



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

TANA RIVER COUNTY

JANUARY 2018



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ACRONYMS

ANC	Antenatal Care
CHV	Community Health Worker
CSB	Corn Soy Blend
EBF	Exclusive Breastfeeding
ENA	Emergency Nutrition Assessment
FGD	Focus Group Discussion
HH	Household
HIV	Human Immuno-deficiency Virus
IFAS	Iron Folate Acid
IYCF	Infant and Young Child Feeding
IYCN	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
MNPS	Micronutrient Powders
MOH	Ministry of Health
MUAC	Mid Upper Arm Circumference
ODK	Open Data Kit
PNC	Postnatal Care
PPS	Probability Proportional to Size
RUTF	Ready to Use Therapeutic Foods
SPSS	Statistical Package for Social Sciences
TBA	Traditional Birth Attendant
UNICEF	United Nations Children's Education 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

Tana River County borders Kitui County to the West, Garissa County to the North East, Isiolo County to the North, Lamu County to the South East and Kilifi County to the South. It is classified as an arid and semi-arid area hence also considered as one of the counties that is most vulnerable to malnutrition. The 2014 KDHS indicated that in Tana River county 28.1% of the children were stunted indicating that more than a quarter of the children suffered from long standing malnutrition.

Methodology

This survey was implemented in Tana river 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 total sample size of 1000 children aged 0-23 months.

Results

Results for key IYCF indicators are as presented below;

Breastfeeding indicators among children 0-23 months of age

INDICATORS	%	N
Ever breastfed	98.9	1000
Timely Initiation of breastfeeding (0-23 months)	69.9	989
Exclusive breastfeeding under 6 months (0-5 months)	49.6	337
Continued breastfeeding at 1 yr (12-15 months)	97.6	124
Continued breastfeeding at 2 yrs (20-23 months)	98.7	76
Baby drank anything from a container yesterday (0-23 months)	72.4	1000

Complementary feeding indicators are shown below;

INDICATOR	%	N
Introduction of solid, semi-solid or soft foods (6-8 months)	82.3	158
Minimum dietary diversity (= <4)		
6-11 months	27.4	274
12-17 months	41.5	188

18-23 months	46.8	201
6-23 months	37.3	663
Minimum meal frequency		
6-8 months (2 times)	49.4	158
9-23 months (3 times)breastfed	45.1	505
6-23 months ALL children	46.5	663
Minimum acceptable diet		
6-8 months	15.2	158
9-23 months breastfed	24.0	505
6-23 months ALL children	22.5	663
Consumed of Iron Fortified solid , Semi solid or soft foods	32.3	663
Cerelac	2.8	214
Plumpy Nut	3.7	
Corn Soy Blend	0.5	
Weetabix	0.5	
Quick Porridge Oats	0.5	
White oats	0.0	
Formular	0.0	
At what age in months should one introduce complementary foods?		1000
0-5	7.7	
6	66.6	
7 and above	25.7	
Consumed foods with added powder or sprinkles	1.1	663
Consumed LNS	2.4	663

Conclusion

Breastfeeding practices reveal; high levels of breastfeeding initiation, close to a quarter given pre-lacteals, Exclusive breastfeeding was low with a high perception of inadequate milk production were reported. Appropriate introduction of complementary was high, however overall complementary feeding indices show poor child feeding. With 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

Tana River County borders Kitui County to the West, Garissa County to the North East, Isiolo County to the North, Lamu County to the South East and Kilifi County to the South. The county lies between latitudes 00 053 and 20 041 South and longitudes 380 2543 and 400 15 East. It is composed of three administrative sub-counties namely; Bura, Galole, Tana Delta, three constituencies namely; Galole, Bura and Garsen. The most prevalent diseases in the county in order of priority are respiratory track infections, diarrhoea, malaria, skin diseases and pneumonia. This increases risk of malnutrition with children being most vulnerable.

In Kenya, the prevalence of stunting is 26% and affects an estimated two million children. In Tana River county 28.1% of the children were reported stunted indicating that more than a quarter of the children suffered from long standing malnutrition (KNBS and ICF, 2015). 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.

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). However, KDHS data on exclusive breast feeding and complementary feeding practices is available at national level but not county level. This survey seeks to determine MIYCN practices based on their knowledge, attitudes and beliefs and to determine the core IYCF indicators in Tana River County. 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 UNICEF nutrition program review shows that current data on exclusive breastfeeding and complementary feeding practices was lacking for Tana River County. The 2016 communication for development secondary data analysis and literature identified information gaps such as lack of sub-national/County 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 Tana River 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 Tana River County.
2. Measuring progress and informing program design and implementation through application of these findings.

METHODOLOGY

This survey was implemented in Tana river 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 for KAP 2017

Indicator	Estimate	Precision	Design effect	Sample Size
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 Tana river County specific data, a prevalence of 50% was used, 50% 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 980 for Tana river 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 1000.

Sampling procedure

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

- In Tana River 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 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 Tana river County, an average of 16 HH's per cluster were randomly selected. With 16 Households per cluster $1000/16=62.5$ rounded off to 63 clusters giving an increased sample size target of 1008. In each household 1 child under 23months of age was eligible. With 12 field teams to cover 63 clusters, it came to 6 days of field data collection for household interviews. During data collection there was limited number of eligible households in one selected cluster. One team combined two villages and still weren't able to get 16 eligible households. The third immediate village was a selected cluster and they had to stop at 14 households hence resulting to 1006 households at the end of the whole survey. However, this did not affect calculated sample size statistically.

N/B- Insecure villages on the border with Somalia were excluded from sampling after consultation with the CNC and Sub-County teams. Security concerns emerged on the date of travel, a team heading to Kipini areas experienced delays due to insecurity along Lamu- Malindi road and were forced to start data collection on the second field day.

Case definitions

Cluster- in this context villages which were the smallest administrative unit were deemed as clusters.

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

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.

**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 Tana river KAP survey.

Focus Group Discussion Guides

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 36 data collectors for household survey. This comprised of 12 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. Enumerators for both survey teams had at least tertiary level of education (i.e. diploma/degree in health related course) and either had previous survey experience. The team leaders were all from the County Health department MoH. Supervision was done by the KABP consultant, the UNICEF NSO (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 13th-19th January for both household teams and FGD teams. Piloting/pretesting was done prior to actual data collection i.e. on 12th January 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 Pokomo, Oromo and Wardei. These included colostrum, Iron Folic 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.
- Training on Household survey modules.
- Age determination in complete months and years.
- Selection of the index child from households and how to identify an eligible 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 teams

- 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. Maternal and child dietary diversity forms were issued to ensure collection of quality dietary data collection and hard copy questionnaires issued in case of ODK technical failure. 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

Household characteristics

This section presents the KABP survey household data collection and Focused Group Discussions (FGD) findings. Tana river KABP survey findings indicated that most (94.4%) of the household heads were male and their mean household size was 5.5. This was higher than the national level of 3.9 (KNBS and ICF, 2015). Majority of the respondents (95.6%) were currently married, 84.9% of them muslims and 88.9% of them were lactating mothers. 57.7% of the respondents had ever been to school with majority (59.2%) of them having attained primary level of education and only 2.6% having college/pre-university/university level of education. Further these women were mainly housewives (47.7%) while 17.5% of them practiced farming as their source of livelihood.

Table 2: Household characteristics

Women Characteristics	%	N
Sex of HH Head		1000
Male	94.4	
Female	5.6	
Mean HH size	5.5	1000
Physiological status		986
Pregnant	5.2	
Lactating	88.9	
Pregnant and lactating	1.1	
Not pregnant-not lactating	4.8	
Marital status		986
Currently married	95.6	
Separated divorced	1.9	
Widowed	0.5	
Single/never married	1.9	
Ever been to school	57.7	986
Highest level of education completed		569
Less than primary school	26.5	
Primary school	59.2	
Secondary/High school	11.6	
College/Pre-university/University	2.6	
Religion		986
Christian	14.9	
Muslim	84.9	
Main occupation /source of livelihood		986

Formal Employment	3.1	
Informal employment / jua kali	0.9	
Casual labor	6.9	
Own business	9.3	
Petty trading / hawking	3.9	
Farming	17.5	
Pastoralist	7.8	
Dependant	1.9	
Housewife	47.7	
Other specify(bodaboda, Madrasa)	0.9	

Maternal characteristics

Nearly all women in Tana River County had ever been pregnant (99.4%) and had also given birth (99.9%). Most of them had at least 1-4 (71.7%) children of whom were mostly male (51%). Many of these children were in the age range of 6-23 months (66.3%). Findings in Tana river County revealed that most of the children were delivered at home (52.7%) while only 35.9% in the hospital which was lower than the national level (61%) (KNBS and ICF, 2015). This could be attributed to the fact quite a number of the women were illiterate and had no source of livelihood. However, 84% of the children had health cards implying that health services were sought later after the deliveries.

Table 3: Birth history

Maternal and Child Birth history	%	N
Ever been pregnant	99.4	986
Ever given birth	99.9	980
Number of children born and are alive		936
1-4	71.7	
5-11	28.3	
Age of index child in completed months		1000
0-5	33.7	
6-23	66.3	
Child age verification		1000
Health card	84.1	
Birth certificate	1.1	
Baptism card	0.1	
Seasonal calendar	6.9	
Other Specify (mother recall, born yesterday)	7.8	

Child gender		1000
Female	49.0	
Male	51.0	
Place of birth		1000
Hospital	35.9	
Health Centre, Doctors office/private clinic	4.2	
Dispensary	7.0	
In the home	52.7	
Mid-wife home	0.2	

Child feeding characteristics

It is recommended that infants should be exclusively breastfed for the first six months of life and there after given appropriate complementary feeding with continued breastfeeding up to two years and beyond. However, there are a number of infants who will not be able to enjoy the benefits of breastfeeding in the early months of life or for whom breastfeeding will stop before the recommended duration of two years (Dewey, 2005). Feeding practices play a critical role in child development. Poor feeding practices can adversely impact the health and nutritional status of children (KNBS and ICF, 2015). The survey findings illustrate that 98.9% of the children were ever breastfed. Most of these children were breast fed less than one hour after birth (69.9%) however most of the caregivers believed that the baby should be put to the breast immediately they are born (85.9%) and also that the babies should be given the very first milk from the breast (90.6%). For children who were not breastfed reasons given most of the caregivers were; baby ill, mother pregnant, mother away and mother unwell (each 18.2%). 15.9% of the mothers felt that children should be fed on prelacteals while 24.5% of the mothers reported having given their children feeds besides breast milk within the first three days. The feeds given mainly included milk other than breast milk (53.1%), plain water (38.8%) and sugar/glucose water (33.5%). Most of the mothers claimed that other drinks were given because there was not enough breast milk (60.9%) and the baby cried too much (26.9%). Majority of the caregivers fed their babies on colostrum (93.3%) and another 94.5% would still feed colostrum to their babies. 58.7% of the caregivers stated that the colostrum was nutritious to the baby while 72.7% of the caregivers who would not feed their babies colostrum stated that it was dirty milk.

Table 4: Breastfeeding practices amongst children 0-23months of age

Breast Feeding Practices	%	N
Ever breastfed	98.9	1000
Duration of breastfeeding after birth		989
Immediately (Less than 1 hour)	69.9	
Hours (Less than 24 hours)	20.5	
Number of days	7.8	
Don't know	1.8	
Why child was never breastfed		11
Baby ill	18.2	
Baby unable to suckle	9.1	
Mother unwell	18.2	
Mother away	18.2	
Inadequate breast milk	9.1	
Mother pregnant	9.1	
	18.2	
Should feed Pre lacteals	15.9	1000
Child fed anything in first three days besides breast milk	24.5	1000
In the first three days child was given		245
milk (other than breast milk	53.1	
Plain water	38.8	
Sugar/Glucose water	33.5	
Gripe water	1.6	
Sugar salt solution	1.6	
Infant Formula	0.5	
Tea	0.5	
Herb	1.2	
Honey	1.6	
Reason For giving child other drinks		245
Not enough breast milk	60.6	
Baby cried too much	26.9	
Cultural; reasons	18.0	
Weather too hot	5.7	
Other Specify	11.0	
Received practical support or advice given during first three days	33.9	1000

Baby should be put to breast immediately they are born	85.9	1000
Baby should be given the very first milk from breast	90.6	1000
Baby was Fed Colostrum	93.3	1000
Would feed baby with colostrum	94.5	1000
Benefits of feeding baby colostrum		933
Nutritious to baby	58.7	
Prevents diseases/infections	17.4	
Cleans babys stomach	6.2	
Nothing Specific	1.2	
Others Specify(brain development, immunity, child growth)	2.0	
Don't Know	32.3	
Reason would not feed baby on colostrum		44
Its dirty milk	72.7	
Not satisfying/ sufficient	4.6	
Mother needs to rest	4.6	
Cultural practices	15.9	
Other (baby refused, mother unwell, told by TBA)	18.2	
Duration after birth child should be put to breast		1000
Hours	81.1	
Days	10.4	
Immediately <1hr	3.4	
Don't know	5.1	
Should baby be given other drinks within first 3 days		1000
Yes	15.9	
No	82.6	
Don't know	1.5	
If yes, what should be given;		159
Milk (other than breast milk)	62.9	
Plain water	47.2	
Sugar/glucose water	28.3	
Gripe water	2.5	
Sugar/salt solution	2.5	
Honey	0.6	
Tea infusion	0.6	
Other	1.9	

Majority of breastfeeding indicator results were higher compared to the National average as indicated by the KDHS 2014 results; timely initiation (69.9%), continued breastfeeding at 1 year (97.6%), continued breastfeeding at 2 years (98.7%). However exclusive breastfeeding (49.6%)

results was much lower than the national level (61%). This low rate of exclusive breastfeeding could be attributed to the lack of support or advice given to the caregivers during the first three days. Similarly, the FGD comments support these findings “*EBF is good, but breast milk alone is not enough*” Young women FGD, Wardei. “*The community considers cow milk more important to breast milk*” Dogodia CHV FGD.

Table 5: Breastfeeding indicators among children 0-23 months of age

INDICATORS	%	N
Ever breastfed	98.9	1000
Timely Initiation of breastfeeding (0-23 months)	69.9	989
Exclusive breastfeeding under 6 months (0-5 months)	49.6	337
Continued breastfeeding at 1 yr (12-15 months)	97.6	124
Continued breastfeeding at 2 yrs (20-23 months)	98.7	76
Baby drank anything from a container yesterday (0-23 months)	72.4	1000

During FGDs the following was summarized findings from the discussions;

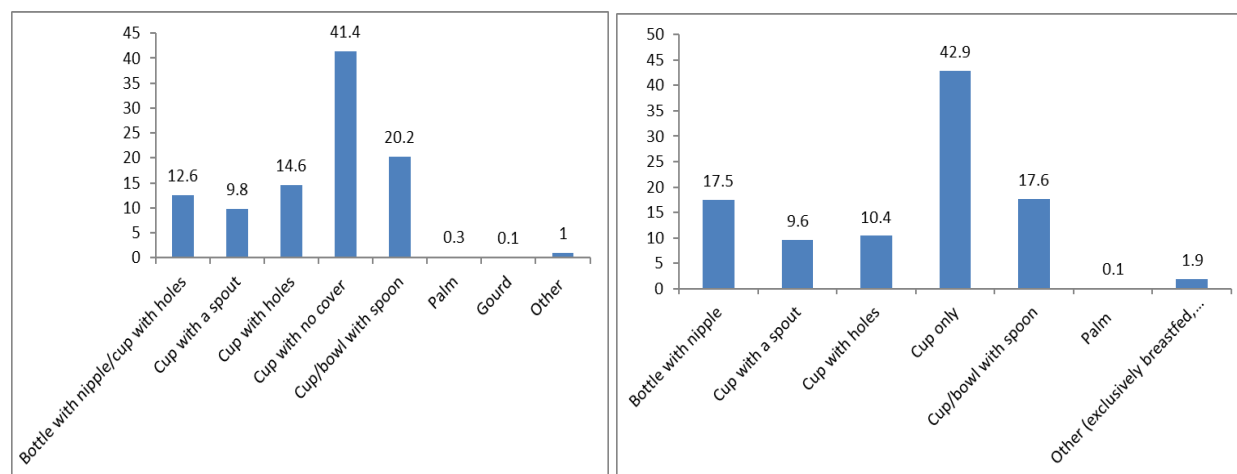
EBF attitudes, perceptions and practices

- Some reported that EBF is beneficial to the infant
- Perceived inadequacy of breast milk to meet the child’s nutritional needs
- Women’s chores lead to children being left in the care of other family members
- Food insecurity and hunger among women leads to inadequate EBF
- Harmful cultural practices influence use of prelacteals
- “*I heard one of the women say she cannot breastfeed alone when the child is crying and dissatisfied*” Pokomo leaders FGD
- “*In our community a child is given a drop of milk immediately after delivery*” Orma Older women FGD.

Feeding containers

Use of containers with teats, spout, palm and gourd is a source of contamination and safety hazard to the child to close to 40% of the children. Survey findings indicate 72.4% of the

children (0-23 months) drank from a container in the previous day prior to the survey. Majority of these children used cups with no covers (41.1%) despite 42.9% of the caregivers believing that cups only should be used.



Use of container for drinking (0-23 months) N=724; What should be used to feed liquids to a baby (0-23 months) N=1000

Figure 1: Child feeding containers

Lack of education/ knowledge by caregivers has been reported to be a determinant in child growth and development. It is associated with better child care practices and reduced incidences of malnutrition (Black et al., 2013). The survey results showed that 96.1% of the caregivers mainly decided what the baby ate and what they didn't. Unfortunately, about a three thirds of the caregivers hadn't receive child feeding information (69.6%) making them prone to inappropriate feeding practices. Other studies agree with this where it was indicated that caregivers who lack knowledge are not able to make best use of available food resources (Inayati *et al.*, 2012). For the caregivers who had received information acquired it from mainly the health care workers (59.4%)

Table 6: Complementary Feeding Characteristics

Introduction to solids, semi solids or soft foods	%	N
Received child feeding information	30.4	1000
Source of child feeding information		304
Mother/ Mother in law	17.8	
Other relative	2.5	
Neighbor/friend	2.5	
Health Worker	59.4	
Community Health Volunteer	15.3	
Electronic media	0.3	
Print media	0.3	
Siblings	0.3	
Others Specify(grandmother,nurse)	1.7	
Who mainly decides what the baby should and should not eat		1000
Baby's mother	96.1	
Baby's father	2.2	
Baby's grandmother	0.6	
House girl	0.1	
Neighbor	0.1	
Others specify(exclusively breastfed)	0.9	

WHO recommends that children from the age of six months be timely initiated on a variety of foods, in adequate amounts and increasing frequency with age, besides continued breastfeeding (Dewey, 2005). However, infants and young children in developing countries are fed on diets that do not meet these requirements. This survey illustrated that appropriate introduction of complementary foods was practiced by most of the respondents (82.3%) although their overall child diet quality indicators were low when compared to the national levels in the 2014 KDHS. Among all age groups (6-23 months) only 37.3% of the children received a minimum dietary diversity, 46.5% of them received a minimum meal frequency and only 22.5% of them were

given the minimum acceptable diets. There was also a low consumption of the fortified foods. This results can further be associated with the fact that most of the caregivers had not received any child feeding information hence there is need for nutrition education on appropriate IYCF feeding practices.

Table 7: Complementary feeding practices

Complementary feeding practices	%	N
Introduction of solid, semi-solid or soft foods (6-8 months)	82.3	158
Minimum dietary diversity (= <4)		
6-11 months	27.4	274
12-17 months	41.5	188
18-23 months	46.8	201
6-23 months	37.3	663
Minimum meal frequency		
6-8 months (2 times)	49.4	158
9-23 months (3 times)breastfed	45.1	505
6-23 months ALL children	46.5	663
Minimum acceptable diet		
6-8 months	15.2	158
9-23 months breastfed	24.0	505
6-23 months ALL children	22.5	663
Consumed of Iron Fortified solid , Semi solid or soft foods	32.3	663
Cerelac	2.8	214
Plumpy Nut	3.7	
Corn Soy Blend	0.5	
Weetabix	0.5	
Quick Porridge Oats	0.5	
White oats	0.0	
Formular	0.0	
At what age in months should one introduce complementary foods?		1000
0-5	7.7	
6	66.6	
7 and above	25.7	
Consumed foods with added powder or sprinkles	1.1	663
Consumed LNS	2.4	663

Dietary diversity is a proxy indicator of nutrient adequacy in an individual's diet (Kennedy *et al.*, 2011) and an intake of diversified diets has been globally recommended in most dietary guidelines (Ruel, 2003). Despite this recommendation low dietary diversity is common in the developing countries where children are mainly fed on starchy staples with little or no animal products (Ruel, 2003; Dewey, 2013). True to this the survey findings indicate children 6-23 months in Tana River County are mostly fed on grains and tubers (87.3%) and rarely fed on meats (31.2%) and eggs (6.8%) but their dairy (75.3%) intake was nearly six times more the than that of the national level. During the FGDs it was further illustrated that children were fed on any available food. *“When a baby reaches 6 months it is fed on any food available”* Young women FGD Wardei.

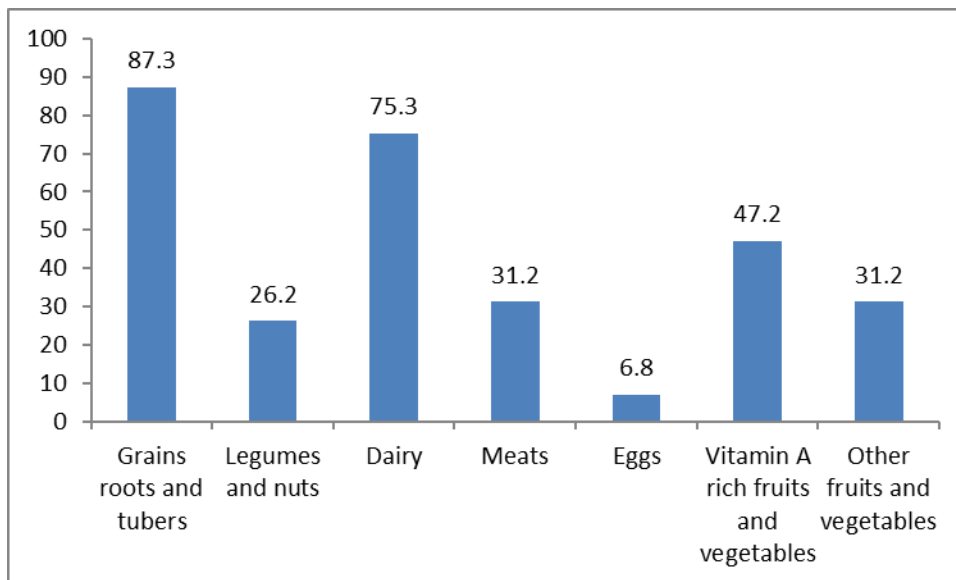


Figure 2: Child dietary diversity n= 663

Responsive feeding and feeding a sick child are among the best practices when it comes to child feeding. A high proportion of respondents did something to encourage their children to eat (79.1%). They mostly encouraged them verbally (84.9%) by praising their children (71.9%). Though most children had ever been sick (84.9%), during sickness period majority of caregivers gave less breast milk (79.8%), less non-breast milk (81%) and less food (80.5%) because the children did not want it. Even after illness some caregivers still some gave less (30.9%) because the children didn't want it, others gave the same amount of food (35.2%) while others more food (30.7%). The caregivers also indicated that once in a while (54.5%) food remained on the children's plate and this remaining food was mainly given to other children (48.9%). Mothers in Tana River County are never away from their children (87.9%) and this was because most of them were housewives.

Table 8: Responsive feeding of children

Responsive feeding yesterday	%	N
Respondent fed the child yesterday	91.9	663
Child ate all food you think he/she should	54.5	609
Respondent did anything to encourage child to eat	79.1	609
What respondent did to encourage child to eat;		482
Offered another food/liquid	9.5	
Encouraged verbally	84.9	
Modeled eating	3.9	
Ordered strongly	3.9	
Another person helped feed child	2.1	
Another form of encouragement	3.7	
Said something to encourage child to eat	81.3	609
Ordered child to eat	19.2	
Praised child	71.9	
Asked child questions	3.6	
Talked about food	17.8	
Threatened the child	0.8	
Told child that she liked food	4.4	
Talked about other things	3.8	
Child self-fed yesterday at any time	40.0	663
Duration of self-feeding		265
All the time	43.0	
Half of the time	28.3	

Little bit of time	28.7	
FEEDING A SICK CHILD		
Child ever been sick	84.9	663
Breastfeeding practices last time child was sick		563
Less because child did not want it	79.8	
Less because it was mothers decision	1.6	
More	4.8	
Same	11.0	
Not breastfed	2.1	
Don't know	0.7	
Non-breast milks and other liquids in sickness		563
Less because child did not want it	81.0	
Less because mother's decision	1.8	
More	2.3	
Same	9.1	
Never fed on non-breast milks and other liquids	4.6	
Don't know	1.2	
Amount of food during illness		563
Less because child did not want it	80.5	
Less because mother's decision	1.6	
More	1.4	
Same	11.2	
Never	4.4	
Don't know	0.9	
Feeding after illness food given		563
Less because child did not want it	30.9	
Less because mother's decision	1.8	
More	30.7	
Same	35.2	
Don't Know	1.4	
How often food remains on the plate		624
Most of the times/always	20.7	
Often/several times	11.4	
Few times/once in a while	54.5	
Never	13.5	
Food that remains on the plate;		540
Put in fridge	0.2	
Put in the cupboard	6.9	
Put elsewhere	12.0	
Thrown away	22.0	
Given to other children	48.9	
Other Specify (Mother eats, given to animals)	10.0	

Duration mother is away from baby		663
Always/most days(6 days/week)	6.3	
Often/many days (4-5 days/week)	1.5	
Sometimes (2-3days/week)	4.2	
Never (0-1 days/week)	87.9	
Seen/ heard of MNPS (shown satchet)	8.0	663
Place first heard of MNPs		53
Health staff of health facility/clinic	81.1	
Community Health volunteers	11.3	
Other family member	7.5	

Micronutrient supplementation and fortification is one of the key primary health interventions to alleviate micronutrient deficiencies. In this survey only 8.0% of the respondents had ever seen or heard about MNPs even after being shown a sample. Only 1.1% of the respondents reported having received MNPs in the last 6 months. The MNPs were received on a daily basis (57.1%) from the health facility (100%). Majority of the respondents who never received MNPs stated that they lacked knowledge on MNPs (82.9%). This calls for prompt measures in increasing micronutrient supplementation since their deficiencies are a major contributor to childhood morbidity and mortality (KNBS and ICF, 2015). Based on the findings more creation awareness should be instigated in the community on the use of MNPs and their associated benefits.

Table 9: Micronutrient powder use in the last six months before survey

MNPS	%	N
Received MNP in last six months	1.1	663
Place received MNP		7
Free from health facility	100	
Frequency of giving MNP		7
Every day	57.1	
Every other day	14.3	
At any day when she remembers	14.3	
Can't remember / don't know	14.3	
Preparing food with MNP		7

Cook with child's food	14.3	
Mix with cooked solid/semi-solid food that is still warm	85.7	
Quantity of food mixed with MNP		7
All amount prepared for child	28.6	
Quantity that child can eat once	71.4	
Reason never received MNP		695
Does not know about MNP	82.9	
Discouraged from what I heard from others	0.3	
Child has not fallen ill so haven't gone to a health facility	2.3	
Health facility or outreach is far	1.1	
Child receiving therapeutic or supplementary/foods	0.5	
I was not offered MNPs at the health facility	16.5	
Other specify (under 6months of age, don't want)	0.5	

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.

Among currently pregnant women aged 15-49 years, majority started ANC between 4th to 6th month (59.1%), with only 36.3% having attended 4 or more visits. The ANC attendance was low compared to their previous pregnancies with index children and this could be associated with their home deliveries (see Table 3). The main source of ANC care was from public health centres (36.4%), provided by nurses/mid-wives (90.9%). Apart from deworming (43.2%) all other predominant ANC services were received by over 70% of respondents. While overall all essential health and nutrition information was given by nurses (84.4%).

Table 10: Maternal health characteristics and practices

Maternal Health	%	N
Seen for ANC during this pregnancy	71.0	62
Months pregnant when 1st attended ANC		44
1	2.3	
2	6.8	
3	13.6	
4	18.2	
5	22.7	
6	18.2	
7	13.6	

8	2.3	
9	2.3	
Times received ANC for current pregnancy		44
1	22.7	
2	25.0	
3	13.6	
4	15.9	
5	15.9	
6	4.5	
Don't Know	2.3	
Where received ANC for current pregnancy		44
Home	2.3	
Public hospital	34.1	
Public health centre	36.4	
Public dispensary	22.7	
Faith based hospital/clinic	2.3	
Other (outreach)	2.3	
Who did you see		44
Doctor	4.5	
Nurse/Mid-wife	90.9	
TBA	4.5	
ANC services received from current pregnancy		44
Weight taken	88.6	
BP	79.5	
IFAS	79.5	
Anti-malarials	72.7	
Urine sample taken	93.2	
Blood sample taken sugar/hb	88.6	
Tetanus vaccine	81.8	
Deworming	43.2	
HIV test	88.6	
Mosquito net given	84.1	
MUAC measured	72.7	
Information given during ANC vsit current pregnancy		44
Tests during pregnancy	70.5	
Birth planning	43.2	
Place of delivery	63.6	
Own health & hygiene	63.6	
Own nutrition	63.6	
HIV/AIDS	68.2	
Breast feeding	63.6	
Infant feeding	52.3	
IFAS	52.3	
Growth monitoring	40.9	

Source of the information		44
Nurse	84.4	
TBA	2.2	
CHV	6.7	
Other (outreach)	6.7	
Attended ANC(index child)	90.9	1000
Months pregnant during 1st ANC visit		909
1	2.3	
2	3.4	
3	12.4	
4	21.3	
5	22.8	
6	20.9	
7	11.9	
8	4.3	
9	0.7	
Times received ANC		909
1	7.4	
2	11.7	
3	24.4	
4	26.1	
5	17.1	
6	7.4	
7	1.8	
8	1.8	
9	0.3	
DK	2.2	
Information given during ANC visit during index child pregnancy		909
Tests during pregnancy	84.0	
Birth planning	61.9	
Place of delivery	75.0	
Own health & hygiene	72.5	
Own nutrition	68.4	
HIV/AIDS	83.8	
Breast feeding	68.9	
Infant feeding	52.0	
IFAS	77.3	
Growth monitoring	70.8	
ANC services received during index child pregnancy		909
Weight taken	93.9	
BP	94.2	
IFAS	89.9	
Anti-malarials	81.2	

Blood sample taken	94.3	
Urine sample taken	90.5	
Tetanus vaccine	86.0	
Deworming	57.3	
HIV test	94.2	
Mosquito net given	85.0	
MUAC measured	66.2	
Reasons for not attending ANC index child pregnancy;		91
Not aware of existence or importance	8.8	
Health facility too far	56.0	
TBA services inadequate	1.1	
Cultural barriers	1.1	
Other (Nurses strike, busy, nomadic lifestyle)	44.0	
Post-natal care practices		
Time it took to take child to clinic for first the time		511
Immediately (within 24hrs)	19.2	
Within first 2 weeks	31.3	
Between 2 weeks and 1 month	10.0	
After 1 month	31.7	
Child not taken	7.6	
Don't intend to	0.2	
Duration after delivery mother seen by a healthcare worker		511
Immediately (within first 48 hours)	15.5	
Within first two weeks	13.9	
Between 2 weeks and 1 month	23.3	
After 1 month	31.5	
Not seen	15.9	

Compared to the current pregnancies more respondents ever attended the ANC (90.9%) during their pregnancies with the index children. Most of them also attended between the 4th and 6th month of pregnancy (65%) and 54.5% of the mothers attended at least 4 or more of the recommend ANC visits. During ANC visits all essential information given was to more than 60% of the respondents, except infant feeding (52.0%). All essential services given reached over 80% of the respondents, deworming (57.3%). Reasons for not attending ANC with index child was health facility is too far (56%) and others such as nurses strike, busy, nomadic lifestyle (44%). Among the respondents majority were seen by a healthcare worker after one month (31.5%), while 15.9 were not seen at all.

During FGDs the below findings were stated as facilitators and barriers of ANC/ health facility attendance;

Community perception of ANC

- Incentives such as drug availability and nets motivate
- The baby is checked if it is well positioned in the womb hence an incentive
- Helps avoid complications

Factors Influencing PNC attendance

FGD discussions revealed that;

Lack of awareness about PNC was a major factor cited for low PNC uptake “*We do not know about it*” Pokomo elders FGD. Cultural practices was also stated “*After delivery we are not allowed to go out until after 40 days*” Wardei young women FGD. Having to seek permission from their husbands was also mentioned.

Barriers of ANC attendance

In the FGDs the following was mentioned

- Having to pay ambulances fuel in case of referrals.
- Presence of TBAs who only refer when complications arise.
- Lack of maternity room in some areas.
- Presence of male health workers and younger relatives. “*If a healthcare worker is a relative or younger, it is an abomination to assist in delivery*” Pokomo CHV FGD. “*Being attended by male providers is not allowed in the community*” Orma men FDG

Facility factors promoting health service utilization

- Incentives like nets, Child birth certification
- Availability of immunization services
- Availability of FP services
- Access to drugs and free care

Factors discouraging health service utilization

- High practice of self-medication among the community
- Stock out of drugs forcing them to buy on their own
- Distance to health facilities in some areas

- Negative attitude from some health workers
- Fear disclosure of HIV status
- Clanism and tribalism in some areas
- Requiring husbands' permission to visit health facilities which can be denied at times

Micronutrient supplementation

Most of the caregivers who were currently pregnant heard, seen or received information about IFAS (77.4%). This information was acquired mainly from the health facilities (97.9%) but only 37.8% were taking iron, 24.4% folate and 55.6% combined iron and folic. 64.5% of the women currently pregnant knew the benefits of taking IFAS, they mentioned increases blood (57.5%) and prevents anaemia (37.5%) as the main reasons. Contrary to this intake of IFAS supplements was poor compared to the amount given at the health facility. Women complained of their side effect (37.5%), others forgot (25%) while another fraction felt better and felt that they didn't need them anymore (25%). FGDs also agreed with these claims; *“There are three tablets given to a pregnant woman, and when they take them they start vomiting”* Pokomo young women FGD. Despite these women reporting low deworming services consumed soil/ minerals salts (0.9%) though this practice was reduced compared to their intake during their pregnancies with their index children.

Table 11: Maternal micronutrient supplements intake characteristics and practices

Supplementation and delivery	%	N
Heard, seen or received information about IFAS (current pregnancy)	77.4	62
First source of information on IFAS(current pregnancy)		48
Health staff or health facility/clinic	97.9	
Community Health Volunteer	12.8	
Friends/support group	2.1	
Other family members	2.1	
Currently taking supplements(current pregnancy)		62
Iron Tablets/ syrup	37.8	
Folic acid	24.4	
Combined Iron and folic	55.6	
Quantity of supplements given(current pregnancy)		17
Iron Tablets		
Total given		
0	5.9	

2	5.9	11
4	5.9	
15	5.9	
30	76.5	
Folic acid		
Total given		
3	9.1	25
4	9.1	
14	9.1	
15	9.1	
30	63.6	
Combined Iron and folic		
Total given		
4	4.0	25
30	84.0	
60	8.0	
98	4.0	
Consumed supplements from total given(current pregnancy)		
Iron Tablets		
0	11.8	17
2	11.8	
3	11.8	
7	11.8	
14	5.9	
20	5.9	11
30	41.2	
Folic acid		
1	9.1	
2	9.1	
3	9.1	
7	9.1	
10	9.1	25
30	54.5	
Combined Iron and folic		
0	4.0	
3	4.0	
7	4.0	
14	4.0	
20	4.0	
27	4.0	
28	4.0	
30	64.0	

50	4.0	
60	4.0	
Know benefits of taking IFAS in pregnancy	64.5	62
Benefits of taking IFAS during pregnancy		40
Prevents anemia among pregnant women	37.5	
Prevents dizziness	10.0	
Increases blood	57.5	
Improves immunity	2.5	
Increases energy	2.5	
Do not know	5.0	
Had IFAS supplements at home but did not take	12.9	62
Reasons for not taking IFAS supplements(current pregnancy)		8
Forgot	25.0	
Side Effects	37.5	
Felt better and I did not think I needed any more	25.0	
Do not know benefits of IFAS	12.5	
Other	12.5	
Currently consuming (current pregnancy)		62
CSB, Advantage plus, Unimix	0.0	
RUSF	0.0	
Herbal	0.0	
Soil/Mineral Stones	0.9	

Among primary caregivers to the index children, 79.9% had heard or seen IFAS, with 82.6% issued with IFAS at ANC, mostly combined IFAS (90.3%). 72.6% reported they knew benefits of IFAS, while those who consumed soil/mineral salts were 10.3%. To note is that consumption of the IFAS supplements was well adhered to during their pregnancies with the index child than with their current pregnancies.

Table 12: Micronutrient supplementation practices during pregnancy with index child

Supplementation and delivery	%	N
Heard, seen or received information about IFAS (index child pregnancy)	79.9	1000
First source of information on IFAS (index child pregnancy)		799
Health staff or health facility/clinic	97.6	
Community Health Volunteer	2.6	

Community members	0.8	
Friend/support groups	1.0	
Husband/male partner	0.3	
Other family member	1.5	
Mass media	0.4	
IEC materials	0.1	
Issued with supplements during pregnancy (index child pregnancy)	82.6	1000
Supplements Given (index child pregnancy)		826
Iron Tablets/syrup	20.1	
Folic acid	11.0	
Combined Iron and folic	90.3	
Quantity of supplements given(index child pregnancy)		
Iron Tablets/syrup		
Total given		166
0	1.2	
2	1.2	
3	0.6	
4	0.6	
5	0.6	
10	9.0	
14	0.6	
15	3.6	
20	0.6	
21	0.6	
30	75.9	
38	0.6	
60	1.8	
90	0.6	
150	0.6	
180	0.6	
2020	0.6	
3030	0.6	
Folic acid		91
Total given		
0	1.1	
1	3.3	
2	2.2	
3	4.4	
4	1.1	
5	1.1	
10	14.3	
12	1.1	
15	7.7	
20	3.3	

30	60.4	746
Combined Iron and folic		
Total given		
1	0.3	
2	0.1	
4	0.1	
5	0.1	
6	0.1	
7	0.9	
8	0.1	
10	2.7	
14	1.3	
15	2.0	
20	0.7	
21	0.1	
22	0.1	
24	0.1	
28	0.5	
30	68.6	
60	6.4	
90	8.6	
120	3.9	
150	1.1	
160	0.7	
180	0.9	
240	0.3	
Consumed supplements (index child pregnancy)		
Iron Tablets		166
0	1.8	
2	1.2	
3	0.6	
4	0.6	
5	1.2	
10	9.0	
14	0.6	
15	3.6	
20	1.2	
21	0.6	
28	1.2	
30	75.3	
60	1.8	
150	0.6	
180	0.6	
Folic acid		91

0	2.2	746
1	2.2	
2	3.3	
3	3.3	
4	1.1	
5	1.1	
10	15.4	
12	1.1	
15	7.7	
20	2.2	
30	60.4	
Combined Iron and folic		
0	0.1	
1	0.5	
2	0.1	
3	0.3	
4	0.3	
5	0.7	
6	0.3	
7	1.1	
8	0.1	
10	3.1	
14	1.6	
15	2.0	
20	1.2	
21	0.3	
22	0.1	
25	0.9	
27	0.1	
28	1.1	
30	65.5	
32	0.1	
35	0.1	
40	0.3	
60	5.6	
80	0.4	
86	0.1	
87	0.1	
88	0.1	
90	7.1	
100	0.3	
120	3.4	
150	0.9	
160	0.7	

180	0.9	
240	0.3	
Know benefits of IFAS	72.6	1000
Benefits of IFAS during pregnancy		726
Prevents anemia among pregnant women	29.8	
Prevents dizziness	10.2	
Increases blood	78.1	
Helps development of fetus	5.1	
Improves immunity	4.0	
Increases energy	6.7	
Increases concentration	0.3	
Do not know	4.4	
Other	0.6	
Had IFAS at home but did not take	26.7	810
Reasons for not taking IFAS supplements (index child pregnancy)		216
Forgot	30	
Side Effects	47.8	
Felt better and I did not think I needed any more	10.4	
Did not know how long I should take the tablets	1.7	
Do not know benefits of IFAS	1.4	
Other (bad smell, drugs got water,gave birth before taking)	8.7	
Currently consumes (index child pregnancy)		1000
CSB, Advantage plus, Unimix	1.5	
RUSF	0.7	
Herbal Supplements	2.4	
Soil/Mineral Stones	10.7	

In the FGDS the following were captured as perceptions about IFAS

Community perceptions about IFAS

- The side effects are a common challenge such as nausea, metallic smell, vomiting
- Others perceive them as being beneficial

Food fortification

The use of fortified products is a wide reach strategy for micronutrient for the general household and vulnerable groups. Most households in Tana River County (91.0%) with a child aged under 2 years reported using fortified food products. The predominant products being; salt (95.3%), wheat flour (82.7%), cooking fat/oil (94.2%) and maize flour (94.2%). However, 87.6% do not know the benefits of feeding children aged 6-23months with fats/oils enriched with vitamins and minerals.

Table 13: Food Fortification

Fortified flours, oils and salt	%	N
Uses fortified products at home	91.0	986
Fortified Food Products used		897
Fortified maize flour	94.2	
Fortified wheat flour	82.7	
Fortified cooking fat and oil	94.2	
Fortified salt	95.3	
Margarine	11.9	
Fortified Sugar	31.8	
Other	0.3	
Main oil/fat consumed		897
Vegetable fat	6.7	
Animal fat	0.2	
Oil	93.1	
Respondents perceived benefits of feeding children (6-23 months) fats and oils enriched in vitamins and minerals		986
Improves ability to fight diseases	31.5	
Improves child appetite	15.8	
Improves child's ability to learn and develop	10.9	
Makes children health strong and active	32.3	
Prevents vitamin and mineral deficiencies	7.9	
Other specify	1.3	
Don't know/Don't remember	87.6	

Nutrition belief

A large majority of respondents do not belief that; some foods are taboo and should avoided by pregnant women (69.0%), pre-lacteals should be fed to child after birth (81.3%), colostrum is dirty and should not be fed to young children (86.5%), it is not possible to exclusively a baby for

the first six months of life (81.7%), some foods are taboo and should not be fed to young children (74.3%), and that a young child should not be breastfed up to 2 years (87.7%). This believes strongly portray what the Tana river community practices except for the exclusive breastfeeding indicator which portrayed low EBF rate.

Table 14: Nutrition belief questions

Question	%	N
Some people believe that certain foods are taboo and should not be fed to a pregnant woman Agree Not sure Do not agree	22.5 8.5 69.0	1000
Some people believe that a new born baby should be given other liquids/Semi-solids before initiating breastfeeding Agree Not sure Do not agree	12.5 6.2 81.3	1000
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 Agree Not sure Do not agree	8.7 4.8 86.5	1000
Some people believe that a baby cannot survive on exclusive breastfeeding for six months Agree Not sure Do not agree	11.8 6.5 81.7	1000
Some people believe that certain foods are taboo and should not be fed to a child Agree Not sure Do not agree	18.9 6.8 74.3	1000
Some people believe that a young child should not be breastfed up to 2 years Agree Not sure Do not agree	7.1 5.2 87.7	1000

FGDs illustrated that food availability and access was influenced by;

- 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
- Irresponsible spouses sometimes leave the mother to source for food and all other family needs
- Large family sizes make food sharing limit intake
- Cultural believes and practices prohibiting certain foods. *“Pregnant women are not allowed to eat eggs, because it has no door and will lead to cervix not opening during delivery”* Pokomo CHV FGD. *“Sheep meat and fatty goat cause fetal death”* Wardei Young women FGD. *“If a pregnant woman eats sheep head, the baby will always have runny nose”* Pokomo older women FGD. *“A mother who has given birth is not allowed to eat intestines since her own intestines are sore”* Orma Older women FGD.

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. MUAC was used in the assessment of nutritional status. Child nutritional status results indicated that 67.3% of the children (6-23 months) were nourished, 3.6% of the pregnant and lactating women were malnourished 19.1% of women not pregnant and not lactating were malnourished.

Maternal diet quality is a good indicator of overall micronutrient status and together with other factors likely to impact their nutritional status. The overall diet quality of the women in Tana River County was poor. The predominant food groups consumed were; starches (97.8%), other vegetables (72.5%) and milk and milk products (71.0%).

Table 15: Maternal dietary diversity and MUAC status

Maternal dietary diversity		
Food groups		986
Starches	97.8	
Pulses	40.8	
Nuts and seeds	0.9	
Milk and milk products	71.0	

Meats	38.7	
Eggs	3.3	
Dark green leafy vegetables	34.4	
Other Vitamin A rich fruits and vegetables	26.8	
Other vegetables	72.5	
Other fruits	12.1	
Acceptable maternal diet (5 or more food groups)	34.0	986
Child MUAC		661
Nourished (>13.4cm)	67.3	
At risk (12.5 – 13.4cm)	27.4	
Moderately malnourished (11.5-12.4cm)	4.8	
Severely malnourished (<11.5cm)	0.5	
Maternal MUAC (at 21cm cut-off)		939
Pregnant and lactating Acute malnutrition	3.6	
Maternal MUAC (at 23cm cut-off)		47
Women not pregnant not lactating acute malnutrition	19.1	

DISCUSSIONS

Caregivers play a crucial role in the development of a child, from before birth through infancy and beyond. A mother's ability to provide a quality care for her child can be affected by her own health status, stress, poverty, literacy level, perceived social support, parenting skills, the household burden and work responsibilities (Tinajero and Loizillion, 2012). Other literature also states that caregivers who lack knowledge are not able to make best use of available food resources (Inayati *et al.*, 2012). Results from Tana River County exhibited that nearly half of the primary caregivers were illiterate and jobless. In addition, most of them had not received any child feeding information hence prone to poor feeding practices. The results depict the norm in developing countries where children are fed with inappropriate diets that are mainly plant based, high in fiber and phytates that lower the bioavailability of micronutrients (Dewey, 2013; Walton *et al.*, 2012). Their diets are also low in animal source foods (Jin and Iannotti, 2014) that are rich in proteins and micronutrients required for child growth and development. Similarly, the survey findings indicate that children were mainly fed on grains, roots and tubers and their overall diet quality was poor below the national's level. Breastfeeding indicators were high in Tana River County except for exclusive breastfeeding of children below six months which was registered to be low. These poor feeding practices are among the key causes of malnutrition (Waswa, 2015)

while on the other hand adequate nutrition is critical for children's growth and development (Dewey, 2005; UNICEF *et al.*, 2012). Therefore, it is essential to ensure that caregivers are provided with appropriate guidance pertaining optimal feeding of infants and young children.

On the other hand, women of reproductive age are equally at risk of suffering malnutrition due to their increased nutrient requirements (Mahan and Escott-Stump, 2008). Lack of dietary diversity has also been identified as key factor contributing to malnutrition in the developing countries (Haddad *et al.*, 2015). Therefore, it is recommended that for good health and normal growth consumption of diversified diets including variety of ASFs, fruits and vegetables is important. On the contrary survey findings reveal that women just like their children feed on low quality diets. These are predominant in starches, other vegetables and the milk and milk products. Likewise, they consume soil/ mineral stones despite the reported low deworming services hence exposing women to risks of blood loss due to intestinal worm infestation (Black *et al.*, 2013; Iron-Segev *et al.*, 2017). This indicates the need for nutrition education concerning geophagic behaviours which interfere with their dietary intake. Besides that, consumer education should also be considered at community level to enable individuals make informed choices since this geophagic materials are available everywhere and in supermarkets labelled as healthy choices that provide minerals.

In order to minimize maternal and child mortality especially at the time of birth there is need for increased facility delivery, as well as skilled birth attendance. Health seeking behaviours in Tana River County were low with home deliveries being reported by majority of the women. WHO recommends that pregnant women should have at least four antenatal care visits during each pregnancy so as to identify any pregnancy related problems. This in the end reduces the risks of morbidity for both the mother and baby (KNBS and ICF, 2015). Findings indicated that only 36.3% of the currently pregnant women visited the ANC for 4 or more recommended times. This was also registered as a drop from 54.5% in their previous pregnancies with the index children. It was depicted in the FGDs that distance to hospital, male health providers were some of the key barriers to health facility utilization. Cultural barriers were also cited where women were not allowed to go outside after delivery until 40 days were over.

Micronutrient deficiency is a major contributor to childhood morbidity and mortality (KNBS and ICF, 2015). Hence micronutrient supplementation and fortification is one of the key primary health interventions to alleviate micronutrient deficiencies. In recognition of this the government of Kenya established the micronutrient deficiency control (MNDC) as one of the ways reducing infant and maternal mortality (MoPHS, 2008). However, there are still low levels reported in micronutrient supplementation. For instance, in this survey nearly all women had never had or seen the MNPs and consequently they hadn't received them contributing to very low consumption.

It is estimated that more than 40% of pregnant women worldwide are anaemic. At least half of this anaemia burden is assumed to be due to iron deficiency (WHO, 2012). Pregnant women require additional iron and folic acid to meet their own nutritional needs as well as those of the developing foetus. Deficiencies in iron and folic acid during pregnancy can potentially negatively impact the health of the mother, her pregnancy, as well as foetal development. Evidence has shown that the use of iron and folic acid supplements is associated with a reduced risk of iron deficiency and anaemia in pregnant women (Rahman *et al.*, 2016). However, in Tana River County despite the women having received information and IFAS services in their ANC's and knowing their associated benefits there was a decreased consumption in their current pregnancies compared to their previous pregnancies. Most women complained of side effects as a main barrier to consumption while another few claimed that they felt better and didn't need to continue with the consumption. This calls nutrition education to support and strengthen the intake and adherence of the supplements. The community needs to also be educated of the MNPs and associated benefits to increase intake in the children who are more vulnerable to micronutrient deficiencies as their low quality diets can't meet their requirements. There is also need to foster food fortification and diet diversity and encourage intake of micronutrient rich foods so as to enhance micronutrient absorption. Information on feeding practices that lower their bioavailability should also be yoked to these interventions.

CONCLUSION

Close to a half of the respondents never attended school, this would pose a challenge if uptake of messages needs to contextualize and adopt easy to understand education strategies. High proportion of children had health card's which is an indicator of high access to health care services, hence an opportunity to target with health education and services. Most women ever attended ANC, but mostly between 4th and 6th month of pregnancy. Many attended 3-4 ANC visits. During ANC visits, information was readily provided, except child feeding information was the least provided service. Only a third of women received support on child feeding during the first 3 days after birth. There was high home delivery (52.7%) as compared to health facility delivery. PNC for both mother and child was also reported to be very low. Use of IFAS results reveal high awareness of IFAS availability with most of the respondents reporting to have been issued with IFAS tablets. Nonetheless its consumption was low as indicated by current pregnancies and women citing side effects as the main challenge besides other reasons.

Breastfeeding practices reveal; high levels of breastfeeding initiation, close to a quarter of the children (6-23 months) were given pre-lacteals, Exclusive breastfeeding was low with a high perception of inadequate milk production being reported. Appropriate introduction of complementary foods was high; however overall complementary feeding indices show poor child feeding with low consumption of fortified foods to children. Use of unsafe feeding containers as a practice and attitude is still high at close to 40% of respondents. 84.9% of children had ever been sick, and most of this children were breastfed less and fed less (both non-breast milks and foods). Only 8% of respondents had ever seen or heard about Micronutrient powders (MNP). And only 1.1% received MNPs in the last 6 months among those with children aged 6-23months.

Maternal dietary quality was poor. They mainly consumed starchy staples, milk and milk products and other fruits and vegetables. During discussions issues of poverty and drought were among the key determinants of food availability and access. Generally, most women and child were well nourished.

In conclusion there is a need to have targeted health and nutrition education among; men and leaders, women and the community in general. Messages should focus on increasing awareness in appropriate MIYCN practices throughout Tana River County.

RECOMMENDATION

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	ASPECTS	DURATION TO IMPLEMENT
Behavior change communication	Promote early ANC attendance targeting first trimester and increased visits	Short term
	Sensitize and educate women and men on need for facility delivery and to attend PNC within 48hrs of delivery	Short term
	Promote optimal breastfeeding practices and appropriate complementary feeding practices by targeting different stakeholders using appropriate BCC messaging	Short term
	Promote behavior change towards acceptance and use of IFAS and demonstrate use MNPs in local diets while sensitizing men and leaders on value of IFAS and MNPs.	Short term
	Educate caregivers on feeding a sick child	Short term
	Engage the community including leaders and men in community dialogue on harmful cultural practices such as food taboos that restrict consumption of certain foods that has no scientific basis.	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, so as to strengthen customer care services and positive attitudes amongst healthcare workers	Short term
	Enhance full ANC services to include enhanced child feeding information through more staff training on MIYCN	Short term
	Increase ANC, Facility delivery and PNC incentive programs to increase health service utilization. Review role of men in delivery services especially in communities opposed	Medium term


























	Role out MNPs program to ensure availability to improve diets	Short and medium term
	Shorten distance to health facilities by constructing and equipping facilities	Long term
Community based integrated programs	TBA re-orientation programs for referral purposes other than home delivery	Medium term
	Recruit train and deploy more CHVs for MICYN promotion	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

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APPENDICES

 KABP SURVEY FGD GUIDE 2018.docx	 KAP QUESTIONNAIRE 151	 KABP BELIEF QUESTIONS.docx	 MOVEMENT HH survey.docx	 Tana River County KABP Training Program
 Tana River County 2018 KABP field report	 Tana River KABP Clusters 2018.xlsx	 Tanariver calendar of events.docx	 CHVs - pokomo.docx	 chvs-dogodia.docx
 KALKACHA JUU YOUNG WOMEN.docx	 KIMBILIA CHV.docx	 KIMBILIA WOMEN.docx	 leaders-dogodia.doc x	 leaders-ormaa.docx
 men - Ormaa.docx	 MEN-giriama.docx	 men-wardei.docx	 MWANGAZA OLD WOMEN.docx	 OLDER WOMEN- wardei.doc
 older women-giriama.docx	 OLDER WOMEN-Ormaa.docx	 pokomo LEADERS.docx	 young women -pokomo.docx	 younger women-wardei.docx