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

KITUI COUNTY

OCTOBER 2017

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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 and Health Survey
KNBS	Kenya National Bureau of Statistics
MIYCN	Maternal Infant and Young Child Nutrition
MoH	Ministry of Health
NSO	Nutrition Support Officer
ODK	Open Data Kit
PPS	Probability Proportional to Size
SPPSS	Statistical Package for Social Sciences
UNOPS	United Nations Office for Project Services
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

Kitui County is situated in the former Eastern Province of Kenya, and borders Taita Taveta, Makueni, Machakos, Tana River, Embu and Tharaka Nithi Counties. The County has eight sub counties namely; Kitui Central, Kitui South, Kitui East, Kitui Rural, Kitui West, Mwingi North, Mwingi West and Mwingi Central. The 2014 KDHS further indicates Kitui as the second highest County with stunting levels of 45.8% in Kenya (KNBS and ICF, 2015).

Methodology

This survey was implemented in Kitui 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 980 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	99.2	979
Timely Initiation of breastfeeding (0-23 months)	73.3	979
Exclusive breastfeeding under 6 months (0-5 months)	75.6	303
Continued breastfeeding at 1 yr (12-15 months)	91.2	170
Continued breastfeeding at 2 yrs (20-23 months)	70.8	120
Baby drank anything from a container yesterday (0-23 months)	58.3	979

Complementary feeding indicators are shown below;

INDICATOR	**%**	**N**
Introduction of solid, semi-solid or soft foods (6-8 months)	87.4	111
Minimum dietary diversity (=<4) 6-23months		
6-11 months	20.5	234
12-17 months	35.0	243
18-23 months	44.7	199
6-23 months	32.8	676
Minimum meal frequency		
6-8 months (2 times) breastfed	57.7	111
9-23 months (3 times) breastfed	59.6	565

6-23 months (4 times) non-breastfed	32.1	76
6-23 months (combined) breastfed	57.2	600
6-23 months ALL Children	59.3	676
Minimum acceptable diet		
6-8 months breast fed children	10.8	111
9-23 months breastfed children	24.1	565
6-23 months breastfed children	21.6	600
6-23 months ALL Children	22.0	676
Consumed of Iron Fortified solid , Semi solid or soft foods	31.4	676
Cerelac	0.9	211
Plumpy Nut	0.9	
Corn Soy Blend	0	
Weetabix	3.1	
Quick Porridge Oats	7.6	
Formular	2.3	
At what age in months should on introduce complementary foods?		979
0-5	4.0	
6	84.2	
7 and above	11.88	
Consumed foods with added powder or sprinkles	1.3	676
Consumed LNS	0.4	676

Conclusion

Breastfeeding practices reveal; high levels of breastfeeding initiation, low use of pre-lacteals, Exclusive breastfeeding was high. Appropriate introduction of complementary was high, however 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

Kitui County is situated in the former Eastern Province of Kenya, and borders Taita Taveta, Makueni, Machakos, Tana River, Embu and Tharaka Nithi Counties. The County has eight sub counties namely; Kitui Central, Kitui South, Kitui East, Kitui Rural, Kitui West, Mwingi North, Mwingi West and Mwingi Central. Covers an area of 30,570.30 square kilometers Km2), of which 6,369 km2 is occupied by Tsavo East National park. It is classified as an arid and semi-arid area hence also considered as one of the counties that is most vulnerable to malnutrition.

Findings from the 2014 KDHS indicated a national stunting prevalence of 26% which affects an estimated two million children. 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. The 2014 KDHS further indicates Kitui as the second highest County with stunting levels of 45.8% in Kenya (KNBS and ICF, 2015). 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 a 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 UNICEF nutrition program review shows that current data on exclusive breastfeeding and complementary feeding practices was lacking for Kitui 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 the Kitui County.

Specific Objectives

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 Kitui County
2. Measuring progress and informing programme design and implementation through application of these findings.

METHODOLOGY

This survey was implemented in Kitui County. The target population for this survey was primary caregivers and 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	50	8%	1.5	245

Foods (6 – 23.9 Months)				
8. Bottle Feeding (6 – 23.9 Months)	50	8%	1.5	245

There being no Kitui County specific data, a prevalence of 50% was used, 50% gives optimal sample size when all other parameters are held constant. Giving a minimum sample size of 245 for individual IYCF indicators.

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 Kitui 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 Kitui County was used as the sampling frame.

- In Kitui 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.). An average of 16 households 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. During survey data for 30 children was not collected as ODK skipped child questions where child age was entered wrongly, this however did not affect calculated sample size statistically. 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.

N/B- Four Insecure villages in Kitui bordering Garissa and Tana River were excluded from sampling after consultation with the CNC and Sub-County teams. One of the selected cluster's had to be replaced in the course of data collection. This particular cluster had been reported to have had family planning medication administered to school going children and the area chief recommended a replacement due to the sensitivity of the matter which was still very high in the village.

Case definitions

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

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

Core 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 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 1009 households were interviewed for the Kitui KABP 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 MoH. Supervision was done by the KABP consultant, the UNICEF nutrition support officer, the CNC, MoH staff from DHMT 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 October for both household teams and FGD teams. Piloting/pretesting was done prior to actual data collection i.e. on 12th October 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 Tharaka and Kikamba. 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 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 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. 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

Findings indicated that majority of the interviewed households were male headed (77.9%). All of the respondents in the survey were female and most of them were lactating women (91.1%). Nearly all (97.3%) of them had attended school with majority having primary education level (60.9%). 99.3% of these respondents were Christians and they were mainly housewives (38.9%) with a number of them practicing farming (18.6%) and owning business (14%) as their main source of livelihood. The mean household size in this survey was 5.1 members which was higher than the national level of 3.9% (KNBS and ICF, 2015).

Table 2: Household characteristics

Women Characteristics	**%**	**N**
Sex of HH Head		979
Male	77.9	
Female	22.1	
Mean HH size	5.12	979
Physiological status		964
Pregnant	1.6	
Lactating	91.1	
Pregnant and lactating	0.7	
Not pregnant-not lactating	6.6	
Marital status		964
Currently married	77.6	
Separated divorced	4.1	
Widowed	1.2	
Single/never married	17.0	
Ever been to school	97.3	964
Highest level of education completed		938
Less than primary school	6.9	
Primary school	60.9	
Secondary/High school	24.0	
College/Pre-university/University	8.1	
Post graduate degree	0.1	
Religion		964
Christian	99.3	
Muslim	0.4	
Traditional	0.1	
Other (Kavonokya)	0.2	
Main occupation /source of livelihood		964
Formal Employment	4.3	
Informal employment / jua kali	4.6	
Casual labor	5.5	
Own business	14.0	

Petty trading / hawking	1.8	
Farming	18.6	
Pastoralist	0.2	
Dependant	11.0	
Housewife	38.9	
other Specify (student)	1.2	

Maternal characteristics

The survey findings revealed that nearly all women interviewed had ever been pregnant (99.8%), had also ever given birth (99.4%) and that most (85.5%) of these women had 1-4 children. The index children were mainly aged between 6-23 months (69.1%) while their ages were mostly verified by the health card (87.8%). Majority of the index children were female (54%) and they were mostly delivered in the hospital (63.8%). This was slightly higher than the national level (61%) as indicated by the 2014 KDHs (KNBS and ICF, 2015). Other women (25.7%) delivered at home with the help of the mid-wife. This is agrees with comments from men FGD "*My wife has delivered all our 12 children at home and out of the 12, she has delivered 2 on her own*".

FGD discussions further illustrated the boosters and barriers to health seeking behaviours. Free mosquito nets and flour, IFAS medication, free medication and vaccinations offered were factors mentioned to be promoting health service utilization. *"If my child is not in the correct position the doctor will help me during delivery*" Young women FGD. "*I took my wife to deliver but I did not pay anything, I'm so happy*" Men FGD. On the other hand, factors discouraging the utilization of health services were;

- Hospital fees
- Long queues
- Distance to health facility
- Drug stock outs at times
- Unfriendly health care workers
- Men do not get encouraged to go to health centres
- Health worker strikes

" I use herbal medicine because when I go to hospital I am told to go and buy medicine from the chemist which is very costly" Young women FGD.

"*Sometimes we spend the whole day waiting to see the doctor because he attends to people he knows first*" Young women FGD.

"*When I go to hospital some doctors do not want to treat me and they say giving medicine to old people is wastage because we're almost dying anyway*" Men FGD.

Table 3: Birth History

Maternal and Child Birth history	*N*	*%*
Ever been pregnant	99.8	964
Ever given birth	99.4	962
Number of children born and are alive		950
1-4	85.5	
5-10	14.5	
Age of index child in completed months		979
0-5	30.9	
6-23	69.1	
Child age verification		979
Health card	87.8	
Birth certificate	3.0	
Baptism card	0.2	
Seasonal calendar	4.2	
Other Specify (mother recall, exercise book)	4.8	
Child gender		979
Female	54.0	
Male	46.0	
Place of birth		979
Hospital	63.8	
Health Centre, Doctors office/private clinic	6.8	
In the home	1.9	
Mid-wife home	25.7	
Other specify (on the way to hospital)	1.6	

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). Exclusive breastfeeding for six months, frequent and on demand breastfeeding up to 2 years and gradual introduction of complementary foods are some of the guidelines and recommendations made to ensure adequate nutrition for children below five years. Kenya is in the fore front in meeting requirements i.e. 99% of the children have ever been breastfed, 61% were exclusively breastfed and 81% of the children received complementary foods alongside breastfeeding (KNBS and ICF, 2015). Similarly, survey findings indicate that 99.2% of the children 0-23 months were ever breastfed and 75.6% exclusively breastfed. Further it was noted that most of the children were breast fed less than one hour after birth (73.3%) and only 7.6% were given prelacteals. Respondents mostly believe breastfeeding should be initiated immediately after birth (84.5%). The respondents

who received support during the first three days after birth were 56.9%, with 98.5% of the children being fed colostrum, even though close to half of the respondents (46.9%) did not know the benefits of colostrum. Other women (95.1%) felt that children should be given other things within the first three days. These mainly include; plain water (31.1%), sugar/glucose water (26.7%) while other 11.1% either gave their children milk other than breastmilk or sugar/salt solution. Reasons why children were mainly given prelacteal feeds were; not enough breast milk (33.3%), other reasons (had not passed stool, unable to suckle, colic, mother unwell, mother-in law gave child) and baby cried too much (20.5%). Additionally, findings from the FGDs agree with the above reason. "*Some of the children born have colic so we introduce them to warm water to ease the pain*" Young women FGD. "*My child keeps on crying once the child doesn't get enough milk and so I gave her sugary water"* Young women FGD.

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

Breast feeding Practices	**%**	**N**
Ever breastfed		979
Yes	99.2	
No	0.2	
Don't know	0.6	
Duration of breastfeeding after birth		971
Less than 1 hour	73.3	
Less than 24 hours	23.2	
Number of days	3.5	
Why child was never breastfed		2
Baby ill	50.0	
Baby unable to suckle	50.0	
Feed Pre lacteals		
Child fed anything in first three days besides breast milk	7.6	979
In the first three days child was given		67
milk (other than breast milk	0.3	
Plain water	1.0	
Sugar/Glucose water	1.7	
Gripe water	0.3	
Sugar /Salt solution	1.2	
Infant Formula	1.0	
Honey	0.4	
Others specify	0.8	
Reason For giving child other drinks		67
Not enough breast milk	33.3	
Baby cried too much	20.5	
Cultural; reasons	5.1	
Work related obligations	1.3	

Other Specify (not getting enough, had not passed stool, unable to suckle, colic, mother unwell, mother-in law gave child, low birth weight baby, sore breast, to prepare baby for breast milk)	39.8	
Received practical support or advice given during first three days	56.9	979
Baby should be put to breast immediately they are born **Baby should be given the very first milk from breast**	84.5 91.2	979
Baby was Fed Colostrum	98.5	979
Would feed baby on colostrum	96.7	979
Benefits of feeding baby colostrum Nutritious to baby Prevents diseases/infections Cleans babys stomach Nothing Specific Others Specify(cleans throat, only thing available) Don't Know	 35.9 29.5 7.6 3.2 3.2 46.9	964
Reason would not feed baby on colostrum Its dirty milk Not satisfying/ sufficient Mother needs to rest Other Specify (not milk looks funny, not good for baby)	 68.8 6.3 6.3 25.0	16
Duration after birth child should be put to breast Less than 1 hour Less than 24 hours Number of days Don't Know	 0.4 84.8 8.8 6.0	979
Should baby be given other drinks within first 3 days Yes No Don't know	 3.6 95.1 1.3	979
If yes, what should be given; Milk (other than breast milk) Plain water Sugar/glucose water Gripe water Sugar/salt solution Honey Other (specify) – milk diluted with water	 11.1 31.1 26.7 8.9 11.1 6.7 4.4	45

All breastfeeding indicator results were higher compared to the National average as indicated by the KDHS 2014 results; timely initiation (73.3%), exclusive breastfeeding (75.6%), continued breastfeeding at 1 year (91.2%), continued breastfeeding at 2 years (70.8%). Findings from the FGDs pertaining EBF attitudes, perceptions and practices illustrated the following;

- In the past this was not practiced but nowadays older women encourage daughters to do exclusive breastfeeding. "*Since mothers were advised to exclusively breastfeed their babies for 6 months without giving food we have seen great change on reduced child death*" Young women FGD.
- Men expressed support, but feared women's chores could come in between.
- Some introduced goat milk and porridge at 3 months.
- Perception of inadequate breast milk by some women. "*My child keeps on crying once the child doesn't get enough milk and so I gave her sugary water"* Young women FGD.
- Household chores lead to others introduce other food early as they go to search for water or food.
- Some women are casual job hunters and so they leave their babies with the young ones and have no time to fully breastfeed.

"*I introduced my other child to porridge at one month and he used to fall sick more frequently compared to my youngest who breastfed for 6 months"* Young women FGD.

"*Since lactating women were advised to breast-feed their babies for six complete months, we have seen a great improvement on the babies because they don't get sick easily*" Community leaders FGD.

"*Kids who breastfeed for complete six months without introduction of any other food are very bright*" Stated a 50 year old lady, Older women FGD.

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

INDICATORS	**%**	**N**
Ever breastfed	99.2	979
Timely Initiation of breastfeeding (0-23 months)	73.3	979

Exclusive breastfeeding under 6 months (0-5 months)	75.6	303
Continued breastfeeding at 1 yr (12-15 months)	91.2	170
Continued breastfeeding at 2 yrs (20-23 months)	70.8	120
Baby drank anything from a container yesterday (0-23 months)	58.3	979

58.3% of the children (0-23 months) drank from a container yesterday. They type of container used in drinking liquids versus what should actually be used in feeding children 0-23 months is illustrated below in Figure 1 and Figure 2. The respondents who were the primary caregivers of the children reported having mostly used cups with no covers (42.5%) and cups/bowls with spoons (25.4%) in feeding liquids to the children.

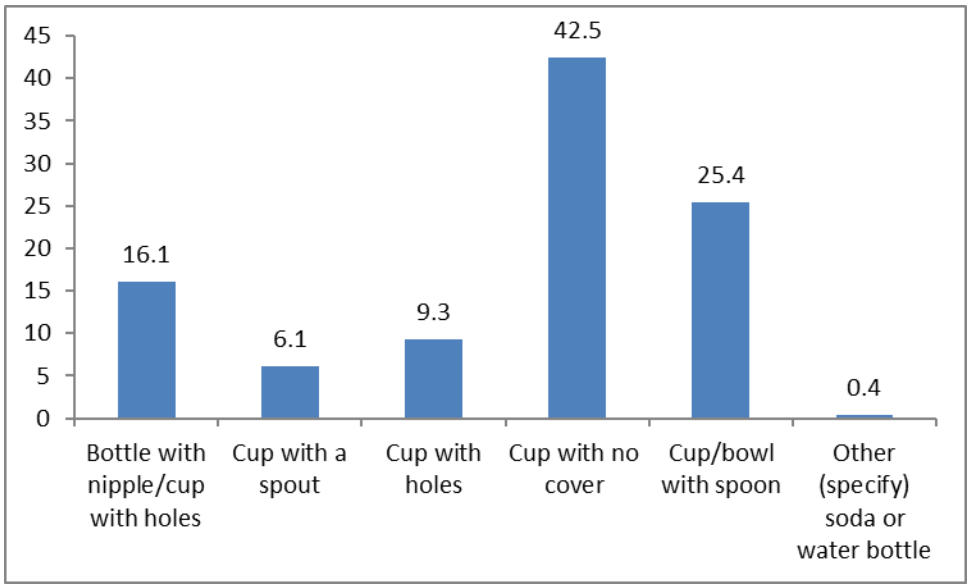

Figure 1:Type of container used for drinking (0-23 months) N=570

Contrary to what the respondents reported as having been used to feed liquids to children (0-23 months) these same respondents stated that bottles with nipple/teats (36.4%) should have been used in giving liquids to their children. However, 29.6% and 17.8% of them maintained that children ought to be given liquids using cups only and cups/bowls with spoons respectively.

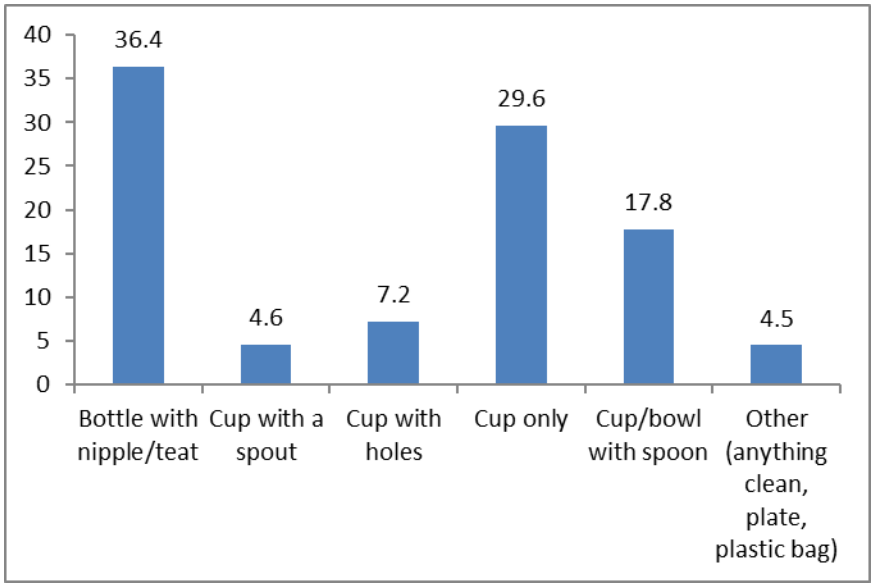

Figure 2: What should be used to feed liquids to a baby (0-23months) n=979

Close to half of the respondents receive child feeding information (41.9%), with those who received being mostly from the health care worker (63.3%). The main decision maker in terms of child feeding was the baby's mother (91.7%). This implies that there is need for more information dissemination on infant and child feeding practices by health care workers and the children's mothers need to be of key focus considering that they make almost all decisions pertaining child feeding. The children's grandmothers (21% mother/mother in law) should also be target as they are also relied upon with child feeding information. Other literature also agrees with this by stating the fact that caregivers who lack knowledge are not able to make best use of available food resources (Inayati *et al.*, 2012). Similary, 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).

Table 6: Complementary Feeding Characteristics

Introduction to solids, semi solids or soft foods		
	%	N
Received child feeding information	41.9	676
Source of child feeding information		324
Mother/ Mother in law	21.0	
Other relative	4.9	
Neighbor/friend	0.3	
House girl	2.2	
Daycare Centre	0.3	
Health Worker	63.3	
Community Health Volunteer	5.3	
Print media	0.9	

Electronic media Others Specify (Hospital, own knowledge, read health card)	0.6 1.2	
Who mainly decides what the baby should and should not eat Baby's mother Baby's father Baby's grandmother Other relative House girl Other	 91.7 0.9 5.5 0.9 0.1 0.9	676

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. Poor feeding practices have been documented among the key causes of infant and young child malnutrition (Dewey, 2005; KNBS and ICF, 2015; Waswa, 2015). This survey illustrated that appropriate introduction of complementary foods was practiced by most of the respondents (87.4%). However, overall child diet quality indicators were not as high as for breastfeeding practices. Compared to KDHS 2014 National findings, dietary diversity among all age groups (6-23months) was low as well as their minimum acceptable diets. Nonetheless their minimum meal frequency was high except for the non-breastfed group.

During FDGs discussions it was commonly agreed that complementary feeding starts at 6 months or before, but rarely beyond 6 months. On the hand the household survey indicated that most of the children were introduced to complementary foods at 6 months (84.2%). A few (11.88%) others were introduced at 7 and above months.

"*As much as we do not have enough money we make sure that our children are well fed*" Young Mother holding her child.

Table 7: Complementary feeding practices

Complementary feeding practices	%	N
Introduction of solid, semi-solid or soft foods (6-8 months)	87.4	111
Minimum dietary diversity (=<4) 6-23months 6-11 months 12-17 months 18-23 months 6-23 months	 20.5 35.0 44.7 32.8	 234 243 199 676
Minimum meal frequency 6-8 months (2 times) breastfed 9-23 months (3 times) breastfed 6-23 months (4 times) non-breastfed 6-23 months (combined) breastfed	 57.7 59.6 32.1 57.2	 111 565 76 600

6-23 months ALL Children	59.3	676
Minimum acceptable diet 6-8 months breast fed children 9-23 months breastfed children 6-23 months breastfed children **6-23 months ALL Children**	 10.8 24.1 21.6 22.0	 111 565 600 676
Consumed of Iron Fortified solid , Semi solid or soft foods	31.4	676
Cerelac	0.9	211
Plumpy Nut	0.9	
Corn Soy Blend	0	
Weetabix	3.1	
Quick Porridge Oats	7.6	
Formular	2.3	
At what age in months should on introduce complementary foods? 0-5 6 7 and above	 4.0 84.2 11.88	979
Consumed foods with added powder or sprinkles	1.3	676
Consumed LNS	0.4	676

Further, diets consumed by young children in developing countries including Kenya are mainly plant based that are high in fiber and phytates that lower micronutrient bioavailability (Dewey, 2013; Walton *et al.,* 2012). They are also deficient in ASFs (Jin and Iannotti, 2014). This agrees with findings from this survey although dairy intake (64.1%) in the survey exhibited contrary results. Compared to the National results in the 2014 KDHS the survey results equally portrayed a similar trend in consumption of the complementary foods. However, eggs (10.9%), Vitamin A rich fruits and vegetables (35.5%) showed lower intakes compared to the national levels while children in this survey consumed the dairy foods (64.1%) approximately five times more than the national level.

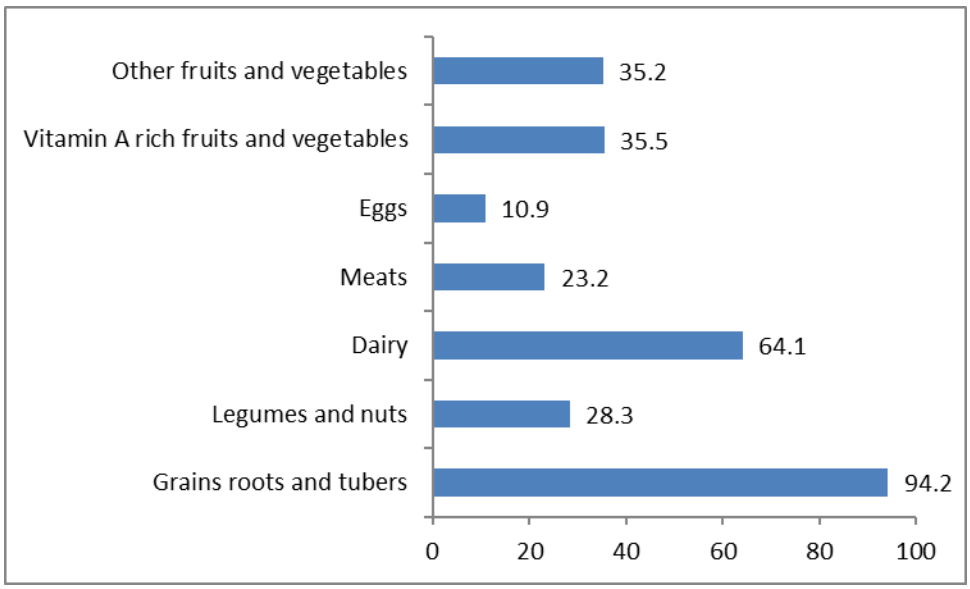

Figure 3: Child dietary diversity N=676

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 a child to eat (67.2%) this achieved by encouraging the children verbally (67.5%). These children rarely fed themselves as indicated (53.4% of them self-feed at a little bit of the time). Though most children had ever been sick (63.5%), during their sickness period majority of caregivers gave less breast milk (69.9%), less non-breast milks (69.6%) and less food (69.9%) because the children didn't want it. Even after the illness 24.4% of the primary caregivers gave less feeding because the children didn't want it while others gave the same feeding (33.3%) and more feeding (36.3%).

Table 8: Responsive feeding of children

Responsive feeding yesterday		
Respondent fed the child yesterday	92.9	676
Child ate all food you think he/she should	58.6	628
Respondent did anything to encourage child to eat	67.2	628
What respondent did to encourage child to eat;		474
Offered another food/liquid	7.6	
Encouraged verbally	67.5	
Modeled eating	7.0	
Ordered strongly	6.3	
Another person helped feed child	1.9	
Another form of encouragement	9.7	

Said something to encourage child to eat		603
Ordered child to eat	17.3	
Praised child	50.4	
Asked child questions	4.7	
Talked about food	17.4	
Threatened the child	2.2	
Told child that she liked food	2.5	
Talked about other things	5.5	
Child self-fed yesterday at any time	39.1	676
Duration of self-feeding		264
All the time	15.5	
Half of the time	29.9	
Little bit of time	53.4	
Does not know	1.1	
FEEDING A SICK CHILD		
Child ever been sick	63.5	979
Breastfeeding practices last time child was sick		622
Less because child did not want it	69.9	
Less because mother's decision	1.0	
More	10.8	
Same	14.8	
Never breastfed	2.6	
Don't know	1.0	
Non-breast milks and other liquids in sickness		622
Less because child did not want it	69.6	
Less because mother's decision	4.2	
More	5.1	
Same	10.0	
Never fed on non-breast milks and other liquids	9.6	
Don't know	1.4	
Amount of food during illness		622
Less because child did not want it	69.9	
Less because mother's decision	5.3	
More	1.9	
Same	10.6	
Never	11.1	
Don't know	1.1	
Feeding after illness		622
Less because child did not want it	24.4	
Less because mother's decision	2.4	
More	36.3	
Same	33.3	
Don't Know	3.5	
How often food remains on the plate		676

Most of the times/always	21.4	
Often/several times	12.6	
Few times/once in a while	42.2	
Never	23.8	
Food that remains on the plate;		515
Put in the cupboard	4.1	
Put elsewhere	10.1	
Thrown away	32.2	
Given to other children	45.8	
Other Specify (Mother eats the food, give dog)	7.8	
Duration mother is away from baby		979
Always/most days(6 days/week)	9.2	
Often/many days (4-5 days/week)	4.6	
Sometimes (2-3days/week)	8.9	
Never (0-1 days/week)	77.3	
Seen/ heard of MNPS (shown satchet)	9.5	979
Place first heard of MNPs		93
Health staff of health facility/clinic	77.4	
Community Health volunteers	1.1	
Support group	1.1	
Community members	9.7	
Other family member	9.7	
Mass media	1.1	

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. National only 6% of the children aged 12-59 months received iron supplements over the last 7 days (KNBS and ICF, 2015). Findings of Kitui County survey revealed that only 9.5% of the respondents had ever seen or heard about MNPs even after being shown a sample and only 10.8% reported receiving MNPs in the last 6 months. Of those who had seen or heard about MNPS 77.4% of them acquire this revelation from the health staff of health facility/clinic and another 90% received the MNPS from the health facility. The MNPS were mostly given daily (40%) mix with cooked solid/semi-solid food that is still warm (60%) and were given in a quantity that the child could eat at once (80%).

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

Received MNP in last six months	10.8	93
Place received MNP		10
Free from health facility	90.0	
Bought from health facility	10.0	
Frequency of giving MNP		10
Every day	40.0	
Every other day	20.0	
Can't remember / don't know	30.0	
Preparing food with MNP		10
Cook with child's food	20.0	
Mix with cooked solid/semi-solid food that is still warm	60.0	
Mix with water	10.0	
Mix with child's drinks	10.0	
Quantity of food mixed with MNP		10
All amount prepared for child	20.0	
Quantity that child can eat once	80.0	
Reason never received MNP		83
Does not know about MNP	9.6	
Discouraged from what I heard from others	3.6	
Child has not fallen ill so haven't gone to a health facility	28.9	
Health facility or outreach is far	4.8	
Child receiving therapeutic or supplementary/foods	3.6	
I was not offered MNPs at the health facility	33.7	
Other specify (under 6months of age, don't want)	15.7	

Reasons given for not having received the MNPS were; the respondents were not offered at the health facility (33.7%), their children had not fallen ill hence they hadn't visited the health facilities (28.9%), others didn't want (15.7%), didn't know about MNPs (9.6%) or were discouraged by others (3.6%). These findings suggest that much awareness needs to be harnessed for the adoption and use of MNPS to be effective in improving child nutrition.

Maternal Health and Nutrition

Maternal health characteristics and practices were captured for both respondents who were currently pregnant and during their previous pregnancy with the index child. The results are presented separately as below. Among currently pregnant women aged 15-49 years, majority started ANC between 4th to 5th month (52.9%). WHO recommends a minimum of four antenatal visits during each pregnancy (WHO, 2001) however survey findings indicated that only 45.3% of the women currently pregnant during the survey had visited the ANC for at least 4 times. This was lower than their levels during their previous pregnancies with the index children (58.8%) and the national level (58%) (KNBS and ICF, 2015). The main source

of ANC care was from public hospitals (52.9%), provided by nurses/mid-wives (64.7%). Predominant ANC services received by over 70% of respondents were; BP, IFAS, HB, Urinalysis, TT, HIV-test and mosquito nets. While overall all essential health and nutrition information was given from mainly the nurses (60%) and doctors (20%).

Table 10: Maternal health characteristics and practices

Maternal Health		
Seen for ANC during this pregnancy	77.3	22
Months pregnant when 1st attended ANC		17
3	17.6	
4	29.4	
5	23.5	
6	17.6	
7	5.9	
8	5.9	
Times received ANC for current pregnancy		17
1	17.6	
2	23.5	
3	23.5	
4	11.8	
5	23.5	
Where received ANC for current pregnancy		17
Home	5.9	
Public hospital	52.9	
Public health centre	5.9	
Public dispensary	5.9	
Other public health sector	17.6	
Private hospital	5.9	
Private clinic	5.9	
Faith based church hospital/clinic		
Who did you see		17
Doctor	29.4	
Nurse/Mid-wife	64.7	
Other Person	5.9	
ANC services received from current pregnancy		17
Height measured	58.8	
Weight taken	1.6	
BP	88.2	
IFAS	88.2	
Anti-malarials	35.3	
Blood sample taken sugar/hb	94.1	
Urine sample taken	82.4	
Tetanus vaccine	76.5	
Deworming	35.3	
HIV test	94.1	
Mosquito net given	75.6	
MUAC measured	35.3	
Others specify(nutrition , CT scan, palpation)	17.7	

Information given during ANC vsit current pregnancy		17
Tests during pregnancy	82.4	
Birth planning	76.5	
Place of delivery	70.6	
Own health & hygiene	88.2	
Own nutrition	64.7	
HIV/AIDS	82.4	
Breast feeding	64.7	
Infant feeding	64.7	
IFAS	70.6	
Growth monitoring	82.4	
Source of the information		20
Doctor	20	
Nurse	60	
Mid-wife	5	
TBA	5	
Relative	10	
CHV		
ANC during pregnancy with index child		
Attended ANC	98.5	885
Months pregnant during 1st ANC visit		872
1	2.4	
2	5.0	
3	17.4	
4	24.7	
5	24.8	
6	16.2	
7	7.1	
8	2.1	
9	0.3	
Times received ANC		872
1	3.7	
2	9.3	
3	28.3	
4	24.9	
5	16.2	
6	11.7	
7	2.9	
8	1.6	
9	0.8	
	0.7	
Information given during ANC visit during index child pregnancy		872
Tests during pregnancy	80.9	
Birth planning	77.3	
Place of delivery	79.7	
Own health & hygiene	75.9	
Own nutrition	70.1	
HIV/AIDS	87.2	

Breast feeding	76.5	
Infant feeding	63.1	
IFAS	78.8	
Growth monitoring	84.3	
ANC services received during index child pregnancy		872
Weight taken	98.2	
BP	95.3	
IFAS	87.4	
Anti-malarials	34.3	
Blood sample taken	91.6	
Urine sample taken	95.0	
Tetanus vaccine	90.6	
Deworming	33.4	
HIV test	97.8	
Mosquito net given	89.6	
MUAC measured	36.2	
Reasons for not attending ANC index child pregnancy;		127
Not aware of existence or importance	38.6	
Health facility too far	52.0	
Unfriendly health workers	7.9	
TBA services inadequate	2.4	
Cultural barriers	6.3	
Other Specify	2.4	
Post-natal care practices		
Time it took to take child to clinic for first the time		237
Imediately (within 24hrs)	11.8	
Within first 2 weeks	52.3	
Between 2 weeks and 1 month	14.3	
After 1 month	15.6	
Child not taken	4.6	
Don't intend to	1.3	
Duration after delivery mother seen by a healthcare worker		237
Immediately (within first 48 hours)	8.9	
Within first one week	23.6	
Within 2 weeks	35.4	
After 1 month	18.1	
Not seen	13.9	
Place of Child delivery		885
At home by TBA	19.5	
At home by nurse	1.0	
At home without assistance	6.2	
Hospital	71.2	
Other Specify(on the way to hospital, home with help from relatives)	2.0	

When compared to the current pregnancy results we find that more women (98.5%) ever attended the ANC during their pregnancies with the index children. Majority of them similarly first attended ANC between their 4th and 5th month of pregnancy (49.6%). During ANC visits all essential information given was to more than 70% of the respondents, except infant feeding (63.1%). While all essential services given reached over 80% of the respondents except for MUAC measurement (36.2%), deworming (33.4%), and anti-malarial drugs (34.3%). To note is that ANC practices were reported to be higher in the previous pregnancies with the index than with the current pregnancies. Reasons stated for not attending ANC during pregnancy with index child were; health facility is too far (52%), "*The hospital is very far, but I encourage my wife to go because she needs to know the progress the baby is making*" Men FGD, others were not aware of existence and importance (38.6%), unfriendly health workers (7.9%) and cultural barriers (6.3%).

ANC facilitators and barriers discussed during FGDs indicated that;

- In situations where health facilities are near-by they attend
- Incentives such as mosquito nets encourage attendance, free medical care. "*The mothers are given free nets although sometimes the mothers do not use the nets because they say it is warm and may end up giving the net to someone else or wait to use it when the baby has been born*" CHV FGD.
- The baby is checked if it is well positioned in the womb hence an incentive
- Some women attend ANC because they are afraid the doctors would refuse to attend to them later in case of complications

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. During FGDs the following insights also came up concerning delivery;

- Initiatives such as "Linda mama" cards which allow mothers to deliver freely and get free family planning pills and assistance in case of complications after six months of delivery encourage health seeking behaviour
- There are free medicine, nets and plumpy nuts. There are also free health examination blood pressure test, weighing, free mosquito nets for pregnant women and the awaited baby
- Some do not deliver at hospital (bad roads, dislike for health facilities, distance) "*We give birth at home with help of women who happen to be around"* Young women FGD.

- Most understand it is good to deliver at health facility especially to overcome obstetric complications. *"In case I give birth at home you can sometimes die due to complications*" Young women FGD.
- Early labor makes it hard to access health facilities that are far. " *You cannot tell a mother in labour to wait until she reaches the hospital because she will only give birth on the way since the hospital is very far*" Young women FGD. "*In case a woman gives birth on the way, we go back home because there is no need for the hospital*" Older women FGD. "*Home delivery got finished long time ago may be the woman deliver while on the way going to hospital*" Men FGD.
- Some fear CS
- Fear of unfriendly health care workers *" I heard the doctors slap you if you don't cooperate well even if you're already in pain"* Young women *FGD.*

The period with the highest risk during obstetric period is the first 48hours after delivery where majority of maternal deaths occur due to excessive bleeding. PNC care within the first 48hours after delivery is essential. Among the respondents majority were seen by a health care worker between the 1st and 2nd week (59.0%), while 13.9% were not seen at all. Again 52.3% of the respondents took their children to the clinics two weeks after delivery. Another 4.6% had not taken their children to the clinics at all and 1.6 of the respondents didn't intend to. This is further backed by the FGD comment "*In case a woman gives birth on the way, we go back home because there is no need for the hospital*" Older women FGD.

FGD discussions further revealed that;

- Women take children for vaccination mostly *"I do not want my baby to get polio so my wife makes sure to take the child to PNC*" Men FDG.
- Women receive minimal health education they are only given vaccinations and return dates "*I have not seen anyone teaching us about anything when we go for clinic they just give us injections and tell us when to come for the next*" Young women FGD.
- General perception among both CHV, older and younger women is that PNC is only for the child's health and survival "*Some mothers attend half of clinics e.g. from 0-6 months and then wait until 5 years and 9 months so the babies weight is monitored*" CHV FGD.

Micronutrient supplementation

A large number (81.8%) of the currently pregnant women had seen heard or received information about. These information was mainly acquired from the health staff or facilities (88.9%) and 72.2% of them were currently consuming combined IFAS. The proportion of

amount given to amount consumed indicated a lower consumption of iron, folic acid and combined Iron and folate. This was consistent with increase in number of days especially 30 days duration. A majority also reported knowing the benefits of IFAS (81.0%) and mostly stated that it increases blood (58.7%) while a few said that it improves concentration (0.4%). On the other hand, 22.7% of the respondents had IFAS at home but did not take mainly because of the side effects (80%). Despite mentioning deworming as the service that was least provided at ANC 45.5% of the were currently consuming soil/mineral salts. This consumption of soils /minerals was increased when compared with the consumption during previous pregnancy with index child (18.3%).

Table 11: Maternal micronutrient supplements intake characteristics and practices

Supplementation and delivery	%	N
Heard, seen or received information about IFAS (current pregnancy)	81.8	22
First source of information on IFAS(current pregnancy		18
Health staff or health facility/clinic	88.9	
Community Health Volunteer	5.6	
Mass media	5.6	
Currently taking supplements(current pregnancy)		18
Iron Tablets/ syrup	38.9	
Folic acid	33.3	
Combined Iron and folic	72.2	
Quantity of supplements given(current pregnancy)		18
Iron Tablets		
Total given		
0	14.3	
10	14.3	
12	14.3	
28	14.3	
30	42.9	
Folic acid		
Total given		
0	16.7	
10	16.7	
12	16.7	
28	16.7	
30	33.3	
Combined Iron and folic		
Total given		
10	15.4	
12	7.7	
30	30.8	
51	7.7	

60	7.7	
90	7.7	
120	7.7	
150	15.4	
Consumed supplements from total given(current pregnancy)		7
Iron Tablets		
0	14.3	
10	14.3	
12	14.3	
28	14.3	
30	28.6	
Folic acid		6
0	16.7	
10	16.7	
12	16.7	
14	16.7	
25	16.7	
30	16.7	
Combined Iron and folic		13
0	7.7	
4	7.7	
10	15.4	
12	7.7	
25	7.7	
30	15.4	
60	7.7	
90	7.7	
120	7.7	
150	15.4	
Know benefits of taking IFAS in pregnancy	81.0	979
Benefits of taking IFAS during pregnancy		979
Prevents anemia among pregnant women	19.1	
Prevents dizziness	5.2	
Increases blood	58.7	
Helps development of fetus	10.5	
Improves immunity	7.7	
Increases energy	12.5	
Improves concentration	0.4	
Other Specify (increases appetite, reduces swelling of legs)	0.9	
Don’t Know	8.0	
Had IFAS supplements at home but did not take	22.7	22
Reasons for not taking IFAS supplements(current pregnancy)		5
Side Effects	80.0	
Felt better and I did not think I needed any more	20.0	
Currently consuming (current pregnancy)		22
CSB, Advantage plus, Unimix		

RUSF Soil/Mineral Stones	9.1 13.6 45.5	

Among primary caregivers to the index child, 86.0% had heard or seen IFAS, with 87.9% issued with IFAS at ANC which was mostly combined IFAS (75.5%). Those who received Iron supplement for 30-90 days, 77.8% of then were given the tablets and 66.2% of them consumed; folic acid given 30-90 days, 61.8% of the respondents were given while 56.1% consumed; whereas combined IFAS for those given between 30-90 days 71.2% of the respondents were given and 61.9% of them consumed. This indicated a reduced intake hence interventions should target adherence in supplementation. Overall those that had IFAS at home but did not consume were 34.6%. While 79.8% reported they knew benefits of IFAS, while those who consumed soil/mineral salts were 18.3%.

Table 12: IFAS supplementation practices during pregnancy with index child

Supplementation and delivery	%	N
Heard, seen or received information about IFAS (index child pregnancy)	86.0	885
First source of information on IFAS (index child pregnancy) Health staff or health facility/clinic Community Health Volunteer Community members Friend/support groups Husband/male partner Other family member IEC materials Mass media Other Specify (MCH booklet)	 87.6 4.6 2.6 2.3 0.2 1.3 0.9 0.4 0.1	822
Issued with supplements during pregnancy (index child pregnancy)	87.9	885
Supplements Given (index child pregnancy) Iron Tablets/syrup Folic acid Combined Iron and folic	 22.0 15.8 75.7	778
Quantity of supplements given(index child pregnancy) Iron Tablets/syrup **Total given** 1 2 3 5	 1.8 0.6 0.6 0.6	 171

7	1.8	
10	0.6	
12	1.2	
14	1.8	
20	3.5	
21	1.2	
28	0.6	
30	45.0	
60	19.9	
90	12.9	
100	0.6	
120	6.4	
150	0.6	
180	0.6	
Folic acid		123
Total given		
1	0.8	
3	0.8	
4	0.8	
5	2.4	
7	1.6	
10	1.6	
12	0.8	
14	6.5	
15	1.6	
20	1.6	
28	0.8	
30	39.0	
60	13.0	
90	9.8	
98	0.8	
100	0.8	
120	4.9	
150	3.3	
180	6.5	
210	1.6	
240	0.8	
Combined Iron and folic		589
Total given		
0	0.2	
3	0.2	
4	0.2	
5	0.2	
6	0.3	
7	1.7	
9	0.2	
10	1.2	
12	0.2	
14	1.2	
15	0.2	

20	0.8	
21	0.3	
24	0.2	
25	0.3	
30	44.3	
35	0.2	
36	0.2	
42	0.2	
45	0.2	
56	0.2	
60	12.2	
75	0.3	
90	13.4	
93	0.2	
98	0.2	
100	0.3	
120	9.8	
130	0.2	
150	6.1	
160	0.5	
180	2.5	
210	0.2	
236	0.2	
240	0.5	
270	0.8	
Consumed supplements (index child pregnancy)		
Iron Tablets		171
0	2.9	
1	2.3	
2	0.6	
3	1.2	
5	1.8	
7	5.3	
10	0.6	
12	1.8	
13	0.6	
14	4.1	
15	1.8	
20	3.5	
21	1.2	
25	0.6	
28	0.6	
30	37.4	
35	0.6	
45	1.2	
50	1.8	
55	0.6	
60	14.0	
65	0.6	
70	1.2	
90	8.8	
100	0.6	

102	0.6	
120	2.9	
150	0.6	
180	0.6	
Folic acid		
1	1.6	123
3	0.8	
4	0.8	
5	3.3	
7	4.1	
10	2.4	
12	0.8	
14	8.1	
15	2.4	
20	1.6	
28	0.8	
30	35.8	
60	11.4	
70	0.8	
90	8.1	
100	0.8	
120	4.1	
150	3.3	
180	6.5	
210	1.6	
240	0.8	
Combined Iron and folic		
0	1.9	
1	0.3	589
2	1.4	
3	1.4	
4	0.7	
5	0.8	
6	0.5	
7	2.2	
8	0.5	
10	1.7	
12	0.2	
14	1.5	
15	1.5	
17	0.2	
18	0.5	
20	2.2	
21	0.8	
23	0.2	
24	0.5	
25	0.8	
26	0.5	
28	0.2	
29	0.2	
30	37.5	

36 40 42 45 46 50 55 56 58 59 60 65 70 75 78 79 80 82 85 90 93 95 100 105 110 120 130 148 150 160 165 180 206 220 240 260 270	0.2 0.5 0.5 0.5 0.2 0.8 0.3 0.3 0.2 0.2 8.3 0.2 0.2 0.8 0.2 0.2 0.5 0.2 0.3 9.8 0.2 0.2 0.2 0.5 0.3 7.0 0.3 0.3 4.8 0.5 0.2 1.5 0.2 0.2 0.5 0.2 0.3	
Know benefits of IFAS	79.8	979
Benefits of IFAS during pregnancy Prevents anemia among pregnant women Prevents dizziness Increases blood Helps development of fetus Improves immunity Increases energy Improves concentration Other Specify (increases appetite, makes bones strong) Don't Know	 21.8 3.5 50.0 5.3 3.6 5.6 0.6 0.2 2.4	979
Had IFAS at home but did not take	34.6	885

Reasons for not taking IFAS supplements (index child pregnancy)		306
Forgot	31.0	
Side Effects	42.2	
Felt better and I did not think I needed any more	11.4	
Did not know how long I should take the tablets	7.2	
Do not know benefits of IFAS	2.0	
Other	14.1	
Currently consumes (index child pregnancy)		885
CSB, Advantage plus, Unimix	3.2	
RUSF	5.3	
Herbal Supplements	0.9	
Soil/Mineral Stones	18.3	

During FGDs different explanations were given around the IFAS topic as explained below;

Community perceptions about IFAS

- Accepted generally "We *get IFAS for free in hospital so we have no issue taking it*." Young women FGD.
- Health workers have undertaken sensitization in some places "*We advise them to take the drugs right before going to sleep because they can't have nausea in their sleep*" CHV FGD
- Some women complain of side effects (nausea, vomiting and dizziness) *"I personally don't take IFAS because when I take in the morning it destructs me from doing my house chores*" Young women FGD. "*I don't like these drugs because I hear young women complain that causes vomiting and dizziness*". Stated a 52 year old lady.
- Men mostly unaware of types of drugs women get from the clinic, some though at times they are for family planning. They do not like family planning pills. "*Sometimes ago my husband beat me because he thought IFAS were family planning pills*" Older women FGD. "*It's my first time to hear of such drugs, I did not even know the women are given anything at the hospital*" Men FGD.
- Older women reported encouraging younger women, but they don't have any information on how useful it is in the body of the pregnant mother

"*On the radio I heard that I would give birth to a laughing baby that's why I took the drugs religiously*" Young women FGD.

" *I know the drugs are good for me and the child, but I generally do not like medicine, so I don't take them even when the doctor prescribes them for me*", Young women FGD.

"My wife is educated and understand importance of IFAS yet my friend's wife may not be able to have the same knowledge so they end up not taking the IFAS" Men FGD.

"*Some people think that the IFAS are ARVs and so people fear taking them*" CHV FGD.

Food fortification

The use of fortified products is a wide reach strategy for micronutrient for the general household and vulnerable groups. Most households in Kitui County (87.7%) with a child aged under 2 years reported using fortified food products. The predominant products being; salt (94.4%), wheat flour (86.5%), cooking fat/oil (85.0%) and maize flour (83.3%). These households mostly used oil (81.6%) with a small number consuming solid fats (0.3%). Despite their use of the fortified products the inhabitants of Kitui County do not know the benefits (44.2%) of feeding children aged 6-23months with fats/oils enriched with vitamins and minerals.

Table 13: Food Fortification at home

Fortified flours, oils and salt	%	N
Uses fortified products at home	87.7	964
Fortified Food Products used		845
Fortified maize flour	83.3	
Fortified wheat flour	86.5	
Fortified margarine	35.6	
Fortified cooking fat	85.0	
Fortified salt	94.4	
Fortified sugar	28.6	
Other (homemade, milk)	0.2	
Main oil/fat consumed		964
Vegetable fat	16.6	
Animal fat	1.5	
Oil	81.6	
Other (solid fats)	0.3	
Respondents perceived benefits of feeding children (6-23 months) fats and oils enriched in vitamins and minerals		964
Improves ability to fight diseases	33.5	
Improves child appetite	11.8	
Improves child's ability to learn and develop	13.3	
Makes children health strong and active	26.5	
Prevents vitamin and mineral deficiencies	7.6	
Other specify	1.5	
Don't know/Don't remember	44.2	

Nutrition beliefs

A large majority of respondents do not belief that; some foods are taboo and should be avoided by pregnant women (76.6%), pre-lacteals should be fed to child after birth (86.1%), colostrum is dirty and should not be fed to young children (86.1%), it is not possible to exclusively a baby for the first six months of life (81.3%), some foods are taboo and should

not be fed to young children (72%), and that a young child should not be breastfed up to 2 years (83.8%). These beliefs go in line with nearly all of the survey findings while it was reported there were no food taboos in their community. However the food taboos emerged in FGDS findings.

Table 14: Nutrition belief questions among primary caregivers of children under 2 years

Beliefs Questions	%	N
Some people believe that certain foods are taboo and should not be fed to a pregnant woman		979
Agree	18.3	
Not sure	5.1	
Do not agree	76.6	
Some people believe that a new born baby should be given other liquids/Semi-solids before initiating breastfeeding		979
Agree	8.7	
Not sure	5.2	
Do not agree	86.1	
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		979
Agree	7.3	
Not sure	6.6	
Do not agree	86.1	
Some people believe that a baby cannot survive on exclusive breastfeeding for six months		979
Agree	13.6	
Not sure	5.1	
Do not agree	81.3	
Some people believe that certain foods are taboo and should not be fed to a child		979
Agree	20.5	
Not sure	7.5	
Do not agree	72.0	
Some people believe that a young child should not be breastfed up to 2 years		979
Agree	10.5	
Not sure	5.7	
Do not agree	83.8	

During FGDs, explanation were short on food taboos, availability and practices, the findings are summarized below;

Factors influencing maternal feeding practices

- Eat what is available
- Drought (vegetables etc. become unavailable)
- Poverty

- No food taboos
- Markets are far
- Male support sometimes weak

"*We lack money such that you can find us taking porridge without sugar for breakfast, lunch and supper"* 30 yr old young woman.

"*When rainfall is not sufficient we really starve a lot even sometimes we end up going a whole day and night without food."* Stated a 42 year old woman

A 50 year old man stated that '*I can't lie that I give my wife any special diet during pregnancy, she eats whatever food we have so my dear men stop lying that you provide a special diet to your pregnant women'*

Recommended foods for pregnant women

- Porridge from sorghum, milk (mbithi - millet and milk fermented; kitulu – millet and milk not fermented), 'ndua', liver, eggs, beans, porridge, green vegetables.
- 'Ndua' Mixture of maize, millet, sorghum and beans enhance milk production.
- They take regular food like other family members.

"*I was told to make sure that I don't let myself go hungry for far too long because my baby might not grow*" Young woman FGD.

"*I like my wife taking 'musandi' (milk and grinded maize)"* Men FGD.

Prohibited foods

- Honey, dates, mutton, banana, eggs, avocado, sugar cane (baby will get too big in the womb, eggs will also lead to a child born without hair), chilli/pepper will lead to a child born without eye lashes
- Some foods are considered harmful to the growing fetus such as chilli, alcohol, quencher juice, cigarettes, miraa
- Meat from animals that have died during birth (the woman or new born might also die during child birth)
- Baobabs fruits they can make the baby to be born blind
- Meat from ant bear- they believe that the child born will look like ant bear.

"*We've been told that pregnant women should not eat meat from animals that die giving birth because the same will happen. Some of us eat it because meat is rare to come by*" Young women FGD

"*Our culture does not allow women to eat some foods such as; heart, liver, head and eggs. So, they will starve even if these foods are available*" FGD Older women.

"I told my son to avoid bringing home honey when his wife was pregnant" Men FGD.

"*My neighbors' wife ate the ant bear meat and gave birth to child who had unproportionate body parts e.g. protruding mouth, deep eyes, big ears, ugly, big eyes*" Men FGD.

Foods to enhance milk production among lactating women

- Bone soup and mbithi (watery hence increase milk production),
- Liver, vegetables and fruits, porridge, ground green grams, cowpeas
- Lack of knowledge on what they should feed on so that they get enough milk for the baby.

"*Porridge made from maize meal is not good for milk production"* Young women FGD.

"*Every breast-feeding mother takes 'ndua' because that's how its always been around here*" Young women FGD.

"*We mix porridge with honey to reduce bleeding after birth"* FGD older women.

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

- Most unaware of existence of MTMSGs among both young and older women
- A few are engaged in merry-go round activities, youth groups, …..

"*Due to high poverty in this area we don't get time for meeting with each but we always busy looking for jobs*" older women FGD.

"*Most women are taught about child care by their mothers –in law, not by other women*" Men FGD

"*The only support groups I see my wife going to are the ones for financial support*" Men FGD.

Practical approaches to enhance health and nutrition education

Approaches for Men and leaders

- Target barazas
- Encourage men to accompany women to health facility
- Livelihood projects integration like irrigation
- Introduce a program to educate men on nutrition and health for their families.

"*My husband was asked by doctor the age of our child and was not able to tell because he believes mothers are one who is supposed to know*" older women FGD.

'*I don't know any food which is recommended or not recommended for a pregnant woman because when my wife goes to clinic she never tells me anything about what they were taught*' Men FGD.

"*The only people who get trained about their health is those who are infected with HIV/AIDS but the other individuals are considered as monkeys*" Men FGD.

"*Men to be given incentives to attend barazas to educate them on nutrition and proper health*" CHV FGD.

Approaches for Women

- Barazas especially during food distribution
- Door to door approach
- IEC materials including branded items in local language
- MTMSGs

Community approach

- Integration of health and nutrition initiatives with community empowerment initiatives such as water tanks construction/provision
- Equip and empower local health facilities
- Incentive scheme for CHVs.

"*Recruit more CHVs since one member is not able to educate the many villages assigned*" CHV 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. The findings indicate that only 1.7% of the pregnant and lactating women in the survey had acute malnutrition. Child nutritional status (based on MUAC) on the other hand showed that 83.1% were nourished while a small proportion were severely malnourished (0.4%). Maternal diet quality is a good indicator of overall micronutrient status and together with other factors is likely to impact their nutritional status. Although 98.3% of the pregnant and lactating women were not malnourished, their overall diet quality was poor. The predominant food groups consumed were; starches (97.2%), other fruits and vegetables (97.2%), legumes/nuts/seeds (60.5%) and milk and milk products (70.1%). Vitamin A rich fruits and vegetables and animal source foods were rarely consumed except for the milk and milk products indicating consumption of diets that are not diversified.

Table 15: Maternal dietary diversity and MUAC status

Maternal dietary diversity		
Food groups		**979**
Starches	97.2	
Dark green leafy vegetables	41.0	
Other Vitamin A rich fruits and vegetables	9.7	
Other fruits and vegetables	97.2	
Organ meats	1.8	
Meats and fish	19.3	
Eggs	4.4	
Legumes, nuts and seeds	60.5	
Milk and milk products	70.1	
Child MUAC		**670**
Nourished (>13.4cm)	83.1	
At risk (12.5 – 13.4cm)	14.3	
Moderately malnourished (11.5-12.4cm)	2.1	
Severely malnourished (<11.5cm)	0.4	
Maternal MUAC (at 21cm cut-off)		**900**
Pregnant and lactating Acute malnutrition	1.7	
Maternal MUAC (at 23cm cut-off)		**64**
Women not pregnant not lactating acute malnutrition	0.0	

DISCUSSIONS

Malnutrition contributes directly or indirectly to morbidity and mortality particularly in developing countries. Its causes are complex and interlinked making malnutrition undergo a vicious cycle if not tackled within early or/ and appropriately. Effects of malnutrition are often felt up to adulthood affecting human overall productivity. Kitui County is classified within the arid and semi-arid regions of Kenya rendering it among the counties most

vulnerable to malnutrition. The 2014 KDHS findings indicated that 45.8% of the children in Kitui County were stunted placing it the second highest county after West Pokot. However, KABP survey conducted in 2017 in Kitui County revealed that 83.1% of the children were well nourished. This was based on MUAC, a rapid assessment method for nutritional status which is still a valid method for screening. Similarly, 98.3% of the women were equally not malnourished. This was despite their consumption of poor diversified diet.

This could be attributed to the good health seeking practices displayed by the survey findings. Most households delivered at hospitals where they received information and support that promoted the good breastfeeding practices and transition to complementary foods alongside breastfeeding. FGDs also revealed that older women encouraged their daughters to exclusively breastfeed which was unlike their past practices. Men also encouraged their wives to visit health facilities. Women also shared their own experiences of their different practices with different children and how they got better outcomes with exclusive breastfeeding till six months.

Additionally, the mothers were motivated to go to health facilities because of the incentives they received such as free vaccines and medication, free nets etc. The health care providers e.g. nurses and doctors were mainly mentioned as the main service providers hence more sensitization of adherence to hospital services needs to be implemented so as to ensure that more people seek health services.

On the contrary findings from the survey indicate poor adherence to ANC practices where these practices were reported to be higher in their previous pregnancies with index children than with their current pregnancies. It is also recommended that pregnant women have at least 4 antenatal visits during their each of their pregnancies so as to identify any complications forehand hence preventing maternal and child mortality (WHO, 2001). However less than half of the women in the survey met this requirement. IFAS intake in both previous and current pregnancies was registered to be poor with low consumption compared to the given amounts. This predisposes women to anaemia during pregnancy, heavy blood loss at delivery and neuro tube defects increasing the risks for maternal mortality (Black *et al.,* 2013). Studies further support this claims where 56,000 deaths were attributed to folate deficiency (Blencowe *et al.,* 2010) and its supplementation in another study reduced the risk of neural tube defects (De-Regil *et al.,* 2010). Women reported nearly a three times fold increase in consumption of soil/minerals intake from their previous pregnancies to their current ones. This was regardless of the low reported deworming services during both previous and current pregnancies 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.

Despite these women indicating good breastfeeding practices their knowledge and attitudes towards the same is poor. For instance, many women felt that children should be given drinks such as plain water, sugar/salt solution, glucose and non-breastmilk within the first 3 days after delivery. This leaves and impression that though they are practising timely initiation of breastfeeding and exclusive breastfeeding they are either not sure or not convinced of the benefits of this practices. Likewise, caregivers mostly use cups with no cover or cups/bowls with spoons in feeding their children but they on the other hand feel that they ought to use bottles with nipples and teats. Bottle feeding is highly discouraged due to the possible contamination of unsafe water, lack of hygiene. This may also reduce child's interest in breastfeeding thereby result in declined milk production (KNBS and ICF, 2015). Further more than half of the respondents stated that they hadn't received any information regarding child feeding information indicating a gap in nutrition education. Other literature also agrees with this by stating the fact that caregivers who lack knowledge are not able to make best use of available food resources (Inayati *et al.,* 2012). Similary, 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 *et al.,* 2015). Hence the need for nutrition specific interventions targeting the women who are also displayed in this survey as the key decision makers regarding what children should or should not eat is key. These interventions should also target the grandmothers since quite a number of women still rely on them on information regarding feeding practices. Men should also not be left out as they make key household decisions which may also impact feeding and nutrition. It is recommendable to note that men said that they support their wives and try to ensure they get good food during pregnancy despite challenges however most of them claimed not being aware of PNC services or IFAS supplementation. Lack of this information resulted to conflicts especially where IFAS was mistaken for family planning drugs or worse still ARVs. For those who knew about the importance IFAS they stated having encouraged their wives to consume however the drug was undesired due to its side effects. Encouraging men to accompany their wives in some of the ANC/PNC visits would also enable acquire information and harness more support for the women.

At 6 months breastmilk alone is no longer sufficient to meet the child's requirements for optimal growth hence timely initiation of complementary foods should be adopted besides continued breastfeeding (Dewey, 2005). However, the survey indicates children across all age groups did not meet the recommended minimum dietary diversity and their minimum acceptable diets were low despite having a high minimum meal frequency. Their diets were also low in ASFs such as meats, eggs, Vitamin A rich fruits and vegetables. Similarly, other studies in developing countries portray a similar trend like in Afghanistan, Bangladesh, India, Nepal and Pakistan less than 25% of the children aged 6-23 months were fed diets that met the minimum frequency and diversity requirements (Aguayo and Menon, 2016). Maggie *et al.,* (2010) attributed poor nutrition with poverty, little or no parental education, unstable working conditions or unemployment. Furthermore, this was more evident in developing countries who are struggling with great socio-economic disadvantages, lack of food and education (Black *et al.,* 2013). The survey findings likewise indicated the primary caregivers had no jobs and most of them were housewives, dependants and a few practised farming thereby placing them at an economic disadvantage. Their average household size is also higher than the national's average which may influence their dietary intakes leaving the vulnerable groups at risk of nutritional deficiencies. Interventions should also target increasing or improving their income sources so as to enable households have diversified diets and adequate meal intakes.

Generally achieving all these efforts geared towards raising awareness, promoting health and nutrition requires combined efforts of all stakeholders starting with the individuals, community, leaders, health providers, implementers, partners and policy makers.

CONCLUSION

There is a high literacy level among the primary caregivers, with 97.3% of the respondents having ever attended school. The predominant occupation for the respondents was being either housewives, own business or farmers (71.5%).

A majority of the children had health card's (87.8%) which is a good indicator to show high interaction with health care workers, as they seek services for ANC and PNC. Most women ever attended ANC (98.5%), mainly between 4^{th} and 6^{th} month of pregnancy. Many attended 3-6 ANC visits (81.1%). During ANC visits, essential basic information was received by over 70% for all information packages except infant feeding education (63.1%), whereas, ANC

basic services package was received by over 80% of ANC attendees, except for MUAC measurement (36.2%), deworming (33.4%) and anti-malarials (34.3%). Distance to health facilities was cited among the barriers while health facility attendance incentives were major boosters. Hospital delivery was reported among 71.2% of the respondents. While 19.5% were delivered by a TBA. A very small proportion of women were seen by health care worker within 48hours of deliver (8.9%), with a further 13.9% not seen at all by a healthcare worker, qualitative data indicated a high level of emphasis on child welfare activities post delivery as opposed to the mothers wellbeing. There is need to promote boosters towards health seeking practices, while rectifying barriers as highlighted during qualitative discussions.

Breastfeeding practices reveal; high levels of breastfeeding initiation (73.3%), low introduction of pre-lacteals (7.6%), even though 46.9% of respondents do not know the benefits of colostrum. Exclusive breastfeeding was at 70.8%, perceptions of inadequate milk production and relating child discomfort or crying with hunger were recorded during qualitative discussion. Appropriate introduction of complementary was high (87.4%), however overall complementary feeding indices show poor child feeding; minimum dietary diversity was low (32.1%), minimum meal frequency was high (76.9%), but overall minimum acceptable diet was low (28.1%), the indices was even worse for the 6-11months age group. A review of the child dietary diversity shows the predominant food groups consumed were; starches and dairy food groups. Only 31.4% of the children consumed iron fortified foods.

Use of IFAS results reveal high awareness of IFAS availability (86.0%), with 87.9% of the respondents reporting to have been issued with IFAS tablets during their pregnancy with the index child. Combined IFAS was the most widely used IFAS. Slightly over a third of the respondents (34.6%) were given IFAS during pregnancy and did not take. Also use of soils/mineral salts was reported by 18.3% of the respondents.

Responsive feeding and feeding a sick child are important child feeding practices. Most caregivers (67.5%) encouraged a child to eat verbally, whereas 50.4% praised the child. This indicates there is still room for improvement. Whereas 63.5% of children had ever been sick, most children were breastfed less (63.5%), fed less (69.9%) and during convalescence only 36.3% were given more. This calls for concerted efforts to educate caregivers to provide more food during sickness and convalescence of children.

Only 9.5% of respondents had ever seen or heard about Micronutrient powders (MNP). And only 10.8% received MNPs in the last 6 months among those with children aged 6-23months. While 44.2% did not know the benefits of feeding children aged 6-23months with fats/oils enriched with vitamins and minerals.

Overall, respondents had high positive beliefs on the MIYCN recommendations of feeding pregnant women, breastfeeding practices and feeding solid/semi-solid foods for young children.

Maternal dietary quality was very poor, with the predominant foods consumed being; starches (97.2%), other fruits and vegetables (97.2%), legumes and nuts (60.5%) and milk-products (70.1%). During discussions issues of poverty, droughts were among the key determinants of food availability and access.

There is need to have targeted health and nutrition education among; men and leaders, women and the community in general. With messaging based on the reinforcing beliefs and barriers as indicated for each target group during FGDs. Further, during FGDs it emerged that very few MTMSGs exist, with few CHVs covering wide regions.

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	ASPECTS	DURATION TO IMPLEMENT
Behavior change communication	Promote early ANC attendance targeting first trimester and increased visits	Short term
	Sensitize and educate women on need 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	Short term
	Promote responsive feeding and feeding a sick child practices among primary caregivers	Short term
	Identify and use appropriate communication channels and messaging 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	Medium term
Health systems interventions	Identify and implement an appropriate health education package for health workers on building positive client care and attitudes to enhance trust and confidence from the community	Medium term
	Ensure ANC information package including infant feeding information	Short term
	Enhance full ANC services to include; MUAC assessment, deworming and anti-malarials	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	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 MTMSGs	Medium term
	Integrated nutrition and livelihood programs (such as Agric and nutrition interventions) for food security	Medium and long term
	Integrated water and nutrition programs	Medium and long term
	Integrated roads, markets and nutrition programs	Medium and long term

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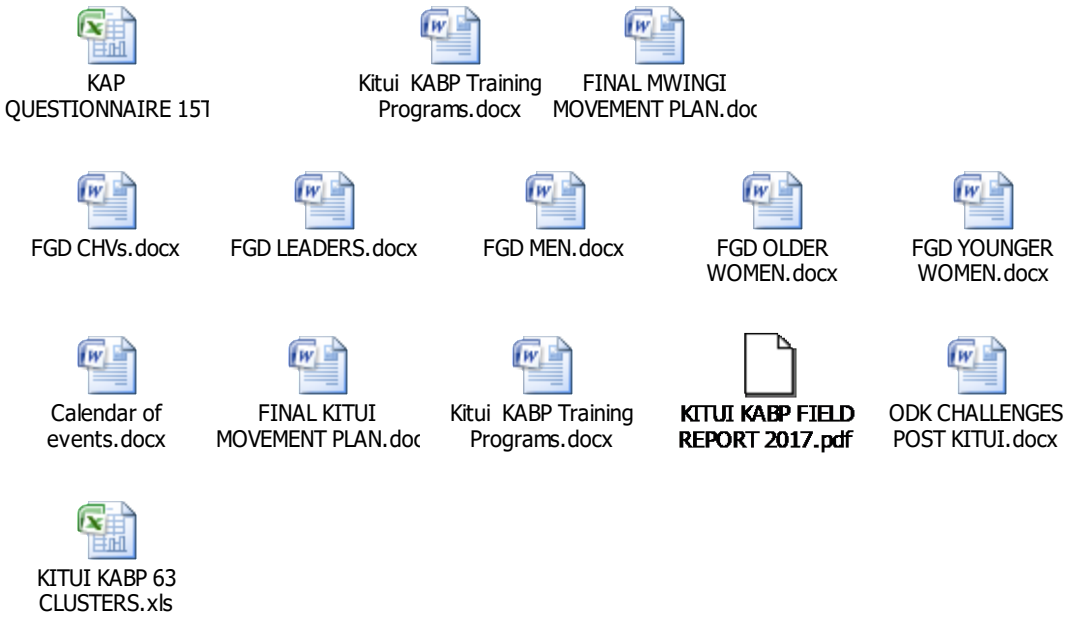
APPENDICES


KAP QUESTIONNAIRE 157
Kitui KABP Training Programs.docx
FINAL MWINGI MOVEMENT PLAN.doc
FGD CHVs.docx
FGD LEADERS.docx
FGD MEN.docx
FGD OLDER WOMEN.docx
FGD YOUNGER WOMEN.docx
Calendar of events.docx
FINAL KITUI MOVEMENT PLAN.doc
Kitui KABP Training Programs.docx
KITUI KABP FIELD REPORT 2017.pdf
ODK CHALLENGES POST KITUI.docx
KITUI KABP 63 CLUSTERS.xls