus Group Discussions Guides were used to facilitate the focus group discussion and collect the qualitative data. The FGDS were done separately with each FGD targeting; fathers/men, mothers of children 0-23 months, CHVs, Older women, religious and community leaders (5 separate groups). This qualitative method was used to establish perceptions on IYCN practices as well as the cultural, socio-economic, and other factors influencing these practices. Each FGD had an average of nine participants per session as conventional, with a range of six to twelve. In total, 21 FGDs were conducted. The twenty one clusters where the FGDs were done were sampled randomly from the list of clusters sampled for the baseline survey and distributed by Sub-Counties. The qualitative data was collected in their local language and later translated into English for analysis during debriefing and notes expansion sessions among the FGD teams.

#### **Survey organization**

The survey was conducted by 30 data collectors for household survey. This comprised of 10 Teams of 2 Enumerators, and a Team Leader. For the FGDs 3 teams of three members each (a facilitator/moderator, a recorder and observer) were used in collecting the qualitative data. The team leaders were all from the MoH. Supervision was done by the KABP consultant, the UNICEF nutrition support officer, the CNC, MoH staff from CHMT and two survey assistants.

#### **Training**

The survey teams were trained for 4 days while FGD teams were trained for 3 days. The data was collected between 17<sup>th</sup>-23<sup>rd</sup> November for both household teams and FGD teams. Piloting/pretesting was done prior to actual data collection i.e. on 16<sup>th</sup> November and feedback and review of tools implemented. Different approaches were used in the training such; role play, question & answer session, demonstrations and use of teaching aid materials. The supervisors were also engaged in supervising the role plays and afterwards gave a feedback of each role play. Topics covered in the training included;

#### *Household team*

- Justification, objectives and methodology of the survey
- Training on survey ethics and informed consent
- Terminology translations to local language were discussed; these included colostrum, IronFolic Acid Tablets, Fortified foods, Pregnant, Lactating, Gripe water, bottle with nipple/teat, cup with a spoon, cup with holes, health workers, nurse, auxiliary nurse, ANC Visit, community health volunteer, TBA, blood pressure measurements, antenatal drugs, tetanus vaccine, HIV test, growth monitoring, support group, corn soy blend CSB, Unimix, RUTF , IEC materials, Fortified oils, fortified maize flour, fortified oils, fortified salts, vitamin A capsule,. Four groups discussed and translated terminologies to local
- Training on Household survey modules.
- Age determination in complete months and years.
- Selection of the index child from households and how to identify a legible household.
- Taking a 24-hour dietary recall for the women and children and how to derive the maternal dietary diversity and child dietary diversity from the 24-hour recalls.
- Introduction to the mobile data software i.e. ODK, components of the mobile application and ways to conserve power in the field and practise of the household survey tool within the ODK.

#### *FGD Team*

- The participants were introduced to the KABP survey framework, field survey ethics and consent taking.
- The roles of a moderator, note-taker and observer.

- Training on note taking and moderating skills and how to make observations during FGDs.
- Discussion of the FGD guide questions, including contextualizing some of the MIYCN terminologies.

#### *Data management and analysis*

Quality assurance of the data was done to ensure that quality data was collected. This was achieved through field supervision of the household and FGD teams, daily use of cluster control forms by household survey teams. Age determination sheets and seasonal calendars were provided to ensure that correct age was captured. The ODK program was locked to ensure a response was given before proceeding, and skip patterns activated. There was also daily ODK data monitor provided independently of the field teams, and reviews done every day to ensure completeness of data collected. Data analysis was done using SPSS version 20.0.

Data from FGDs was collected in their local language and then translated into English for analysis. Content and thematic analysis was used for sorting transcribed information, looking for patterns, similarities, differences or contradictions.

## RESULTS AND DISCUSSION

### Household characteristics

Majority of the interviewed households were male headed (96.8%). The respondents in the survey were women 15-49 years, primary caregivers of the index child aged 0-23months, majority were lactating (82.3%). Majority of the respondents had no education (92.1%) this is an increase in comparison with North Eastern region illiteracy levels (75%) according to KDHS, 2014. This indicates high levels of illiteracy considering the national average is 11.7% based on the 2014 KDHS report. Maternal education influences maternal decisions and is a predictor of child nutritional status (Waswa, 2015). High illiteracy has a negative implication on health, behaviors and attitudes. The region is Islamic dominated, 99.9 % of the respondents being Muslims. Majority of the respondents were housewives (82.3%) with majority having 1-4 children (57.9%). The mean household size was 6.3 members which was higher than the national level of 3.9% (KNBS and ICF, 2015).

Table 2 Household characteristics

<b>Women Characteristics</b>	<b>%</b>	<b>N</b>
<b>Sex of HH Head</b>		1001
Male	96.8	
Female	3.2	
<b>Mean HH size</b>	6.3	1001
<b>Physiological status</b>		988
Pregnant	10.4	
Lactating	84.2	
Pregnant and lactating	1.5	
Not pregnant-not lactating	3.8	
<b>Marital status</b>		988
Currently married	98.8	
Separated/divorced	0.7	
Widowed	0.5	
Single/never married	0.0	
<b>Ever been to school</b>	7.9	988
<b>Highest level of education completed</b>		78
Less than primary school	30.8	
Primary school	53.8	
Secondary/High school	9.0	
College/Pre-university/University	6.4	
<b>Religion</b>		988
Christian	0.1	

Muslim	99.9	
<b>Main occupation /source of livelihood</b>		988
Formal Employment	1.1	
Informal employment / jua kali	0.3	
Casual labor	3.0	
Own business	4.8	
Petty trading / hawking	2.7	
Pastoralist	5.2	
Dependant	0.6	
Housewife	82.3	

### Maternal characteristics

Almost all the respondents had ever been pregnant 99.8% and had ever given birth 99.8%. Majority of the index children were aged between 6-23months (69.1%), male (51.5%), with the predominant age verification means being by use of health card (48.1%) or seasonal calendar (32.7%). Majority were delivered in the home (55.3%), this indicates high levels of unskilled care during pregnancy and child birth, considering the national average is 37% based on the 2014 KDHS report. This poses a challenge in terms of maternal and child mortality. However, this is a slight improvement in comparison with 2014 KDHS results for home deliveries in Wajir (78.5%), which was leading in the region. The rate of hospital deliveries is very low ,those delivered in the hospital were 35.4%, which is lower than the National level (61%) as indicated by the 2014 KDHS (KNBS and ICF, 2015). Increasing skilled deliveries reduces maternal and child mortality.

Table 3 Birth history

Maternal and Child Birth history	N	%
<b>Ever been pregnant</b>	99.8	988
<b>Ever given birth</b>	99.8	988
<b>Number of children born and are alive</b>		977
1-4	57.9	
5-12	42.1	
<b>Age of index child in completed months</b>		1001
0-5	30.9	
6-23	69.1	
6-11	27.1	
12-17	27.3	
18-23	14.8	
12-15	21.5	
6-8	13.8	



9-23	55.3	
20-23	7.2	
<b>Child age verification</b>		1001
Health card	48.1	
Birth certificate	3.5	
Seasonal calendar	32.7	
Other Specify (mother recall)	15.8	
<b>Child gender</b>		1001
Female	48.5	
Male	51.5	
<b>Place of birth</b>		1001
Hospital	35.4	
Health Centre, Doctors office/private clinic	2.2	
In the home	55.3	
Mid-wife home	1.9	
Other specify (on the way to hospital, In the bush)	0.5	

### **Child feeding characteristics**

WHO and UNICEF have promoted increased commitment in appropriate feeding practices for all infants and young children with an aim of achieving optimal growth, development and health (WHO and UNICEF, 2004). The World Health Organization and UNICEF recommendations on breastfeeding are as follows: initiation of breastfeeding within the first hour after the birth; exclusive breastfeeding for the first six months; and continued breastfeeding for two years or more, together with safe, nutritionally adequate, age appropriate, responsive complementary feeding starting in the sixth months.

Kenya is in the fore front in meeting WHO and UNICEF requirements i.e. 99% of the children have ever been breastfed, 61% were exclusively breastfed and 81% (KNBS and ICF, 2015). Exclusive breastfeeding is recommended for the first six months since breast milk is safe, available in the right temperature, requires no preparation, and is available even in environments with poor sanitation and unsafe drinking water. Therefore, breastfeeding assures babies access to a consistent, sufficient quantity of affordable and nutritionally adequate food. Results indicate that almost all the children 0-23 months were ever breastfed (98.4%) and 69.9% were exclusively breastfed for six months.

Among respondents with child 0-5months of age, when asked if by the time of interview they had introduced child to anything else other breast milk were 15.2%, and when asked what they

had introduced they reported; plain water 61.7% soups 0.0%, other milks 53.2%, juices 4.3%, cereals 4.3%, vegetables 4.3%, fruits 4.3% and meats 4.3%. Early supplementation has negative implications on the infants health, it reduces intake of breast milk, exposes the infant to pathogens through contamination and also increases the risk of infections .In addition to this, in developing countries supplementary feeds are commonly nutritionally inadequate.

Early initiation of breastfeeding ensures that the infant receives colostrum which is rich in protective factors that provide natural immunity to the infant. While 98.0% of the children were fed colostrum, (14.1%) did not know the benefits of colostrum. Most of the children were breast fed less than one hour after birth (87.6%) this is high compared to the National average as compared to KDHS 2014 results (62.2%) and a 6.8% improvement in comparison with average North Eastern region results according to KDHS 2014. Additionally, majority of respondents believe breastfeeding should be initiated immediately after birth (85.9%). Pre lacteal feeding is discouraged since it exposes the infant to infections as well as limiting breastfeeding frequency. Only 12.9% were given pre lacteals this is a 3.1% improvement from the National levels compared to KDHS 2014 results. 88.1% of the respondents believe that infants should not be fed other drinks within first three days. However, 11.6% felt that children should be given other drinks apart from breast milk, majority felt water should be given 31.1% within the first three days. The respondents who received support during the first three days after birth were 48.4%. Additionally, majority of the respondents believed children should be introduced to breastfeeding less than 24hrs after birth (90.8%).

Table 4 Breastfeeding practices among children aged 0-23months

<b>Breast feeding Practices</b>	<b>N</b>	<b>%</b>
Ever breastfed	98.4	1001
<b>Duration of breastfeeding after birth</b>		985
Immediately	87.6	
Hours	9.2	
Days	2.8	
Don't know	0.3	
<b>Why child was never breastfed</b>		16
Baby ill	6.3	
Baby unable to suckle	6.3	
Mother unwell	6.3	
Mother away	6.3	
Inadequate breast milk	6.3	
Mother pregnant	68.8	

<b>Feed Pre lacteals</b>	12.9	1001
<b>Child fed anything in first three days besides breast milk</b>	7.6	979
<b>In the first three days child was given</b>		129
milk (other than breast milk)	61.2	
Plain water	59.7	
Sugar/Glucose water	5.4	
Sugar/Salt water	0.8	
Infant Formula	0.8	
Tea	1.6	
Coffee	0.8	
Others	0.8	
<b>Reason For giving child other drinks</b>		129
Not enough breast milk	58.1	
Baby cried too much	18.6	
Cultural; reasons	10.9	
Weather too hot	12.4	
First milk not good	1.6	
Other Specify (twins, baby refused to breastfeed, mother unwell)	20.9	
<b>Received practical support or advice given during first three days</b>	48.4	1001
<b>Baby should be put to breast immediately they are born</b>	94.7	1001
<b>Baby should be given the very first milk from breast</b>	97.9	
<b>Baby was Fed Colostrum</b>	98.0	1001
<b>Would feed baby on colostrum</b>	98.6	1001
<b>Benefits of feeding baby colostrum</b>		981
Nutritious to baby	74.7	
Prevents diseases/infections	45.7	
Cleans babys stomach	6.7	
Nothing Specific	1.7	
Others Specify(just like milk, only thing available, growth)	1.3	
Don't Know	14.1	
<b>Reason would not feed baby on colostrum</b>		12
Its dirty milk	33.3	
Not satisfying/ sufficient	50.0	
Cultural practices	8.3	
Other	8.3	
<b>Duration after birth child should be put to breast</b>		1001
Hours	90.8	
Days	7.0	
Immediately <1hr	2.0	
Don't know	0.2	

<b>Should baby be given other drinks within first 3 days</b>		1001
Yes	11.6	
No	88.1	
Don't know	0.3	
<b>If yes, what should be given;</b>		116
Milk (other than breast milk)	55.2	
Plain water	66.4	
Sugar/glucose water	4.3	
Honey	0.9	
Other (plain water, sugar with glucose)	0.9	

Majority of breastfeeding indicator results were higher compared to the National average as compared to KDHS 2014 results; timely initiation (87.6%), exclusive breastfeeding (69.9%), continued breastfeeding at 1 year (98.9%) .

According to WHO and UNICEF recommendations children should continue to breastfeed up to 2 years of age. Breastfeeding at two years is below National average in Wajir County (40.3%) in comparison to 2014, KDHS results which indicated the national average as 53%.

Table 5 Breastfeeding indicators among children aged 0-23 months

<b>INDICATORS</b>	<b>%</b>	<b>N</b>
Ever breastfed	98.4	1001
Timely Initiation of breastfeeding (0-23 months)	87.6	985
Exclusive breastfeeding under 6 months (0-5 months)	69.9	309
Continued breastfeeding at 1 yr (12-15 months)	83.3	215
Continued breastfeeding at 2 yrs (20-23 months)	40.3	72

During FGDs the following was summarized findings from the discussions;

#### **EBF attitudes, perceptions and practices**

- Some believe water is essential to cool the baby, as breast milk is warm
- Perception of inadequate breast milk by some women
- Some introduce goat milk and porridge early
- Perception of inadequate breast milk by some women
- Household chores and casual labor lead to others introducing other foods early as they go to search for water or food.
- 'Hanqaris'(prelacteals) are given from animal source.
- Some know the importance of breast milk.

*"I know my baby will die of thirst,"* FGD Women.

*“She takes care of animals so she don’t have time to practice exclusive breast feeding”* FGD older women.

*We give breastmilk and water together because the child feels thirsty like somebody who eats camel meat (Helib Geel)”*FGD Young women

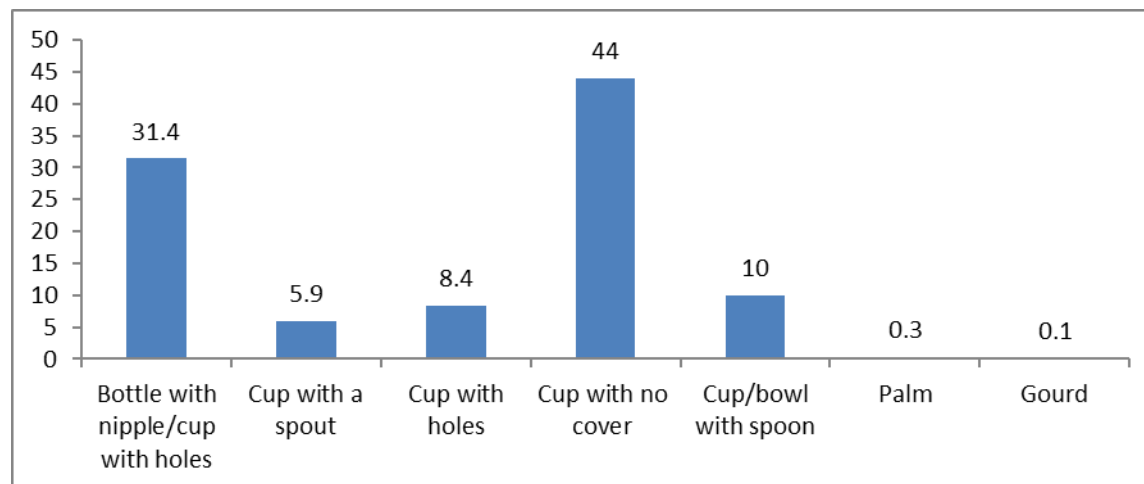


Figure 1 Used of container for drinking (N=570)

Majority (71.5%) of babies (0-23 months) drank from a container on the night preceding the survey majority used cup with no cover (44.0%) and bottle with nipple(31.4%). However, 36% of the respondents believe bottle with nipple teat and cup only (38.2%) should be used to feed a baby. Use of containers with teats, spout, palm and gourd is a source of contamination and safety hazard to the child

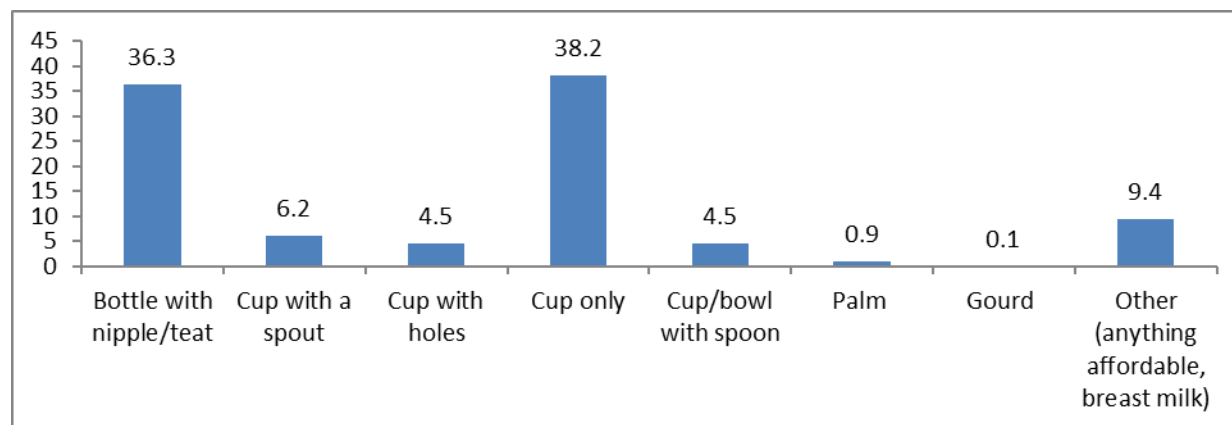


Figure 2 What should be used to feed liquids (N=979)

Health workers need to increase dissemination of child feeding information considering that more than a half of the respondents did not receive child feeding information (54.9%). Caregivers who lack knowledge are not able to make best use of available food resources (Inayati *et al.*, 2012). Similarly, studies have also shown positive effects of nutrition education interventions on the caregivers' knowledge, complementary feeding practices and child growth (Maggie *et al.*, 2010; Shi *et al.*, 2010; Waswa, 2015). Those who received child feeding information being mostly from their mother or mother in law (58.3%). This implies that most mothers receive information from unskilled sources rather than Health care workers (47.2%) who are more skilled. Despite the fact that majority of the primary caregivers did not receive child feeding information, the main decision maker in terms of child feeding was the baby's mother (99.2%). This means that health care workers need to educate mothers on child feeding practices which will have an impact on child feeding attitudes, practices and child health.

Table 6 Complementary feeding characteristics

<b>Introduction to solids, semi solids or soft foods</b>		
	%	N
Received child feeding information	45.1	1001
<b>Source of child feeding information</b>		451
Mother/ Mother in law	58.3	
Father/father in-law	8.2	
Other relative	10.9	
Neighbor/friend	16.2	
Daycare Centre	0.7	
Health Worker	47.2	
Community Health Volunteer	17.3	
Print media	1.3	
Electronic media	0.4	
Siblings	0.2	
House girl	1.1	
Others Specify (Hospital, own knowledge, read health card)		
<b>Who mainly decides what the baby should and should not eat</b>		1001
Baby's mother	99.2	
Baby's father	0.2	
Baby's grandmother	0.5	
Other	0.1	

Ensuring adequate nutrition during complementary feeding is a global health priority (Dewey, 2013). Despite the global efforts and initiatives placed in ensuring that children meet their

nutrient requirement and attain optimal growth and development (Ruel *et al.*, 2013), developing countries still loom with inadequate feeding practices among the infant and young children.

The transition period from exclusive breastfeeding to consuming a wide range of foods in addition to breast milk generally between (6-24 months) is considered as complementary feeding period ( Dewey, 2013). In developing countries, this period is marked by significant growth faltering ,high occurrence of infections which increases nutritional needs, hence, inappropriate feeding practices during this period are known to impact child nutrition, health and overall development negatively (Dewey 2013 ; Waswa 2015).

In this survey, appropriate introduction of complementary foods (6-8 months) was practiced by most of the respondents (65.2%). However, is low in comparison to the national level (80%) according to KDHS 2014. UNICEF and WHO recommend that solid and semi-solid foods should be introduced at around the age of six months since during this period; breast milk alone is inadequate to maintain the child’s optimal growth.

Table 7 Complementary feeding practices

<b>Complementary feeding practices</b>		
Introduction of solid, semi-solid or soft foods (6-8 months)	65.2	138
<b>Minimum dietary diversity (= &lt;4)</b>		
6-11 months	19.2	271
12-17 months	26.4	273
18-23 months	36.5	148
6-23 months	25.7	692
<b>Minimum meal frequency</b>		
6-8 months (2 times)	29.0	138
9-23 months (3 times)breastfed	30.3	554
6-23 months (combined) breastfed	27.6	692
<b>Minimum acceptable diet</b>		
6-8 months	12.3	138
9-23 months breastfed	13.0	554
6-23 months combined breastfed	12.4	692
<b>Child dietary diversity</b>		692
Grains roots and tubers	79.3	
Legumes and nuts	48.8	
Dairy	85.8	
Meats	15.9	
Eggs	19.8	
Vitamin A rich fruits and vegetables	9.5	

Other fruits and vegetables	6.1	
<b>Consumed of Iron Fortified solid , Semi solid or soft foods</b>	21.4	692
Cerelac	20.9	148
Plumpy Nut	15.5	148
Corn Soy Blend	3.4	148
Weetabix	1.4	148
Quick Porridge Oats	14.2	148
White oats	3.4	49
Formular	14.3	
<b>At what age in months should on introduce complementary foods?</b>		1001
0-5	3.1	
6	56.7	
7 and above	39.4	
<b>Consumed foods with added powder or sprinkles</b>	4.8	692
<b>Consumed LNS</b>	6.6	692

Consumption of diverse diets is linked to reduction in stunting (Darpheak *et al.*, 2013). Among all age groups (only 6-23 months) only 25.7% received a minimum dietary diversity, 27.6% of them attained a minimum meal frequency and 12.4% of them realized the minimum acceptable diet. Further their diets mainly consisted of grains & tubers (79.3%), dairy products (85.8%) and their consumption of the fortified foods was equally poor.

Responsive feeding and feeding a sick child are among the best practices when it comes to child feeding. It has been documented that feeding practices more so responsive feeding influence acceptance of food, dietary intake and overall growth of infants and young children (Bentley *et al.*, 2011; Black and Aboud, 2011) ;Eshel *et al.*, 2006). Feeding children slowly and patiently and encouraging them to eat without forcing is recommended (Dewey, 2015). In line with the recommended responsive feeding practices, a high proportion of respondents did something to encourage a child to eat (63.9%), (92%) of whom encouraged child verbally, by praising the child (77.1%).

During illness fluid and nutrient intake should be increased to cater for increased nutrient needs related to nutrient losses from fever, diarrhea or vomiting (Dewey, 2015). Despite most children ever being sick (57.1%), during sickness period majority of caregivers gave less breast milk (94.2%) and less food (83.8%) because child did not want it. After illness on average 43.8% gave more food thus increasing nutrient intake to make up for nutrient losses and allow for catch-



up growth .However there is a high risk of delayed recovery for the 37.0% who gave same amounts and 14.7% gave less amounts of food.

Table 8 Responsive feeding and feeding a sick

<b>Responsive feeding yesterday</b>		
Respondent fed the child yesterday	96.1	692
Child ate all food you think he/she should	55.9	665
Respondent did anything to encourage child to eat	63.9	665
<b>What respondent did to encourage child to eat;</b>		425
Offered another food/liquid	11.1	
Encouraged verbally	92.5	
Modeled eating	1.9	
Ordered strongly	0.7	
Another person helped feed child	1.2	
Another form of encouragement	2.8	
<b>Said something to encourage child to eat</b>	64.4	665
Ordered child to eat	30.6	428
Praised child	77.1	
Asked child questions	1.2	
Talked about food	4.4	
Threatened the child	0.5	
Told child that she liked food	2.8	
Talked about other things	2.1	
<b>Child self-fed yesterday at any time</b>	27.7	692
<b>Duration of self-feeding</b>		192
All the time	37.5	
Half of the time	32.3	
Little bit of time	29.7	
Does not know	0.5	
<b>FEEDING A SICK CHILD</b>		
<b>Child ever been sick</b>	57.1	692
<b>Breastfeeding practices last time child was sick</b>		395
Less because child did not want it	94.2	
More	0.5	
Same	3.8	
Not breastfed	0.5	
Don't know	1.0	
<b>Non-breast milks and other liquids in sickness</b>		395
Less because child did not want it	92.7	
Less because mother's decision	0.3	

More	0.3	
Same	3.8	
Never fed on non-breast milks and other liquids	2.3	
Don't know	0.8	
<b>Amount of food during illness</b>		395
Less because child did not want it	83.8	
Less because mother's decision	0.8	
More	2.5	
Same	8.4	
Never	4.1	
Don't know	0.5	
<b>Feeding after illness food given</b>		395
Less because child did not want it	14.7	
Less because mother's decision	1.8	
More	43.8	
Same	37.0	
Don't Know	2.8	
<b>How often food remains on the plate</b>		601
Most of the times/always	22.8	
Often/several times	13.0	
Few times/once in a while	44.4	
Never	19.8	
<b>Food that remains on the plate;</b>		482
Put in fridge	0.6	
Put in the cupboard	1.5	
Put elsewhere	24.3	
Thrown away	28.4	
Given to other children	41.7	
Other Specify (Mother eats the food, give animals)	3.5	
<b>Duration mother is away from baby</b>		1001
Always/most days(6 days/week)	0.2	
Sometimes ( 2-3days/week)	0.9	
Never (0-1 days/week)	98.9	

### **Complementary feeding attitudes, perceptions and practices**

Findings from FGDs indicate that;

- Some lack resources to purchase nutritious complementary foods.
- Unavailability of nutritious foods in the market.
- Mashed foods should be given.

Micronutrient deficiency is a major contributor to childhood morbidity and mortality (KNBS and ICF, 2015). Sprinkles is an intervention that was developed to address micronutrient deficiencies through delivering iron and a blend of other essential vitamins and minerals in powdered form that can be mixed into complementary foods before serving (Zlotkin *et al.*, 2005). Despite micronutrient supplementation being one of the key primary health interventions to alleviate micronutrient deficiencies, low levels were reported in micronutrient supplementation from the survey, where less than half (39.7%) of the respondents had ever seen or heard about MNPs even after being shown a sample. Additionally, Only 4.4% reported receiving MNPs in the last 6 months. Of the respondents who never received MNPs, majority lack knowledge on MNPs (51.8%).

Table 9 MNP use in the last six before the survey

<b>Seen/ heard of MNPS (shown satchet)</b>	39.7	1001
<b>Place first heard of MNPs</b>		397
Health staff of health facility/clinic	87.2	
Community Health volunteers	8.3	
Support group	1.0	
Community members	0.5	
Other family member	2.0	
Mass media	0.3	
Other (outreach)	0.8	
<b>Received MNP in last six months</b>	4.4	1001
<b>Place received MNP</b>		44
Free from health facility	84.1	
Bought from health facility	4.5	
From CHV	11.4	
<b>Frequency of giving MNP</b>		44
Every day	20.5	
Every other day	18.2	
Every third day	25.2	
Two days a week at ay day	6.8	
At any day when she remembers	15.9	
Can't remember / don't know	13.6	
<b>Preparing food with MNP</b>		44

Cook with child's food	13.6	
Mix with cooked solid/semi-solid food that is still warm	81.8	
Mix with water	2.3	
Other (did not know how to use)	2.3	
<b>Quantity of food mixed with MNP</b>		44
All amount prepared for child	22.7	
Quantity that child can eat once	75.0	
Other (did not understand)	2.3	
<b>Reason never received MNP</b>		654
Does not know about MNP	51.8	
Discouraged from what I heard from others	2.5	
Child has not fallen ill so haven't gone to a health facility	8.3	
Health facility or outreach is far	4.4	
Child receiving therapeutic or supplementary/foods	0.6	
I was not offered MNPs at the health facility	26.5	
Other specify (under 6months of age, don't want)	8.9	

### **Maternal health and nutrition**

Maternal health characteristics and practices were captured for currently pregnant women as well for the respondent during her pregnancy with the index child. The results are presented separately below.

ANC is an important strategy to improve maternal and infant health , however literature indicates that in Sub-Saharan Africa, women mostly initiate ANC after the first trimester and do not achieve the recommended number of ANC visits (Pell *et al.*, 2013). Among currently pregnant women aged 15-49 years, majority started ANC between 3<sup>rd</sup> to 5<sup>th</sup> month (77.9%). WHO recommends a minimum of four antenatal visits during each pregnancy (WHO, 2001), with majority of the respondents having between 3 and 4 visits. The main source of ANC care was from public hospital (44.2%), provided by nurses/mid-wives (83.7%).

Majority of predominant ANC services were received by less than 70% of respondents ;IFAS

2.3%, Anti-malarials 32.6%, deworming(33.7%), HIV test (64.0%), mosquito net (18.6%) and MUAC (59.3%). While overall all essential health and nutrition information was given by nurses (77.1%).

Table 10 Maternal health characteristics and practices

<b>Maternal Health</b>		
<b>Seen for ANC during this pregnancy</b>	72.9	118
<b>Months pregnant when 1<sup>st</sup> attended ANC</b>		86
2	2.3	
3	19.8	
4	33.7	
5	24.4	
6	14.0	
7	3.5	
8	1.2	
9	1.2	
<b>Times received ANC for current pregnancy</b>		86
1	16.3	
2	12.8	
3	22.1	
4	27.9	
5	16.3	
6	2.3	
7	1.2	
8	0.0	
9	1.2	
<b>Where received ANC for current pregnancy</b>		86
Home	2.3	
Public hospital	44.2	
Public health centre	19.8	
Public dispensary	31.4	
Other (outreach)	2.3	
<b>Who did you see</b>		86
Doctor	8.1	
Nurse/Mid-wife	83.7	
Midwife	1.2	
TBA	1.2	
CHV	3.5	
Other Person	3.3	
<b>ANC services received from current pregnancy</b>		86
Weight taken	86.0	
BP	84.9	
IFAS	2.3	
Anti-malarials	32.6	
Urine sample taken	80.2	

Blood sample taken sugar/hb	79.1	
Tetanus vaccine	75.6	
Deworming	33.7	
HIV test	64.0	
Mosquito net given	18.6	
MUAC measured	59.3	
<b>Information given during ANC vsit current pregnancy</b>		86
Tests during pregnancy	75.6	
Birth planning	48.8	
Place of delivery	75.6	
Own health & hygiene	61.6	
Own nutrition	64.0	
HIV/AIDS	69.8	
Breast feeding	68.6	
Infant feeding	52.3	
IFAS	67.4	
Growth monitoring	51.2	
<b>Source of the information</b>		86
Doctor	10.5	
Nurse	77.1	
Mid-wife	2.3	
TBA	3.5	
Relative	3.5	
CHV	17.4	
NGO/CBO	1.2	
Other (outreach)	3.5	
<b>ANC during pregnancy with index child</b>		
<b>Attended ANC</b>	87.0	1001
<b>Months pregnant during 1<sup>st</sup> ANC visit</b>		871
1	0.2	
2	1.7	
3	10.6	
4	33.4	
5	25.3	
6	14.7	
7	7.9	
8	4.2	
9	2.0	
<b>Times received ANC</b>		871
1	5.5	
2	13.9	
3	23.1	
4	32.7	
5	17.7	

6	5.4	
7	0.9	
8	0.3	
9	0.1	
DK	0.3	
<b>Information given during ANC visit during index child pregnancy</b>		871
Tests during pregnancy	74.4	
Birth planning	55.3	
Place of delivery	80.4	
Own health & hygiene	65.0	
Own nutrition	67.5	
HIV/AIDS	68.1	
Breast feeding	70.4	
Infant feeding	55.3	
IFAS	71.2	
Growth monitoring	59.4	
<b>ANC services received during index child pregnancy</b>		871
Weight taken	89.8	
BP	89.6	
IFAS	84.7	
Anti-malarials	27.2	
Blood sample taken	79.8	
Urine sample taken	77.4	
Tetanus vaccine	84.5	
Deworming	26.3	
HIV test	66.7	
Mosquito net given	10.8	
MUAC measured	61.5	
<b>Reasons for not attending ANC index child pregnancy;</b>		130
Not aware of existence or importance	17.7	
Health facility too far	58.5	
TBA services inadequate	5.4	
Cultural barriers	4.6	
Other (Nurses strike, away, didn't feel like)	20.8	
<b>Post-natal care practices</b>		
<b>Time it took to take child to clinic for first the time</b>		591
Immediately (within 24hrs)	20.6	
Within first 2 weeks	32.8	
Between 2 weeks and 1 month	7.3	
After 1 month	24.0	
Child not taken	13.9	
Don't intend to	1.4	

<b>Duration after delivery mother seen by a healthcare worker</b>		591
Immediately (within first 48 hours)	17.1	
Within first two weeks	9.3	
Between 2 weeks and 1 month	27.6	
After 1 month	23.7	
Not seen	22.3	
<b>Place of Child delivery</b>		984
At home by TBA	57.6	
At home by nurse	1.4	
At home without assistance	0.9	
Hospital	39.9	
Other	0.1	

In comparison to the current pregnancy, more women ever attended ANC (87.0%) during pregnancy with the index child. Overall majority, attended ANC between the 4<sup>th</sup> and 5<sup>th</sup> month of pregnancy (58.7%), whereas majority received between 3 to 4 ANC visits (55%).

*“Most of us visit after 4 months, as you can now feel the baby”* Young women FGD.

During ANC visits all essential information given was given to more than 60% of the respondents. However, birth planning, infant feeding and growth monitoring were below 60%. Moreover, all essential services given reached over 60% of the respondents, except deworming (23.6%), anti-malarial (27.2%) and mosquito nets (10.8%). Generally, information and services given in current pregnancy were lower compared to previous pregnancies with the index child. The major reason for not attending ANC was attributed to health facility being too far (58.5%).

### **Community perception of ANC**

- Household chores prevent some women from attending
- Incentives such as drug availability and female nurses are motivating
- The baby is checked if it is well positioned in the womb hence an incentive
- Some visit ANC only when feeling sick.

*“I attended all my antenatal care despite the distance, what is distance if it comes to the health of my child,”* FGD Women.

Hospital delivery which is a key maternal and child mortality and morbidity strategy is highly encouraged and supported through different initiatives, such as the free maternity government



program. A significant proportion of mothers in developing countries still deliver at home unattended by skilled health workers (Montagu *et al.*, 2011; Koblinsky *et al.*, 2006). Unskilled deliveries were high among the respondents; 57.6% delivered at home by TBA. This is quite high in comparison to the national levels according to KDHS 2014. Literature agrees that qualified skilled personnel manage labor complications effectively and are equipped with effective referral systems for specialized care during complications thus improving perinatal outcomes for mothers and infants (Fillipi *et al* 2006; Gabrysch and Campbell, 2009, Adegoke and Broek, 2009; Koblinsky *et al* 2006). Hospital deliveries (39.9%) are very low in Wajir county in comparison to national levels according to KDHS 2014.

Some of the important barriers to delivering in health facilities in Kenya include physical access to health facilities through distance, lack of transport and economic considerations (Wajir *et al*, 2013).

During FGDs the following perceptions, attitudes and practices on place of delivery came up:

- Lack of ambulances for referrals.
- Long distance to health facilities.
- Presence of experienced TBAs in the home
- If staff are welcoming they would attend
- Presence of male nurses is discouraging
- Fear of cesarean section associated with hospital delivery
- If no complications some of them prefer to deliver at home.

*“If we had hospital, we could not have delivered at home”* FGD Older women.

The postpartum period is critical for the mother and child since during this period there is high risk of developing complications (KDHS 2014). The period with the highest risk during obstetric period is the first 48 hours after delivery where majority of maternal deaths occur due to excessive bleeding. PNC care within the first 48 hours after delivery is essential. Only 20.6% of the respondents took child to clinic for the first time during the critical two day period. This is low in comparison to the national average of (53%) in comparison to KDHS 2014. Majority attended PNC for the first time within the first two weeks (32.8%). According to regional results for KDHS 2014, North eastern region is marked by high rates of no postnatal checkup (80%) ,

there is a great improvement in PNC attendance whereby only 15.3% did not attend clinic. Additionally, (27.6%) of the respondents were seen by a health care worker between two weeks and one month after delivery while 22.3% were not seen at all.

**FGD discussions on PNC revealed that;**

- Women take children for vaccination mostly
- Only attend when there are complications
- Some women are not aware of PNC.
- Some believe injections triggers high fever in children.

*“My sister took her son for clinic the baby contracted fever as result of vaccination,”*FGD Women.

*“Majority of the mothers deliver at home assisted by traditional birth attendants, but after 2 days after delivery, they come to the health facility for drugs to reduce pain and also given immunization for the new born baby BCG”.* FGD CHVs.

**Boosters and barriers to health seeking behaviors in the community**

*Facility factors promoting health service utilization*

- Incentives like nets, plumpy nuts , flour
- Positive staff attitude
- Staff are welcoming and cooperative
- Availability and effectiveness of drugs
- Vaccinations given.
- Complications are managed.

*“I feel safe when I deliver in the hospital”* FGD Women.

*“ I had server joint pain I tried traditional ointment but I could not get relieve but after visiting the hospital they gave drugs to swallow and get to sub on the joints and all my problems went away,”* FGD Women.

*“Majority of the mothers deliver at home assisted by traditional birth attendants, but after 2 days after delivery, they come to the health facility for drugs to reduce pain and also given immunization for the new born baby BCG”. FGD CHVs.*

### **Factors discouraging health service utilization**

- Distance to health facility
- Male staff attending to women
- Drug stock outs at times
- Unfriendly health care workers
- Lack of maternity wing at nearby health facility
- Some of the male partner perceptions
- Long duration in the health facility.
- Some believe in faith healing.
- Side effects of drugs given in the health facilities.

*When I see my wife taking IFAS, I thought of her taking family planning drugs so I Stopped her taking it“ Men FGD.*

*“I went to the hospital at 8:00 in the morning only to remain till 12:00,” FGD Women.*

*“We believe God cures and so why waste time to go to the hospital which has no drugs when we read Quran for Medication,”FGD Women*

### **Micronutrient supplementation**

There is a causal link between maternal Iron Deficiency Anemia and adverse birth outcomes including low birth weight and increased perinatal mortality; there exists a substantial proportion of neural tube defects related to inadequate consumption of folic around the time of conception (Black et al, 2013). Among currently pregnant women, a majority had heard or seen IFAS (81.8%) and Iron tablets were mainly consumed (62.8%).

Majority of the women did not consume all the supplements given, even though most (60.2%) know the benefits of IFAS and a majority stating that IFAS increases blood (78.9%) and prevents anemia in pregnant women (49.3%). Twenty two percent had IFAS at home but did not take mainly because they forgot (55.6%). While 5.6% consumed fortified blended flours, 2.5% were

consuming soil/mineral salts even though deworming was one of the least provided ANC services.

Table 11 Maternal IFAS supplementation

<b>Supplementation and delivery</b>		
<b>Heard, seen or received information about IFAS (current pregnancy)</b>	81.8	118
<b>First source of information on IFAS(current pregnancy)</b>		85
Health staff or health facility/clinic	97.6	
Community Health Volunteer	14.1	
<b>Currently taking supplements(current pregnancy)</b>		
Iron Tablets/ syrup	62.8	78
Folic acid	50.0	78
Combined Iron and folic	37.2	78
<b>Quantity of supplements given(current pregnancy)</b>		
Iron Tablets		
<b>Total given</b>		49
0	2.0	
7	2.0	
10	4.1	
15	2.0	
20	10.2	
30	79.6	
Folic acid		39
<b>Total given</b>		
7	2.6	
10	2.6	
20	10.3	
30	84.6	
Combined Iron and folic		
<b>Total given</b>		29
30	93.1	
60	3.4	
90	3.4	
<b>Consumed supplements from total consumed (current pregnancy)</b>		49
<b>Iron Tablets</b>		
0	6.1	
5	2.0	
7	6.1	
8	2.0	
10	8.2	

14	4.1	
15	2.0	
20	6.1	
21	2.0	
26	2.0	
30	59.2	
<b>Folic acid</b>		39
5	2.6	
7	2.6	
8	2.6	
10	5.1	
14	5.1	
15	5.1	
20	7.7	
21	2.6	
26	2.6	29
30	64.1	
<b>Combined Iron and folic</b>		
4	3.4	
10	3.4	
14	3.4	
21	3.4	
22	3.4	
24	3.4	
25	6.9	
26	3.4	
30	65.5	
60	3.4	
<b>Know benefits of taking IFAS in pregnancy</b>	60.2	118
<b>Benefits of taking IFAS during pregnancy</b>		
Prevents anemia among pregnant women	49.3	71
Prevents dizziness	16.9	
Increases blood	78.9	
Helps development of fetus	1.4	
Improves immunity	9.9	
Increases energy	7.0	
Other Specify (reduces pain resulting from fetus)	1.4	
<b>Had IFAS supplements at home but did not take</b>	22.9	118
<b>Reasons for not taking IFAS supplements(current pregnancy)</b>		27
Forgot	55.6	
Side Effects	29.6	
Felt better and I did not think I needed any more	14.8	
Do not know	3.7	
Other	7.4	

<b>Currently consuming (current pregnancy)</b>		118
CSB, Advantage plus, Unimix	8.5	
RUSF	6.8	
Herbal	0.0	
Soil/Mineral Stones	2.5	

Among primary caregivers to the index child, 71.9% had heard or seen IFAS, with 71.0% issued with IFAS at ANC, mostly iron tablets (59.9%). Interventions should target adherence in supplementation. 36.8% had IFAS at home but did not take mainly because they forgot.

Table 12 IFAS supplementation during most recent birth

<b>Heard, seen or received information about IFAS (index child pregnancy)</b>	71.9	1001
<b>First source of information on IFAS (index child pregnancy)</b>		719
Health staff or health facility/clinic	88.0	
Community Health Volunteer	15.2	
Community members	0.6	
Friend/support groups	0.4	
Husband/male partner	0.4	
Mass media	0.1	
Other family member	0.1	
<b>Issued with supplements during pregnancy (index child pregnancy)</b>	71.0	1001
<b>Supplements Given (index child pregnancy)</b>		711
Iron Tablets/syrup	59.9	
Folic acid	40.6	
Combined Iron and folic	38.5	
<b>Quantity of supplements given(index child pregnancy)</b>		426
Iron Tablets/syrup		
<b>Total given</b>		
0	0.2	
1-10	8.2	
14-20	6.6	
21-30	78.6	
60-90	3.1	
120-150	2.1	
180-302	1.2	
Folic acid		
<b>Total given</b>		289
0	1.4	
3-10	5.9	

14-20	6.6	
21-30	81.3	
60-90	2.4	
120-180	2.4	274
<b>Combined Iron and folic</b>		
<b>Total given</b>		
0-5	0.7	
6-10	2.2	
14-20	6.9	
21-30	79.9	
40-60	5.5	
90-120	4.0	
180	0.7	
<b>Consumed supplements (index child pregnancy)</b>		
<b>Iron Tablets</b>		
0	0.7	426
1-10	9.2	
12-20	12.9	
21-30	71.6	
40-90	3.3	
100-180	2.4	
		289
<b>Folic acid</b>		
0	2.1	
3-10	6.9	
14-20	15.9	
21-30	70.6	
60-90	2.4	
120-180	1.4	274
<b>Combined Iron and folic</b>		
0-5	2.9	
6-10	4.4	
14-20	15.7	
21-30	67.5	
40-60	5.5	
90-120	3.7	
180	0.4	
<b>Know benefits of IFAS</b>	66.4	1001

<b>Benefits of IFAS during pregnancy</b>		657
Prevents anemia among pregnant women	49.9	
Prevents dizziness	18.1	
Increases blood	81.9	
Helps development of fetus	4.6	
Improves immunity	6.4	
Increases energy	3.5	
Other	0.6	
<b>Had IFAS at home but did not take</b>	36.8	696
<b>Reasons for not taking IFAS supplements (index child pregnancy)</b>		256
Forgot	60.5	
Side Effects	34.0	
Felt better and I did not think I needed any more	10.9	
Did not know how long I should take the tablets	2.0	
Do not know benefits of IFAS	3.1	
Other (children misplaced, smell, too many)	5.5	
<b>Currently consumes (index child pregnancy)</b>		1001
CSB, Advantage plus, Unimix	5.6	
RUSF	2.1	
Herbal Supplements	0.3	
Soil/Mineral Stones	1.3	

### **Community perceptions about IFAS**

- The side effects are a common challenge such as nausea, drowsiness and vomiting.
- It has bad smell "Shiir".
- They are unavailable in the facilities at times.
- They believe it may lead to miscarriage.
- Some of the participants in FGDs reported awareness of the benefits of IFAS.
- Some believe it is a form of family planning.

*“during my time I never took any supplement and nothing happened to them, but these days things are different and I hear it is a good thing and I always tell my daughter to take the medicine”* FGD Older women.

*"When I saw my wife taking IFAS I thought of her taking family planning so I avoid her taking it"* FGD Men.



### Food fortification

Inadequate micronutrient intake is of concern for infants and young children in developing countries (Walton et al, 2012). The use of fortified products is a wide reach strategy for preventing and alleviating micronutrient deficiencies for the general household and vulnerable groups. Most households in Wajir County (74.4%) with a child aged under 2 years reported using fortified food products. The predominant products being; salt (88.4%), wheat flour (83.7%), cooking fat/oil (67.5%) and maize flour (80.0%). These households mostly used oil (80.0%).

Majority of the respondents perceived benefits of feeding children 6-23months with fats/oils enriched with vitamins as to boost baby's immunity (51.3%) and to prevent vitamin and mineral deficiencies (34.2%).

Table 13 Food fortification

<b>Fortified flours,oils and salt</b>		
<b>Uses fortified products at home</b>	74.4	988
<b>Fortified Food Products used</b>		735
Fortified maize flour	80.0	
Fortified wheat flour	83.7	
Fortified cooking fat and oil	67.5	
Fortified salt	88.4	
Margarine	7.2	
Fortified Sugar	13.3	
Other	2.7	
<b>Main oil/fat consumed</b>		735
Vegetable fat	12.7	
Animal fat	2.2	
Oil	80.0	
Other (solid fat)	5.2	
<b>Respondents perceived benefits of feeding children (6-23 months) fats and oils enriched in vitamins and minerals</b>		988
Improves ability to fight diseases	51.3	

Improves child appetite	13.5	
Improves child's ability to learn and develop	12.9	
Makes children health strong and active	17.2	
Prevents vitamin and mineral deficiencies	34.2	
Don't know/Don't remember	0.2	
Other specify	0.4	

A large majority of respondents do not believe that; some foods are taboo and should avoided by pregnant women (86.1%), pre-lacteals should be fed to child after birth (90.8%), colostrum is dirty and should not be fed to young children (96.3%), it is not possible to exclusively a baby for the first six months of life (92.8%), some foods are taboo and should not be fed to young children (83.2%), and that a young child should not be breastfed up to 2 years (89.5%). Majority of these beliefs are in line with the survey findings. However, FGD findings indicate presence of food taboos that influence consumption of certain foods during pregnancy.

### **Nutrition belief**

From the survey, majority of the respondents have positive beliefs towards MIYCN practices.

Table 14 MIYCN beliefs among women with children aged 0-23months

Question	%	N
<b>Some people believe that certain foods are taboo and should not be fed to a pregnant woman</b>		1001
Agree	10.3	
Not sure	3.6	
Do not agree	86.1	
<b>Some people believe that a new born baby should be given other liquids/Semi-solids before initiating breastfeeding</b>		1001
Agree	6.4	
Not sure	2.8	
Do not agree	90.8	
<b>Some people believe that COLOSTRUM (that breast milk that comes out in the first 3 days after delivery) is dirty and should not be fed to new born babies</b>		1001
Agree	0.4	
Not sure	3.3	
Do not agree	96.3	

<b>Some people believe that a baby cannot survive on exclusive breastfeeding for six months</b>		1001
Agree	5.2	
Not sure	2.0	
Do not agree	92.8	
<b>Some people believe that certain foods are taboo and should not be fed to a child</b>		1001
Agree	11.7	
Not sure	5.1	
Do not agree	83.2	
<b>Some people believe that a young child should not be breastfed up to 2 years</b>		1001
Agree	7.3	
Not sure	3.2	
Do not agree	89.5	

**Challenges given at FGDs to food availability and access include;**

- Poverty making it difficult for some to access all the food they would need.
- Drought that precipitates food insecurity hence scarcity
- Distance to markets is a challenge especially during the rainy season for some areas
- Pastoral lifestyle makes food access hard when families relocate in search of pasture
- Lack of clean safe water in most areas
- Large family sizes make food sharing limit intake.
- Harmful cultural beliefs and taboos.

*“I personally wanted to eat some meat today but I couldn’t find until I sent to the other town,” FGD Women.*

*“Meat of sheep; which they believes it may also bring miscarriages’ FGD older women.*

*“Almost 90% of women in this village cannot afford to buy meat since they are mostly poor” FGD Older women.*

*“Tomato is our meat” FGD older women.*

*"I have two families, one wajir and the other one in the border. When I visit my family in border, I don't stay more than 2 days, I feel like running away because I don't get what I eat while in Wajir I get"* FGD Leaders.

*"Gothir' (meat from wild animals) not good for maternal health"* FGD Men

*"Digir' (beans) it may cause heart burn to the women"* FGD Men.

### **Health and nutrition education perspectives**

During FGDs views were sort from the members regarding the status of MtMSGs and the likely approaches that could be used to strengthen health and nutrition education among Men and leaders, Women and the Community in general. The findings are summarized below;

#### **The status of MTMSGs**

- They support each other in exclusive breastfeeding and hygiene practices.
- The mothers guide each other in visiting the hospital during ANC and PNC.
- Lack of motivation during meetings.
- Some view MTMSGs as a room for gossip.

#### **Practical approached to enhance health and nutrition education**

##### **Targeting Men and leaders**

- Sensitisation of men and leaders on importance of health during barazas.
- Mobilisation of men and leaders to treat the children and family at health facility.
- Use of chiefs to communicate important message

*"Bilcan kaliged nin racay malaha"(no one will follow words from females)"* FGD Men

##### **Approaches for Women**

- Encouraged to attend ANC and PNC through seminars and at MCH clinic.
- Awareness sensitization at the market
- Informal radio station that endorses health and nutrition on local languages
- The women should be taught on maternal nutrition through mother to mother support groups
- Involve women in the decision making

## Community approach

- Sensitization at religious training.
- Two way communication flow between the community and health care can improve health and nutrition communication
- Health education through barazas.
- Promotion of small scale farming increases food production

## Maternal and child nutrition status

Maternal and child nutrition contribute to deficits in children's development, health and productivity into adulthood (Black *et al.*, 2013). While a woman's nutrition status may affect her own health it may as well have implications over her children. Despite MUAC being a rapid assessment method for nutritional status, it is still a valid method for screening; Child nutritional status indicator; based on MUAC 72.1% were nourished overall, 23% were at risk, 4% were moderately malnourished while 0.9% were at high risk.

Table 15 Maternal and child status

<b>Maternal dietary diversity</b>		
<b>Food groups</b>		<b>988</b>
Starches	98.5	
Pulses	78.8	
Nuts and seeds	1.8	
Milk and milk products	97.2	
Meats	6.8	
Eggs	26.7	
Dark green leafy vegetables	9.4	
Other Vitamin A rich fruits and vegetables	4.0	
Other vegetables	74.1	
Other fruits	1.8	
<b>Acceptable maternal diet (5 or more food groups)</b>	36.2	<b>988</b>
<b>Child MUAC</b>		<b>691</b>
Nourished (>13.4cm)	72.1	
At risk (12.5 – 13.4cm)	23.0	
Moderately malnourished (11.5-12.4cm)	4.1	
Severely malnourished (<11.5cm)	0.9	

<b>Maternal MUAC (at 21cm cut-off)</b>		<b>950</b>
Pregnant and lactating Acute malnutrition	3.1	
<b>Maternal MUAC (at 23cm cut-off)</b>		<b>38</b>
Women not pregnant not lactating acute malnutrition	0.0	

Maternal diet quality is a good indicator of overall micronutrient status and together with other factors is likely to impact their nutritional status. Even though only 3.1% of the pregnant and lactating women were malnourished, the overall diet quality was poor. Only 36.2% of the women had an optimal diet based on five or more food group's consumption. The predominant food groups consumed were; starches (98.5%), Pulses (78.8%), milk and milk products (71.0%) and other fruits and vegetables (74.1%). Dark green vegetables, vitamin A rich fruits and vegetables, nuts and seeds and meats were rarely consumed therefore lack of diversified diets.

#### **Factors identified at FGDs that influence maternal feeding practices**

- Lack of money to purchase the food
- Cultural believes.
- Sickness
- Distance to the market
- Support from other household members.

*" If mother is properly fed when she is breastfeeding and she is assisted at home with housechores , she will be comfortable, she will be healthy and she will produce enough milk( just like animals when they are grazed on good green pasture ,they produce enough milk )"*FGD Leaders.

*Men slaughter ram (Wan) because they believe the oil is natural and provides energy"*.FGD Young women.

*"Because of poverty, there is no recommended food for our wives"* Men FGD.

#### **DISCUSSIONS**

Nutrition deficiencies are prevalent globally contributing to high morbidity and mortality rates to infants, children and mothers in developing countries. Mothers who are malnourished when children are likely to enter pregnancy stunted and their health and nutrition status will impact

their children nutritional status negatively thus developing a vicious cycle. The synergistic interaction between inadequate dietary intake and disease burden leads to a vicious cycle that accounts for much of the high morbidity and mortality in developing countries (Khan, Yasir, and Zulfiqar A. Bhutta, 2010). Data on stunting levels in North Eastern region was (26.4%); North Eastern region had a higher proportion of underweight (19%) according to KDHS, 2014. However, majority of the children (72.1%) aged 6-23 months were well nourished overall based on MUAC as a child nutritional status indicator. This could be attributed to; high levels of breastfeeding initiation, high levels of continued to breastfeed for year, low introduction of pre-lacteals and high appropriate introduction of complementary feeds.

The period of complementary feeding is between 6 and 24 months , marked by a transition from exclusive breastfeeding to consuming a wide range of foods in addition to breast milk and is the key window for preventing under nutrition and its long-term adverse implications; marked by significant growth faltering, high occurrence of infections leading to increased nutrition needs hence adequate nutrition during this critical period is prioritized (Dewey, 2013) .According to UNICEF , solid and semi-solid foods should be introduced to infants at around one six months of age because breast milk is insufficient to maintain growth. Despite high appropriate introduction of complementary feeding, high recommended responsive feeding practices majority of the women use bottles with nipples to feed their children. Bottle feeding is highly discouraged due to the possible contamination of unsafe water, lack of hygiene leading to infections. This may also reduce child's interest in breastfeeding thereby result in declined milk production (KNBS and ICF, 2015).

Responsive feeding ought to improve children's attentiveness, interest in feeding, attention to their inner cues of hunger and satiety, ability to communicate their needs to their caregivers with distinct meaningful signals and successful progression to independent feeding (Black and Aboud, 2011; Bentley *et al.*, 2011; Eshel *et al.*, 2006) hence it is a key feature in healthy caregiving behavior. Recommended responsive feeding practices were high but feeding a child during illness is low. During illness fluid and nutrient intake should be increased to cater for increased nutrient needs related to nutrient losses from fever , diarrhea or vomiting (Dewey,2015). Even with most children ever being sick (57.1%), during sickness period majority of caregivers gave less breast milk (94.2%) and less food (83.8%). This could be attributed to the low dissemination

of nutrition knowledge and high illiteracy levels. Majority of the caregivers receive child feeding information from unskilled sources mainly; their mother or mother in laws. Caregivers might not make the best out of the food present in the household due to lack of knowledge on foods for young children, cultural beliefs and practices (Waswa, 2015). Additionally, literacy and numeracy skills that women acquire in school enhance their ability to recognize illness and seek treatment for their children (Abuya, 2012). Inappropriate feeding practices during complementary feeding period are known to impact child health negatively therefore education interventions on infant and young child feeding are a necessity.

Wajir County is classified within the arid and semi-arid regions of Kenya rendering it among the counties most vulnerable to malnutrition. So as to understand the determinants of undernutrition it is important to assess causes and determinants of under nutrition at different levels as per the most widely used conceptual framework developed by UNICEF. Poor health seeking behavior compromises maternal and child health.

Low utilization of health care services was evident from the survey. Less than half of the children had health card's which is an indicator of low utilization of health care services, as they seek services for ANC and PNC. Women mostly initiate ANC after the first trimester. Timing of first antenatal care is indeed an important entry point for delivery care as young women who initiated antenatal care early were more likely to use skilled professional assistance at delivery than their counterparts who initiated ANC late (Ochako *et al.*, 2011). However, majority achieve the recommended number of ANC visits. This is a positive result since it is also recommended that pregnant women have at least 4 antenatal visits during their pregnancies so as to identify any complications beforehand hence preventing maternal and child mortality (WHO, 2001). From the FGDs women are aware that during ANC visit the foetus is monitored and appropriate drugs are administered, these are incentives to ANC attendance. However, some women report that they attend ANC only when they have labour complications, while others fail to attend ANC due to household chores. Only 20.6% of the respondents took child to clinic for the first time during the critical two day period after delivery. A high mean household size (6.3 members) is a barrier to food access therefore limits sharing and intake.

Unskilled deliveries were high among the respondents; 57.6% delivered at home by TBA. Literature agrees that qualified skilled personnel manage labor complications effectively and are



equipped with effective referral systems for specialized care during complications thus improving perinatal outcomes for mothers and infants (Fillipi *et al.*, 2006; Gabrysch and Campbell, 2009, Adegoke and Broek, 2009; Koblinsky *et al.*, 2006; Shiferaw *et al.* 2013 ).Physical acces to health facilities because of unreliable transport and poverty are barriers to health facility deliveries ( Kitui *et al.*,;2013).Strategies to promote skilled assisted deliveries such as provision of ambulances and improving maternal experiences at the health facilities is a necessity.

Literature indicates that child under nutrition is also linked to other factors. Maternal education has been linked with nutrition outcomes among children in studies in various settings (Kabubo, Ndenge and Mwabu , 2008;Obuya *et al.*, 2011; Frost ,Forste and Haas, 2005). Findings indicate high illiteracy levels among the caregivers (92.1%) which has negative implications on child health. Maternal education is a strong predictor of children's health; educated mothers have children who suffer less from stunting wasting and underweight (Abuya *et al.*, 2012).

Poor maternal dietary quality also impacts on the child's nutrition status. Only 36.2% of the women had an optimal diet based on five or more food group's consumption. This could be as a result of high illiteracy levels among other barriers to food access reveled through FGDs. Literature indicates that animal source foods are rich in several key nutrients but are often lacking in the diets of vulnerable populations (Jin and Lannoti, 2014).

Poor child dietary quality and poor intake of fortified foods was also evident from the survey. Among all age groups (only 6-23 months) only 25.7% received a minimum dietary diversity, 27.6% of them attained a minim diversity meal frequency and 12.4% of them realized the minimum acceptable diet. Dietary diversity is reflected in the number of foods consumed across several food groups within a period of time ,developed to ensure adequate nutrient intake and improve variety of food, thus reducing stunting in children (Darapheak *et al* 2013). Dietary diversity is alsoan indicator for household food security (Kennedy *et al*, 2009) .

Use of IFAS results reveal high awareness of IFAS availability with most of the respondents reporting to have been issued with IFAS tablets. However, IFAS intake in both previous and current pregnancies was registered to be poor with low consumption compared to the given amounts. There is a causal link between maternal Iron Deficiency Anemia and adverse birth

outcomes including low birth weight and increased perinatal mortality; there exist a substantial proportion of neural tube defects related to inadequate consumption of folic acid around the time of conception (Black *et al.*, 2013). From the FGD discussions, side effects such as nausea, vomiting are a common challenge to IFAS intake, some women complained that IFAS has a bad smell 'shiiir' and sometimes unavailable in health facilities. Community belief that IFAS is a form of family planning and might lead to miscarriage is a barrier to IFAS intake.

MNPs are powdered preparations of vitamins and minerals which are mixed into food before consumption, developed to address the challenge of childhood anemia through delivering Iron and a blend of other important vitamins and minerals (Zlotkin *et al.*, 2005). Low levels were reported in micronutrient supplementation from the survey, where less than half (39.7%) of the respondents had ever seen or heard about MNPs even after being shown a sample. This could be linked to the poor health seeking behavior and poor dissemination on child feeding information. The use of micronutrient sprinkles with IYCF education reduces anemia and Iron Deficiency compared with IYCF education only (Jack *et al.*, 2012). With low intake of fortified foods, MNPS, poor dietary diversity, low minimum meal frequency, low minimum acceptable diet and poor intake of fortified foods in Wajir children at risk of micronutrient deficiencies. Children should be given sprinkles and sustained until 2 years in order to cover up for the most vulnerable period.

## **CONCLUSIONS**

Based on the above findings we can draw the following conclusions;

Household characteristics indicate high illiteracy levels among the caregivers, 92.1% had no education and a majority are housewives (82.3%). There is a high mean household size (6.3 members), in comparison to the national average according to KDHS, 2014.

Home deliveries were high among the respondents; 57.6% delivered at home by TBA while Hospital deliveries (39.9%) are very low in Wajir county in comparison to national levels according to KDHS 2014. This indicates that interventions should be put in place to encourage facility delivery. Qualitative discussions revealed that lack of ambulance for referrals, long distance to the health facilities, presence of experienced TBAs in the community, presence of

male nurses and fear of caesarian section deliveries are major barriers to health facility deliveries.

Less than half of the children had health card's which is an indicator of low utilization of health care services, as they seek services for ANC and PNC.

Breastfeeding practices reveal; high levels of breastfeeding initiation, low introduction of pre-lacteals. Most of the children were breast fed less than one hour after birth (87.6%) this is high compared to the National average as compared to KDHS 2014 results (62.2%) and a 6.8% improvement in comparison with average North Eastern region results according to KDHS 2014. Breastfeeding indicator results were higher compared to the National average as compared to KDHS 2014 results; timely initiation (87.6%), exclusive breastfeeding (69.9%), continued breastfeeding at 1 year (98.9%). However, breastfeeding at two years is below National average.

Although cultural practices of giving pre lacteals still exist, the rate of pre lacteal feeding is still low .Only 12.9% were given pre lacteals this is a 3.1% improvement from the National levels compared to KDHS 2014 results. Qualitative discussions on breastfeeding attitudes, perceptions and practices revealed that inadequate breast milk, household chores, the belief that water cools the baby, the practice of giving 'hanqaris' ( pre lacteals from animal source), introduction of goat milk and porridge before six months are some of the barriers to exclusive breastfeeding.

Dissemination of child feeding information by health care workers is low. Most of the caregivers did not receive child feeding information (54.9%). Those who received child feeding information was mostly from their mother or mother in law (58.3%). This implies that most mothers receive information from unskilled sources rather than Health care workers (47.2%) who are more skilled.

Appropriate introduction of complementary was high, however overall complementary feeding indices show poor child feeding, with low consumption of fortified foods. Appropriate introduction of complementary foods (6-8 months) was practiced by most of the respondents (65.2%). However, is low in comparison to the national level (80%) according to KDHS 2014. Use of bottles with nipples as a practice and attitude is still high at close to a third of respondents.

High recommended responsive feeding practices; a high proportion of respondents did something to encourage a child to eat (63.9%), (92%) of whom encouraged child verbally, by praising the child (77.1%). However feeding a child during illness is still low. This could be attributed to the low dissemination of nutrition knowledge.

Low levels were reported in micronutrient supplementation from the survey, where less than half (39.7%) of the respondents had ever seen or heard about MNPs even after being shown a sample. Only 4.4% reported receiving MNPs in the last 6 months.

Women mostly initiate ANC after the first trimester however majority achieve the recommended number of ANC visits. In comparison to the current pregnancy, more women ever attended ANC (87.0%) during pregnancy with the index child. Overall majority, attended ANC between the 4<sup>th</sup> and 5<sup>th</sup> month of pregnancy with index child (58.7%), whereas majority received between 3 to 4 ANC visits (55%)., many attended 4 ANC visits . During ANC visits with index child, all essential information given was given to more than 60% of the respondents. However, birth planning, infant feeding and growth monitoring were below 60%. All essential ANC services given reached over 60% of the respondents, except deworming (23.6%), anti-malarial (27.2%) and mosquito nets (10.8%) which were the least provided services. Generally, information and services given in current pregnancy were lower compared to previous pregnancies with the index child. Qualitative discussions from FGDs revealed that monitoring of the fetus during ANC visits, presence of drugs and female nurses in health facilities are incentives to ANC attendance. However, household chores and believe that they should health services only when sick are some barriers to ANC attendance.

Post-natal care for women is one of the key pillars in securing maternal health; however, PNC for both mother and child is also very low. Only 20.6% of the respondents took child to clinic for the first time during the critical two day period. According to regional results for KDHS 2014, North eastern region is marked by high rates of no postnatal checkup (80%), there is a great improvement in PNC attendance whereby only 15.3% did not attend clinic. Qualitative discussions reveal that women are aware of the importance of PNC, mostly attend PNC for vaccination of their infants; however some believe injections trigger high fever in infants. Some women see no need to attend PNC when they have no complications.

Iron folic acid supplementation is critical in maternal nutrition enhancement. Use of IFAS results reveal high awareness of IFAS availability with most of the respondents reporting to have been issued with IFAS tablets. Even though 71.0% of respondents received IFAS during pregnancy, 36.8 reported to have had supplements at home but were not consuming. From the FGD discussions, side effects such as nausea, vomiting are a common challenge to IFAS intake, some women complained that IFAS has a bad smell '*shiir*' and sometimes unavailable in health facilities. Community belief that IFAS is a form of family planning and might lead to miscarriage is a barrier to IFAS intake. It is worth noting that 1.3% consumed soil/mineral salts despite deworming being among the least provided ANC services.

Based on MUAC as a child nutritional status indicator; 72.1% of children aged 6-23 months were well nourished overall. Among all age groups (only 6-23 months) only 25.7% received a minimum dietary diversity, 27.6% of them attained a minimum meal frequency and 12.4% of them realized the minimum acceptable diet.

Even though only 3.1% of the pregnant and lactating women were malnourished, the overall diet quality was poor. Only 36.2% of the women had an optimal diet based on five or more food group's consumption. It was noted from FGDs that poverty, drought, long distance to the market, pastoral lifestyle, large family size, misleading cultural believes and food taboos are the major barriers to food access.

Targeted health and nutrition education among; men and leaders, women and the community in general is a necessity, with messaging based on the reinforcing beliefs and barriers as indicated for each target group during FGDs.

## RECOMMENDATIONS

Based on the findings, the recommendations are grouped into three major domains; Behavior change related activities, health systems interventions, and lastly community based integrated programs.

DOMAIN	RECOMMENDATIONS	DURATION TO IMPLEMENT
Behavior change communication	Promote early ANC attendance targeting first trimester and increased visits	Short term
	Sensitize and educate women on need for facility delivery and to attend PNC within 48hrs of delivery	Short term
	Sustain knowledge and attitudes toward optimal breastfeeding practices and appropriate complementary feeding practices	Short term
	Promote behavior change towards acceptance and use of IFAS and MNPs and sensitize men on value of IFAS and MNPs.	Short term
	Promote responsive feeding and feeding a sick child practices among primary caregivers	Short term
	Identify and use appropriate communication channels and messaging (illiteracy) to target Men and leaders, women and the community in general on MICYN education	Short term
	Develop and implement cooking sessions among women to include balanced diet concept based on locally available and accepted foods for women and children to improve dietary diversity	Medium term
Health systems interventions	Sensitize and monitor staff on the implementation and adherence to patients rights (Kenya National Patient Rights Charter October 2013) and patient attitude	Short term
	Capacity building in terms of more women health care workers working in Maternity to enhance facility delivery uptake.	Short term
	Enhance full ANC services to include; mosquito net provision, de-worming and anti-malarials, ANC information package including infant feeding information	Short term
	Revamp ANC, Facility delivery and PNC visit incentive programs to increase health service utilization	Medium term
	Enhance stocking levels for MNPs and IFAS	Short and medium term
	Pilot waiting mothers intervention in areas where facility reach for delivery is a challenge, and contextualize to cultural taste	Medium term
Community based integrated programs	Shorten distance to health facilities by constructing and equipping facilities	Long term
	TBA re-orientation programs for referral purposes other than home delivery	Medium term
	Recruit train and deploy more CHVs for revitalize MTMSGs	Medium term
	Integrated nutrition and livelihood programs (such as Agric and nutrition interventions) for food security to improve access to food	Medium and long term

	Integrated water and nutrition programs for water availability for home use and kitchen gardens	Medium and long term
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## APPENDICES



KAP  
QUESTIONNAIRE 151



Wajir KABP Training  
Programs.docx



Wajir calendar of  
events.docx



Selected  
Clusters.xlsx



ADDITIONAL  
QUESTIONs for UNIC



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women.doc



Wajir young  
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